

FINAL PROGRAM

# asm 2013

**American Society for Microbiology**  
**113th General Meeting**  
May 18–21, 2013  
Denver, Colorado

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# DENVER



AMERICAN  
SOCIETY FOR  
MICROBIOLOGY

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## ASM Officers

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*President*

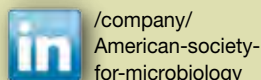
Jo Handelsman,  
*President-Elect*

Joseph M. Campos,  
*Secretary*

James M. Tiedje,  
*Treasurer*

## Join the asm2013 discussion!

Participate in the asm2013 conversations taking place on the web.



Dear fellow asm2013 attendees,

It is my pleasure to welcome you to Denver for asm2013, the 113th General Meeting of the American Society for Microbiology. We are excited about the meeting, the state of the art science that will be presented, the networking and collaborations that will ensue, and the emergence of the next generation of great microbiologists.

The General Meeting Program Committee has worked diligently to ensure that asm2013 includes a diverse program that provides you with ample opportunities to stay up-to-date on your areas of expertise, but also challenges you to explore cross-cutting implications of world-class research.

Through presentations by leading national and international investigators, esteemed award lecturers, and junior scientists on the cutting edge, asm2013 will present the most exciting breakthroughs in basic, clinical and environmental microbiology, pathogenesis and infectious diseases, and many other areas. In addition to scientific sessions, you will also have opportunity to view the latest in laboratory technologies and services from the participating exhibitors.

I also encourage you to join me on Monday, May 20th for the President's Forum and State of the Society Address. The State of the Society Address, 12:15 p.m. – 1:00 p.m., will highlight ASM's accomplishments over the past year and discuss future initiatives of the Society. This will be followed by the President's Forum, 1:00 p.m. – 2:00 p.m., where Dr. Keith Yamamoto and Dr. Margaret McFall-Ngai will present in a session titled, "*Curiosity-driven Basic Research: Laying the Foundation for Discoveries and Applications of the Future.*"

Please also join me in thanking Dr. Margaret McFall-Ngai, Chair of the Program Committee, Dr. Arturo Casadevall, Vice-Chair of the Program Committee, and the members of the General Meeting Program Committee for their excellent work in developing asm2013 and bringing together an amazing slate of speakers.

It will be an exciting time in Denver and I look forward to seeing familiar faces, making new friends, and hearing about the most recent scientific advances in microbiology. I hope you will take advantage of all the benefits asm2013 has to offer.

Yours,

**Jeff F. Miller**, ASM President

# Welcome!

On behalf of the General Meeting Program Committee, it is our distinct pleasure to welcome you to Denver, a spectacular city endowed with scenic views of the Rocky Mountains and a host of natural attractions. We are fortunate to be here in Denver as it hosts the American Society of Microbiology 113th Annual Meeting, asm2013, the premier scientific meeting for microbiologists. asm2013 showcases the work of leading researchers in our field, esteemed division and award lecturers, and internationally recognized experts from around the globe. An impressive group of young investigators, hand-selected from abstract submissions, joins the set of invited speakers to share their latest scientific findings.

The Program officially starts on the evening of Saturday, May 18, at the Opening Session, **“Microbes: Nature’s Mighty Engineers”** with presentations by Nathan Wolfe, PhD., Christine Jacobs-Wagner, PhD., and ASM Lecturer, Frances Arnold, PhD. These three diverse and highly distinguished scientists will bring us together for a fabulous kick-off to the myriad of sessions that follow over the next three days.

This year, workshops were expanded to provide an extensive selection of topics relevant to basic scientists, as well as those working in the field of clinical microbiology. Members of the ASM Junior Advisory Group eagerly contributed to two workshops involving next generation technologies. These offerings promise to provide exciting and enriching new experiences for our contingency of young scientists.

The main scientific program contains 48 sessions, including 12 plenary sessions designed to provide a view into cross-cutting, interdisciplinary research currently underway in the field and 36 afternoon symposia planned to offer in-depth coverage of cutting-edge research in particular subdisciplines. In addition, the Program includes 26 sessions that focus on the fields of diagnostic microbiology and epidemiology.

Several other experiences are planned to round out the meeting, including the President’s Forum and other special sessions, as well as over two thousands posters showcasing the most current research in microbiology. We encourage you to spend time in the Exhibit Hall and visit the exhibits to check out the latest technology and tools offered in our field. Take advantage of the Networking Break in the Exhibit Hall on Tuesday afternoon to meet and share your experiences with colleagues; and remember to take time to tour the city of Denver—all of these will add tremendous value to your overall meeting experience.

We are pleased to present this robust scientific program to our colleagues and we personally thank each of you for attending asm2013 and bringing your own expertise to our meeting. Together we will tackle the new challenges we face as scientists and present the exciting breakthroughs and advancements we pursue. asm2013 is where we come together and learn from each other to help shape our future. We sincerely thank you for your support and welcome you to Denver and asm2013.

Regards,

**Margaret McFall-Ngai**

Chair, General Meeting Program Committee

**Arturo Casadevall**

Vice-chair, General Meeting Program Committee

## asm2013 General Meeting Program Committee

### CHAIRS

Margaret J. McFall-Ngai, *Chair*

Arturo Casadevall, *Vice-Chair*

Jeff F. Miller, *Past Chair*

David C. Hooper, *Meetings Board Chair*

### DIVISIONAL GROUP REPRESENTATIVES

Ellen Jo Baron, *Divisional Group I*

Virginia Miller, *Divisional Group II*

Joy Doran Peterson, *Divisional Group III*

Paul Babitzke, *Divisional Group IV*

### COMMITTEE MEMBERS

Judith Armitage

Deshratn Asthana

Neil Baker

Michael Buchmeier

Sheldon Campbell

Sean Crosson

Francisco Diez Gonzalez

Victor DiRita

Nicole Dubilier

Jean-Marc Ghigo

Joerg Graf

Eduardo Groisman

Myles Jackson

Matthew Kane

Samuel Miller

Peter Myler

Karen Ottemann

Michael Pentella

John Perfect

Dee Pettit

Connie Price

Lita Proctor

Vincent Racaniello

Barbara Robinson-Dunn

Lucia Rothman-Denes

Thomas Schmidt

Ashley Shade

Michelle Swanson

Amy C. Vollmer

Stephen Zinder

## Saturday, May 18

7 a.m. 8 a.m. 9 a.m. 10 a.m. 11 a.m. 12 p.m. 1 p.m. 2 p.m. 3 p.m. 4 p.m. 5 p.m. 6 p.m. 7 p.m. 8 p.m.

Workshop Registration	7:30 a.m. – 12:00 p.m.	
General Registration		12:00 p.m. – 8:00 p.m.
Workshop Program	8:30 a.m. – 12:00 p.m.	1:00 p.m. – 4:30 p.m.
Opening Session/Award Presentations		5:00 p.m. – 7:30 p.m.
Opening Reception		7:30 p.m. – 9:00 p.m.

## Sunday, May 19

General Registration	7:00 a.m. – 6:00 p.m.	
Scientific Program	8:15 a.m. – 10:45 a.m.	11:00 a.m. – 1:30 p.m. 3:00 p.m. – 5:30 p.m.
Poster Presentations		10:45 a.m. – 12:30 p.m. 1:00 p.m. – 2:45 p.m.
Poster Viewing		9:00 a.m. – 5:30 p.m.
Grand Opening of the Exhibit Hall (Refreshments Included)		10:45 a.m. – 11:45 a.m.
Exhibit Hall Open		10:45 a.m. – 4:00 p.m.

## Monday, May 20

General Registration	7:30 a.m. – 6:00 p.m.	
Scientific Program	8:15 a.m. – 10:45 a.m.	3:00 p.m. – 5:30 p.m.
Award Lecture		11:00 a.m. – 12:00 p.m.
State of the Society Address		12:15 p.m. – 1:00 p.m.
President's Forum		1:00 p.m. – 2:00 p.m.
Poster Presentations		10:45 a.m. – 12:30 p.m. 1:00 p.m. – 2:45 p.m.
Poster Viewing		9:00 a.m. – 5:30 p.m.
Exhibit Hall Open		10:45 a.m. – 4:00 p.m.

## Tuesday, May 21

General Registration	7:30 a.m. – 3:30 p.m.	
Scientific Program	8:15 a.m. – 10:45 a.m.	11:00 a.m. – 1:30 p.m. 3:00 p.m. – 5:30 p.m.
Poster Presentations		10:45 a.m. – 12:30 p.m. 1:00 p.m. – 2:45 p.m.
Poster Viewing		9:00 a.m. – 5:30 p.m.
Networking Break		1:30 p.m. – 3:00 p.m.
Exhibit Hall Open		10:45 a.m. – 2:45 p.m.

## Introducing the asm2013 Meeting App!

Get 24-hour access to unique, on-the-go meeting information, maps, and networking.

### Features include:

- Interactive program and course schedules
- Customizable calendar and itinerary builder
- Exhibitor listing with interactive booth map
- Social media interaction
- Meeting alerts



## Downloading the App is Easy!

### For iPhone, iPod Touch, and iPad users:

From your handheld device, go to the iTunes App Store and search for the American Society for Microbiology or ASM to locate the app. Click on the "free" button, which will take you to the install screen.



### For BlackBerry, Android, and all other web-enabled smartphones and tablets:

Point your browser to [m.core-apps.com/TriStar-asm2013](http://m.core-apps.com/TriStar-asm2013). On this web-based mobile site, you will be directed to the proper download version for your mobile device type.



Brought to you in part by **Hologic®** and **Roche**, the asm2013 Meeting App is compatible with iPhone, iPad, BlackBerry, Android smartphones, and most tablets.

# Workshops Program

This section of the *Final Program* provides an at a glance look of the Workshop Program for asm2013. Please reference the page numbers listed under each session title to view the session's description, conveners, and faculty.

All workshops will take place at the Colorado Convention Center.

## Saturday, May 18

### CAREER DEVELOPMENT WORKSHOPS

8:30 a.m. – 12:00 p.m.

#### **WS-01 Careers in Microbiology**

Four Seasons Ballroom 3 | See Page 43

1:00 p.m. – 4:30 p.m.

#### **WS-02 Everything You Need to Know About Obtaining a Successful and Fulfilling Microbiology Career**

Four Seasons Ballroom 3 | See Page 43

### AM HALF-DAY WORKSHOPS

Morning: 8:30 a.m. – 12:00 p.m.

#### **WS-03 High-Throughput Phenotyping and Comparative Phenomics**

Meeting Room 607 | See Page 43

#### **WS-04 Quality Management (ISO 15189?) What Has Been, What is Coming and Why You Should Care?**

Meeting Room 407 | See Page 44

#### **WS-05 Single-Cell Microscopy**

Meeting Room 704 | See Page 44

### PM HALF-DAY WORKSHOPS

Afternoon: 1:00 p.m. – 4:30 p.m.

#### **WS-09 Scientific Writing: Essentials for Success**

Meeting Room 407 | See Page 44

#### **WS-10 Test Methods for Evaluating Topical Antimicrobial Products**

Meeting Room 607 | See Page 44

#### **WS-24 Studying Whole-Genome Microbial Epigenetics**

Meeting Room 111 | See Page 45

### FULL-DAY WORKSHOPS

8:30 a.m. – 4:30 p.m.

#### **WS-12 The Business of Science in the Modern Health Care Era: Selection, Verification and Validation of Tests in the Clinical Microbiology Laboratory**

Meeting Room 207 | See Page 45

#### **WS-13 Clinical Microbiology Board Review Course**

Meeting Room 603 | See Page 45

#### **WS-14 Clinical Mycobacteriology Update-2013**

Meeting Room 201 | See Page 46

#### **WS-15 Computational Tools for Analyzing Microbial Metabolism**

Meeting Room 405 | See Page 46

#### **WS-16 Do-it-yourself Microbial Genome Sequence Analysis**

Meeting Room 605 | See Page 46

#### **WS-18 Intestinal Protozoa and Helminths**

Meeting Room 403 | See Page 47

#### **WS-19 Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry in Clinical Microbiology**

Meeting Room 705 | See Page 47

#### **WS-20 Metagenomic Approaches: Frontiers of Annotation and Assembly, Networking and Discovery**

Meeting Room 710 | See Page 47

#### **WS-21 Molecular Typing of Bacterial Pathogens in 2013: Mining Data and Interpreting the Results**

Meeting Room 401 | See Page 48

#### **WS-22 Selected Topics in Pediatric Clinical Microbiology**

Meeting Room 601 | See Page 48

#### **WS-23 Update on Molecular Virology for Clinical Diagnosis**

Meeting Room 205 | See Page 48

## HIGHLIGHTS

## Plenary Sessions

Each morning will feature concurrent plenary sessions focused on interdisciplinary topics of broad interest. The goal is to showcase the transcendent science, with topics selected for minimal overlap and maximum appeal. Here's your chance to expand your knowledge and better understand new trends in microbiology. Plenary sessions will also host Division and Award Lectures.

## Symposia

Symposia held in the morning and afternoon will focus on more specialized topics; asm2013 symposia will include sessions from the General Program, Diagnostic Microbiology & Epidemiology Program and Special Interest Sessions. Symposia will also host Division Lecturers, Award Lectures and 15-minute presentations of selected abstracts.

## Oral Presentations of Selected Abstracts

Select afternoon symposia at asm2013 will include four 15-minute oral presentations from the submitted abstracts of graduate students, postdoctoral fellows, assistant professors and other young scientists.

Division Lectures,  
Division Business Meetings,  
and Award Lectures

Division and Award Lectures at asm2013 have been incorporated into sessions within the meeting's scientific program, unless otherwise noted. Division Business Meetings will be held alongside the scientific program throughout asm2013. Please visit the following pages for complete details on each:

**Division Lectures**—Page 14–16

**Division Business Meetings**—Page 17

**Award Lectures**—Page 20–21

## General Program

This section of the *Final Program* provides an at a glance look of the General Microbiology Program for asm2013. Please reference the page numbers listed under each session title to view the session's description, conveners, and speakers.

All events will take place at the Colorado Convention Center unless otherwise noted.

**Note:** The *Diagnostic Microbiology & Epidemiology Program's* sessions are included in the *Schedule-at-a-Glance* on pages 10 and 11.

## Saturday, May 18

## OPENING SESSION

5:00 p.m. – 7:30 p.m.

## 001 Microbes: Nature's Mighty Engineers

Mile High Ballroom 1-4 | See Page 49

## Sunday, May 19

## PLENARY SESSIONS

8:15 a.m. – 10:45 a.m.

## 002 Intricacies of Host-Microbe Co-evolution

Four Seasons Ballroom 3 | See Page 51

## 003 Pumping at the Microbial Well for Fuels, Chemicals and Materials

Mile High Ballroom 3 | See Page 52

## 004 Putting 'Omics to the Test

Mile High Ballroom 1 | See Page 52

## 005 Translating Knowledge of Bacterial Pathogenesis into the Next Generation Antimicrobials

Mile High Ballroom 4 | See Page 52

## SPECIAL INTEREST SESSIONS

11:00 a.m. – 12:15 p.m.

## 035 Accomplishments and Legacy of the Soviet Biological Weapons Program, 1928-1992

Mile High Ballroom 3 | See Page 56

11:00 a.m. – 1:30 p.m.

## 036 Early Microbe Hunters Overcoming Biases and Barriers

Mile High Ballroom 1 | See Page 56

## 037 Oceans and Human Health: The Microbiological Perspective

Mile High Ballroom 4 | See Page 57

## 038 Saving the World with Microbes: Science for Diplomacy and Sustainable Development

Four Seasons Ballroom 3 | See Page 57



## HIGHLIGHTS

## SYMPOSLIA

3:00 p.m. – 5:30 p.m.

**063 The Bug Stops Here: Cellular Barriers to Infection**

Meeting Room 203 | See Page 58

**065 Chemical Microbiology: Opening New Doors in Microbiology Using Chemistry**

Meeting Room 401 | See Page 59

**066 Citizen Microbiology: Enhancing Microbiology Education and Research with the Help of the Public**

Mile High Ballroom 1 | See Page 60

**068 Experimental Evolution**

Four Seasons Ballroom 4 | See Page 61

**069 Hooking Up in the Ocean**

Four Seasons Ballroom 3 | See Page 61

**071 Immune Evasion by Persistent and Latent Pathogens**

Meeting Room 205 | See Page 62

**072 Life Lessons from Biofuels Research and Bioremediation**

Meeting Room 109 | See Page 63

**073 Rewiring Bacterial Metabolism**

Meeting Room 403 | See Page 63

**074 The Roles of Antibiotics in Nature: A Long-Standing Enigma**

Four Seasons Ballroom 1 | See Page 64

**076 Transformative Research, and then Some: Mechanisms of Bacterial Lateral Gene Transfer**

Meeting Room 405 | See Page 65

**077 Uncovering the Function of Unknown Proteins**

Mile High Ballroom 4 | See Page 66

**078 Viruses Shaping Their Host Environment**

Meeting Room 207 | See Page 66

## Monday, May 20

## PLENARY SESSIONS

8:15 a.m. – 10:45 a.m.

**079 Bedside to Bench: Microbiology in the Clinics**

Four Seasons Ballroom 3 | See Page 69

**080 Microbe-Microbe Interactions**

Mile High Ballroom 4 | See Page 70

**081 Microbes in Action! Dynamics of Single Cells to Communities**

Mile High Ballroom 3 | See Page 70

**082 Microbial Nanomachines**

Mile High Ballroom 1 | See Page 70

## PRESIDENT'S FORUM

1:00 p.m. – 2:00 p.m.

**113 Curiosity-driven Basic Research: Laying the Foundation for Discoveries and Application of the Future**

Mile High Ballroom 3 | See Page 73

## Opening Session

SATURDAY, MAY 18

5:00 p.m. – 7:30 p.m. | Mile High Ballroom 1–4

**Microbes: Nature's Mighty Engineers***Conveners:***Margaret McFall-Ngai**  
University of Wisconsin-Madison  
Madison, WI**Arturo Casadevall**  
Albert Einstein College of Medicine  
Bronx, NY**Jeff F. Miller**  
University of California-Los Angeles  
Los Angeles, CA*Presentations:***Bacterial Cell Cycle Regulation: Location, Location, Location****Christine Jacobs-Wagner**  
Yale University  
New Haven, CT**The Killers, the Cures, and the Limits of Life: Frontiers of Science in the Unseen World****Nathan Wolfe**  
Global Viral; Metabiota;  
Stanford University  
San Francisco, CA*ASM Lecturer***Engineering by Evolution****Frances H. Arnold**  
California Institute of Technology  
Pasadena, CA

## Opening Reception

SATURDAY, MAY 18

7:30 p.m. – 9:00 p.m. | Four Seasons Ballroom

Kick-off asm2013 with fellow attendees over light hors d'oeuvres and drinks.

## Outstanding Student Poster Program

This year's Outstanding Student Poster Program will highlight the exceptional research of 40 students. Outstanding Student Posters will be presented with the Divisional topic category they were submitted, as well as in a special highlighted area of the Poster Hall (Exhibit Hall A).

## HIGHLIGHTS

## Networking Break

TUESDAY, MAY 21

1:30 p.m. – 3:00 p.m. | Exhibit Hall F

To enhance the networking opportunities offered at asm2013, the General Meeting Program Committee has introduced a networking break in Exhibit Hall F on Tuesday, May 21 from 1:30 p.m. to 3:00 p.m. This is your opportunity to discuss the latest discoveries in the field, and network with old and new friends, all while enjoying light refreshments.

## International Activities

**Saving the World with Microbes:  
Science for Diplomacy and Sustainable  
Development**
*International Board Special Interest Session*

SUNDAY, MAY 19

11:00 a.m. – 1:30 p.m. | Four Seasons Ballroom 3

Interested in using your science in an international setting? Considering a non-traditional pathway in science policy, development or diplomacy? Come hear how you can make a difference from leaders in the field.

**ASM International Ambassadors'  
Scientific Poster Session**

MONDAY, MAY 20

11:00 a.m.–12:30 p.m. | ASM International Lounge, Meeting Room 606

Curious about microbiology in China, Belgium, Namibia, Argentina, and other countries? Come meet ASM's International Ambassadors to learn about scientific developments and collaborations taking place around the world.

## ASM International Lounge

SUNDAY, MAY 19 – TUESDAY, MAY 21

7:00 a.m. – 4:00 p.m., Daily | Meeting Room 606

The International Lounge, made possible through a donation by Cepheid, is a place for ASM members from outside the US to network, relax and learn more about ASM's International Activities.

## Better Labs, Better Health, Globally

Share your expertise to help ASM build lab capacity across the globe. Stop by the ASM International Lounge, Room 606, to learn more. [www.labcap.org](http://www.labcap.org)

## SYMPOSIA

3:00 p.m. – 5:30 p.m.

**139 Discoveries in Symbiosis in the “omics” Age**

Four Seasons Ballroom 1 | See Page 74

**140 Eating Right: How Metabolism Steers Infection**

Meeting Room 207 | See Page 75

**141 Eavesdropping on Microbial Conversations: Deciphering New Meaning from Small Molecule Signaling**

Meeting Room 401 | See Page 75

**143 The Great Wall of Bacterial Peptidoglycan and its Impact on the Bug and the Host**

Meeting Room 405 | See Page 76

**144 It Starts with a Cough: The Many Paths to Pneumonia**

Meeting Room 205 | See Page 77

**146 Macromolecular Assemblies in Bacteria**

Mile High Ballroom 4 | See Page 78

**147 Metagenomic Approaches in Agriculture and Food Production**

Meeting Room 109 | See Page 79

**148 Microbiology's Next Top Model: Predicting the Future with Math and Microbes**

Four Seasons Ballroom 4 | See Page 79

**149 On the Front Lines PMNs, Macrophages and Dendritic Cells**

Meeting Room 203 | See Page 80

**150 Regulating Gene Expression from the Membrane**

Meeting Room 403 | See Page 80

**151 Role of Microbes in Environmental Sustainability**

Four Seasons Ballroom 3 | See Page 81

**152 This Week in Microbiology**

Meeting Room 106 | See Page 81

## Tuesday, May 21

## PLENARY SESSIONS

8:15 a.m. – 10:45 a.m.

**154 Environmental Adaptation, Diversity and Reverse Ecology**

Four Seasons Ballroom 1 | See Page 83

**155 The Good, the Bad and the Ugly: Food Microbiology in the Omics Age**

Four Seasons Ballroom 3 | See Page 84

**156 Microbial Transmission: Getting from Here to There**

Mile High Ballroom 1 | See Page 84

**157 The Rising Appreciation of Post-transcriptional Regulation of Gene Expression in the Microbial World**

Mile High Ballroom 4 | See Page 84

## LATE-BREAKING SESSION

11:00 a.m. – 1:30 p.m.

**LBS001 Pandemic Threats from Emerging Avian Influenza (H7N9 and H5N1): Challenges for Public Health, Research, Surveillance and Countermeasures**

Mile High Ballroom 3 | See Page 89

## HIGHLIGHTS

## SPECIAL INTEREST SESSIONS

11:00 a.m.–1:00 p.m.

**187 The Immune Response and Diseases Which Primarily Affect Underrepresented Populations**

Mile High Ballroom 1 | See Page 87

11:00 a.m. – 1:30 p.m.

**188 Implementing a Multidisciplinary Team Approach in Managing MDROs: Complementary Roles of Microbiology and Infection Control**

Mile High Ballroom 4 | See Page 88

**189 Men, Women, Infection, and Infertility**

Four Seasons Ballroom 1 | See Page 88

**190 Strategic Coalitions and Public Policy in Human Health and Disease**

Four Seasons Ballroom 3 | See Page 89

## SYMPOSIUM

3:00 p.m. – 5:30 p.m.

**218 Biofilms**

Meeting Room 203 | See Page 91

**219 The Ecology of *Clostridium difficile* Infections**

Meeting Room 205 | See Page 92

**220 Evolution of Bioenergetic Systems**

Four Seasons Ballroom 3 | See Page 92

**221 Extraordinary and Extreme Microbial Lifestyles**

Four Seasons Ballroom 1 | See Page 93

**222 Fermented Foods and Beverages: A Flavorful Blend of Culinary Tradition and Microbial Terroir**

Meeting Room 605 | See Page 94

**223 A Light Guide to Microbial Photobiology: From Physiology to Synthetic Biology**

Meeting Room 403 | See Page 94

**224 Microbial Ecosystems: From Networks to Models**

Four Seasons Ballroom 4 | See Page 95

**225 New Frontiers in Synthetic Biology: Challenges and Opportunities**

Meeting Room 401 | See Page 95

**226 New Insights into the Regulation of Translation**

Mile High Ballroom 4 | See Page 96

**227 Organizing, Replicating and Segregating the Genome**

Meeting Room 405 | See Page 96

**228 Phylogenomics and Microbial Species Concepts**

Meeting Room 109 | See Page 97

**230 When Microbes Target the Nucleus**

Meeting Room 207 | See Page 98

## State of the Society Address

MONDAY, MAY 20

12:15 p.m. – 1:00 p.m. | Mile High Ballroom 3

ASM President Jeff F. Miller will deliver a “State of the Society” address that highlights many of the new and innovative programs that are offered by the Society, as well as discuss some of ASM’s greatest accomplishments over the past year. We also encourage you to take this opportunity to share your views on policy proposals, comment on emerging issues, and pose questions to ASM leadership.

## President’s Forum

MONDAY, MAY 20

1:00 p.m. – 2:00 p.m. | Mile High Ballroom 3

**Curiosity-driven Basic Research: Laying the Foundation for Discoveries and Application of the Future****Convener:****Jeff F. Miller**University of California-Los Angeles  
Los Angeles, CA

President, American Society for Microbiology

**Presentations:****21st Century Biomedical Research and Education****Keith R. Yamamoto**University of California,  
San Francisco  
San Francisco, CA**Discovering the Mechanisms Underlying Host-Microbe Interactions: Exploiting Nature’s Toolkit****Margaret McFall-Ngai**University of Wisconsin-Madison  
Madison, WI

## Late-Breaking Session

TUESDAY, MAY 21

11:00 a.m. – 1:30 p.m. | Mile High Ballroom 3

**Pandemic Threats from Emerging Avian Influenza (H7N9 and H5N1): Challenges for Public Health, Research, Surveillance and Countermeasures**

## HIGHLIGHTS

## Quiz Busters

TUESDAY, MAY 21

3:00 p.m. – 5:30 p.m. | Meeting Room 705

This is the ultimate test of knowledge for the clinical microbiologist. Four teams representing regional microbiology societies will vie for the title of “Expert” as they answer questions on current infectious disease problems, outbreaks, taxonomy, and identification methods. The quiz will cover case studies and diagnostic puzzles that supervisors and lab directors should be able to solve. This question and answer format will allow the audience to test their knowledge of what’s new in clinical microbiology. Quiz questions are intended to present real-life problems and reflect current clinical and public health infectious disease issues. Lessons learned from teaching points and discussion can be applied to their laboratory testing.

## Clinical Microbiology Lounge

SUNDAY, MAY 19 – MONDAY, MAY 20

7:00 a.m. – 6:00 p.m. | Meeting Room 701

TUESDAY, MAY 21

7:00 a.m. – 3:30 p.m. | Meeting Room 701

Learn more about career opportunities for CMs during informal chats with practicing CMs of various backgrounds! Learn about becoming a CM or enhancing your position as a CM. Discussions daily; refer to page 12 for schedule. A list of CMs who will be on-site to talk with you will be posted on the CM Portal, <http://clinmicro.asm.org>, in late April.

Late-Breaker  
Diagnostic Microbiology  
& Epidemiology Posters

SUNDAY, MAY 19 – TUESDAY, MAY 21

Poster Hall Hours | Exhibit Hall A

Late Breaker Diagnostic Microbiology and Epidemiology Posters will be showcased in a specially designated area in the Poster Hall and available for viewing throughout all Poster Sessions. Located in Exhibit Hall A.

Poster presenters are available for questions on Monday, May 20 from 10:45 a.m. – 12:30 p.m.

Diagnostic Microbiology  
& Epidemiology Program

This program includes twenty-six symposia covering traditional and molecular clinical microbiology, medical mycology and parasitology, healthcare epidemiology, public health, and diagnostic immunology. This section of the *Final Program* provides an at a glance look of the Diagnostic Microbiology & Epidemiology Program for asm2013. Please reference the page numbers listed under each session title to view the session’s description, conveners, and speakers.

## Sunday, May 19

8:15 a.m. - 10:45 a.m.

**006 Best Practices for Consolidation of Clinical Microbiology Labs and Shared Services in Public Health Labs**

Meeting Room 705 | See Page 53

**007 Clinical and Microbiological Updates of Established and Newly Emerging Mycobacterium Species**

Meeting Room 706 | See Page 53

**008 Innate and Adaptive Immune Responses to Infection**

Meeting Room 712 | See Page 54

**009 Outbreaks of Invasive Fungal Infections: Search, Find and Destroy Them**

Meeting Room 601 | See Page 54

**010 You Want Me to Culture What?: Challenging Clinical and Non-clinical Samples in Microbiology**

Meeting Room 605 | See Page 55

3:00 p.m. - 5:30 p.m.

**064 Challenges to Surveillance of Antimicrobial Resistance in the Global Setting**

Meeting Room 712 | See Page 58

**067 Clinical Relevance of Multiple Pathogens as Accessed by New Technology**

Meeting Room 601 | See Page 60

**070 How Knowledge from the Human Microbiome Projects Will Change the Practice of Clinical Microbiology**

Meeting Room 706 | See Page 62

**075 Toyota Meets Pixar: Digital Microbiology and Automation in the Clinical Microbiology Laboratory**

Meeting Room 605 | See Page 65

## Monday, May 20

8:15 a.m. - 10:45 a.m.

**083 Current Microbiological Perspective from Historical Retrospect**

Meeting Room 601 | See Page 71

**084 Emerging Problems in Diagnosis of Parasitic Disease**

Meeting Room 706 | See Page 71



**085 Impact of Rapid Molecular Diagnostic Tools on Infection Control Practices**

Meeting Room 605 | See Page 72

**086 Point-of-Care Infectious Disease Testing: Should the Microbiologist Be Involved?**

Meeting Room 712 | See Page 72

3:00 p.m. - 5:30 p.m.

**138 Clinical Microbiology Lab Result Reporting...and I Thought Getting the Right Answer was the Hard Part!**

Meeting Room 705 | See Page 73

**142 Globe Trotting: Laboratory-based Surveillance for Infectious Diseases**

Meeting Room 706 | See Page 76

**145 Learning to Love Gram Positive Rods (GPRs): An Update on *Corynebacterium*, Coryneforms and other Pathogenic, Gram Positive Bacilli**

Meeting Room 712 | See Page 77

**153 What About Us? STIs Other than Gonorrhea and Chlamydia: What Public Health, Your Laboratory, Your Clinicians, and Your Patients Need to Know**

Meeting Room 601 | See Page 82

**Tuesday, May 21**

8:15 a.m. - 10:45 a.m.

**158 Antibiotic Resistance: Perspectives and Practice**

Meeting Room 705 | See Page 85

**159 Biothreats and Other Disasters: Is Your Lab Prepared?**

Meeting Room 605 | See Page 85

**160 The Herpesviruses: Spectrum of Disease and Laboratory Diagnosis**

Meeting Room 712 | See Page 86

**161 Recent Advances in Medical Mycology: Global Impact and Implications for Clinical Microbiology Laboratories**

Meeting Room 706 | See Page 86

**162 A Re-examination of Diagnostic Practices for Enteric Infections in the Clinical Microbiology Laboratory**

Meeting Room 601 | See Page 87

3:00 p.m. - 5:30 p.m.

**215 Advances in Anaerobic Microbiology**

Meeting Room 712 | See Page 90

**216 Are We There Yet? Has the Limit of the Taxonomic Resolution of Mass Spectrometry-enabled Microbial Profiling Been Reached?**

Meeting Room 706 | See Page 90

**217 Beyond the Basics: Modern Metrics for Clinical Microbiology**

Meeting Room 601 | See Page 91

**229 QUIZ BUSTERS: So You THINK You Know Microbiology**

Meeting Room 705 | See Page 97

**Watch the sessions — anytime and anywhere****HIGHLIGHTS:**

- Full-motion videos, slides and MP3 audio of the Diagnostic Microbiology & Epidemiology Program
- Convenient online and mobile viewing – iPad®, iPhone® & Android™ devices
- Optional DVD-ROM for on-the-go access\*
- **Purchase and demo onsite in Lobby A across from Registration**

\*A companion DVD (if selected) will begin shipping after 7/12/2013.



[www.asm.org/asmdvl](http://www.asm.org/asmdvl)

## Career-Focused Events for Students, Postdoctoral Fellows and Others!

### Saturday, May 18

7 a.m. 8 a.m. 9 a.m. 10 a.m. 11 a.m. 12 p.m. 1 p.m. 2 p.m. 3 p.m. 4 p.m. 5 p.m.

#### WORKSHOPS

Careers in Microbiology

8:30 a.m. – 12:00 p.m.

Everything You Need to Know About Obtaining  
a Successful and Fulfilling Career in Microbiology

1:00 p.m. – 4:30 p.m.

### Sunday, May 19

#### LOUNGES AND INFORMAL MENTORING

Student and Postdoc Lounge

7:00 a.m. – 4:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

Orientation to asm2013 and Breakfast

7:30 a.m. – 8:00 a.m.

10:00 a.m. – 10:30 a.m.

#### CONVERSATIONS ABOUT PLANNING A MICROBIOLOGY CAREER

Student and Postdoc Lounge

12:00 p.m. – 1:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

ASM Career Connections

10:45 a.m. – 4:00 p.m.

### Monday, May 20

#### LOUNGES AND INFORMAL MENTORING

Student and Postdoc Lounge

7:00 a.m. – 4:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

1:00 p.m. – 2:00 p.m.

#### CONVERSATIONS ABOUT PLANNING A MICROBIOLOGY CAREER

Student and Postdoc Lounge

12:00 p.m. – 1:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

1:00 p.m. – 2:00 p.m.

ASM Career Connections

10:45 a.m. – 4:00 p.m.

Postdoctoral Award Presentation

3:00 p.m. – 4:00 p.m.

4:30 p.m. – 6:00 p.m.

Postdoctoral Social Event

4:30 p.m. – 6:30 p.m.

### Tuesday, May 21

#### LOUNGES AND INFORMAL MENTORING

Student and Postdoc Lounge

7:00 a.m. – 4:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

1:00 p.m. – 2:00 p.m.

#### CONVERSATIONS ABOUT PLANNING A MICROBIOLOGY CAREER

Student and Postdoc Lounge

12:00 p.m. – 1:00 p.m.

Clinical Microbiology Lounge

11:00 a.m. – 12:00 p.m.

1:00 p.m. – 2:00 p.m.

ASM Career Connections

10:45 a.m. – 2:45 p.m.



# HIGHLIGHTS

## ASM Career Connections

View current job postings and schedule interviews on site.

Sunday through Tuesday.

## Conversations About Planning a Microbiology Career

Attend small group sessions with recognized career advisers. Check respective lounge schedules for a list of these advisers and any specific topic that might be featured during the session.

Sunday through Tuesday in the Student Lounge and Clinical Microbiology Lounge.

## Lounges

Lounges are a great environment to meet other like-minded microbiologists, former colleagues, and on-site mentors, as well as network with other professionals in a relaxed setting. See “Conversations About Planning a Career in Microbiology” to learn of special events to be held in the lounges. The two lounges planned for 2013 include one for students and postdoctoral fellows, and another for clinical microbiologists.

Sunday through Tuesday.

## Orientation to asm2013 and Breakfast

Learn how to navigate the meeting, network with other scientists and optimize your asm2013 experience.

Two sessions on Sunday in the Student Lounge: 7:30 a.m. – 8:00 a.m., and 10:00 a.m. – 10:30 a.m.

## Postdoctoral Award Presentation

Recipients of the Career Development Grants for Postdoctoral Women will be presented during the Committee on the Status of Women in Microbiology Reception.

Monday at 4:30 p.m. at the Hyatt Regency, Capitol 1 Ballroom.

## Postdoctoral Social Event

Join other postdoctoral fellows at this social event.

Stop by the Student and Postdoc Lounge for more information.

Monday 4:30 p.m. – 6:30 p.m.

## Workshops

Workshops are scheduled prior to the Opening Session and provide in depth discussion and training on specific topics. Career development will be the focus of two workshops planned for 2013. Check the workshop program for descriptions, speakers, topics, and format.

Saturday only.

*All sessions sponsored by the ASM Education, Membership and Public and Scientific Affairs Boards and ASM Professional Practice Committee and may change without notice. Check the asm2013 app for updated times.*



## NSF/ASM Leaders Inspiring Networks and Knowledge (ASM LINK) Program

**MONDAY, MAY 20**

11:00 a.m. – 12:00 p.m. | Meeting Room 503

Looking for new collaborators to integrate microbiology research and education? Looking to enhance scientifically meritorious proposals with effective approaches to reach a broader audience including students underrepresented in science, technology, engineering and math (STEM)? Join ASM in a strategic initiative to increase diversity in molecular, cellular, and microbial biosciences. Plan to visit:

- Orientation, *ASM Leaders Inspiring Networks and Knowledge* (ASM LINK). Monday, May 20, 11:00 a.m. – 12:00 p.m.; Colorado Convention Center, Room 503.
- NSF and ASM LINK Booth. Sunday and Monday, May 19 and 20, 10:45 a.m. – 4:00 p.m., Tuesday, May 21, 10:45 a.m. – 2:45 p.m. Colorado Convention Center, Exhibit Hall

The *ASM Leaders Inspiring Networks and Knowledge* (ASM LINK) seeks to “link” and support established research investigators, early-career scientists, undergraduate faculty, and trainees (students and fellows). The program promotes discovery, understanding, broadening participation and interdisciplinary collaborations among the next generation of scientists. The program is sponsored by the ASM Education Board with support from the National Science Foundation Directorate for Biological Sciences (grant # 1241970).

**[www.asmlink.org](http://www.asmlink.org)**

Division Lectures at asm2013 have been incorporated into sessions within the meeting's scientific program, unless otherwise noted. Below you will find details on each Division Lecturer as well as information on the session in which the lecture will take place.

## DIVISION A

Session:

**005 Translating Knowledge of Bacterial Pathogenesis into the Next Generation Antimicrobials** | See Page 52

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 4

*Division Lecturer:*

**BRUCE R. LEVIN**; Emory Univ., Atlanta, GA

*Presentation Title:*

**Antibiotic Treatment of Bacterial Infections: Pharmacodynamics Meets Population Dynamics Meets Immunology**

8:15 a.m.

## DIVISION B

Session:

**146 Macromolecular Assemblies in Bacteria** | See Page 78

Monday, May 20 | 3:00 p.m. – 5:30 p.m. | Mile High Ballroom 4

*Division Lecturer:*

**SCOTT J. HULTGREN**; Washington Univ. School of Med., St. Louis, MO

*Presentation Title:*

**Molecular Snapshots of Pilus Biogenesis and UTI Pathogenesis: Blueprint for Therapeutics**

3:00 p.m.

## DIVISION C (BD Award for Research in Clinical Microbiology)

Session:

**085 Impact of Rapid Molecular Diagnostic Tools on Infection Control Practices** | See Page 72

Monday, May 20 | 8:15 a.m. – 10:45 a.m. | Meeting Room 605

*Division Lecturer:*

**CHRISTINE C. GINOCCHIO**; North Shore-LIJ Hlth. System Lab., New Hyde Park, NY

*Presentation Title:*

**Rapid Detection and Identification of Blood Stream Pathogens**

8:15 a.m.

## DIVISION D

Session:

**144 It Starts with a Cough: The Many Paths to Pneumonia** | See Page 77

Monday, May 20 | 3:00 p.m. – 5:30 p.m. | Meeting Room 205

*Division Lecturer:*

**RALPH R. ISBERG**; Tufts Univ. Sch. of Med., Boston, MA

*Presentation Title:*

**How Selection in Environmental Reservoirs Drives Virulence in Lung Pathogen**

4:00 p.m.

## DIVISION E

Session:

**149 On the Front Lines PMNs, Macrophages and Dendritic Cells** | See Page 80

Monday, May 20 | 3:00 p.m. – 5:30 p.m. | Meeting Room 203

*Division Lecturer:*

**SAMUEL M. BEHAR**; Brigham and Women's Hosp., Boston, MA

*Presentation Title:*

**Apoptosis and Efferocytosis: A Winning Combination against Tuberculosis**

3:00 p.m.

## DIVISION F

Session:

**009 Outbreaks of Invasive Fungal Infections: Search, Find and Destroy Them** | See Page 54

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Meeting Room 601

*Division Lecturer:*

**DIMITRIOS P. KONTOYIANNIS**; Univ. of Texas M.D. Anderson Cancer Ctr., Houston, TX

*Presentation Title:*

**Finding and Destroying Nosocomial Outbreaks due to *Mucorales* and Rare Fungi: Ecology, Presentation and Overview of Antifungals for Prophylaxis and Treatment**

9:15 a.m.

## DIVISION G

Session:

**225 New Frontiers in Synthetic Biology: Challenges and Opportunities** | See Page 95

Tuesday, May 21 | 3:00 p.m. – 5:30 p.m. | Meeting Room 401

*Division Lecturer:*

**JOHN I. GLASS**; J. Craig Venter Inst., Rockville, MD

*Presentation Title:*

**Synthetic Genomics to Create a Minimal Bacterial Cell and Some Other Neat Stuff**

3:00 p.m.

## DIVISION H

Session:

**157 The Rising Appreciation of Post-transcriptional Regulation of Gene Expression in the Microbial World** | See Page 84

Tuesday, May 21 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 4

*Division Lecturer:*

**SIDNEY R. KUSHNER**; Univ. of Georgia, Athens, GA

*Presentation Title:*

**Regulation of Functional tRNA by Polyadenylation in *E. coli***

9:15 a.m.



**DIVISION I***Session:***004 Putting 'Omics' to the Test** | See Page 52

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 1

*Division Lecturer:***NICOLE DUBILIER**; Max Planck Inst. of Marine Microbio., Bremen, Germany*Presentation Title:***From 'Omics' to the Environment and Back: Unraveling how Chemosynthetic Symbionts Gain Energy and Carbon**

9:15 a.m.

**DIVISION J***Session:***082 Microbial Nanomachines** | See Page 70

Monday, May 20 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 1

*Division Lecturer:***PIET DE BOER**; Case Western Reserve Univ., Cleveland, OH*Presentation Title:****E. coli* Cytokinesis**

9:45 a.m.

**DIVISION K***Session:***072 Life Lessons from Biofuels Research and Bioremediation** | See Page 63

Sunday, May 19 | 3:00 p.m. – 5:30 p.m. | Meeting Room 109

*Division Lecturer:***LONNIE O. INGRAM**; Univ. of Florida, Gainesville, FL*Presentation Title:***From Woody Residues to Renewable Chemicals and Fuels**

3:00 p.m.

**DIVISION L***Session:***142 Globe Trotting: Laboratory-based Surveillance for Infectious Diseases** | See Page 76

Monday, May 20 | 3:00 p.m. – 5:30 p.m. | Meeting Room 706

*Division Lecturer:***FRED TENOVER**; Cepheid, Sunnyvale, CA*Presentation Title:***The Evolution of Healthcare Associated Pathogens: Is it Local, Global, or Both?**

4:30 p.m.

**DIVISION M***Session:***Division M Business Meeting, Lecture and Student Presentations** | See Page 58

Sunday, May 19 | 1:00 p.m. – 2:30 p.m. | Meeting Room 705

*Division Lecturer:***ALAN R. DAVIDSON**; Univ. of Toronto, Toronto, Canada*Presentation Title:***From DNA Injection to Protein Secretion: Conserved Elements of the Myophage Tail and its Bacterial Relatives****DIVISION N***Session:***004 Putting 'omics' to the Test** | See Page 52

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 1

*Division Lecturer:***DAVID A. STAHL**; University of Washington, Seattle, WA*Presentation Title:***Assembly and Adaptive Evolution of Simple Microbial Communities**

8:45 a.m.

**DIVISION O***Session:***003 Pumping at the Microbial Well for Fuels, Chemicals and Materials** | See Page 52

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 3

*Division Lecturer:***THOMAS W. JEFFRIES**; Univ. of Wisconsin-Madison, Madison, WI*Presentation Title:***Is There a Path to Cellulosic Biofuels?**

8:45 a.m.

**DIVISION P***Session:***155 The Good, the Bad and the Ugly: Food Microbiology in the Omics Age** | See Page 84

Tuesday, May 21 | 8:15 a.m. – 10:45 a.m. | Four Seasons Ballroom 3

*Division Lecturer:***LEE-ANN JAYKUS**; North Carolina State Univ., Raleigh, NC*Presentation Title:***Food Virology: A Case Study for the Importance of Biotechnology to Food Safety and Public Health**

8:45 a.m.

**DIVISION Q***Session:***151 Role of Microbes in Environmental Sustainability** | See Page 81

Monday, May 20 | 3:00 p.m. – 5:30 p.m. | Four Seasons Ballroom 3

*Division Lecturer:***MICHAEL J. SADOWSKY**; Univ. of Minnesota, St. Paul, MN*Presentation Title:***The Impact of Human Activity on the Microbial Metagenome of the Upper Mississippi River**

5:00 p.m.

**DIVISION R***Session:***156 Microbial Transmission: Getting from Here to There** | See Page 84

Tuesday, May 21 | 8:15 a.m. – 10:45 a.m. | Mile High Ballroom 1

*Division Lecturer:***JULIAN PARKHILL**; Wellcome Trust Sanger Institute, Cambridge, United Kingdom*Presentation Title:***Identifying Transmission at Local and Global Scales**

8:15 a.m.

**DIVISION S**

Session:

**078 Viruses Shaping their Host Environment** | See Page 66

Sunday, May 19 | 3:00 p.m. – 5:30 p.m. | Meeting Room 207

Division Lecturer:

**LINDSEY HUTT-FLETCHER**; Louisiana State Univ., Shreveport, LA

Presentation Title:

**Virus Cell Interactions in the Pathogenesis of Oncogenic EBV**

3:00 p.m.

**DIVISION T**

Session:

**078 Viruses Shaping their Host Environment** | See Page 66

Sunday, May 19 | 3:00 p.m. – 5:30 p.m. | Meeting Room 207

Division Lecturer:

**LESLIE PARENT**; Pennsylvania State Univ., Hershey, PA

Presentation Title:

**Cellular Machinery Hijacked by RNA Viruses for Genome Packaging and Budding**

4:00 p.m.

**DIVISION U**

Session:

**071 Immune Evasion by Persistent and Latent Pathogens**

See Page 62

Sunday, May 19 | 3:00 p.m. – 5:30 p.m. | Meeting Room 205

Division Lecturer:

**JOHN CHAN**; Albert Einstein Coll. of Med., Bronx, NY

Presentation Title:

**The Role of B Cells Regulating the Immune Response to Mycobacteria**

5:00 p.m.

**DIVISION V (Abbott Award in Clinical and Diagnostic Immunology)**

Session:

**008 Innate and Adaptive Immune Responses to Infection**

See Page 54

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Meeting Room 712

Division Lecturer:

**JENNIFER PUCK**; Univ. of California at San Francisco, San Francisco, CA

Presentation Title:

**Early Detection of Severe Combined Immunodeficiency by Newborn Screening**

9:45 a.m.

**DIVISION W (Carski Foundation Distinguished Undergraduate Teaching Award)**

Session:

**066 Citizen Microbiology: Enhancing Microbiology Education and Research with the Help of the Public**

See Page 60

Sunday, May 19 | 3:00 p.m. – 5:30 p.m. | Mile High Ballroom 1

Division Lecturer:

**GRAHAM HATFULL**; Univ. of Pittsburgh, Pittsburgh, PA

Presentation Title:

**Authentic Research for Novice Scientists: Phage Discovery and Genomics by Undergraduate Students**

3:00 p.m.

**DIVISION X**

Session:

**218 Biofilms** | See Page 91

Tuesday, May 21 | 3:00 p.m. – 5:30 p.m. | Meeting Room 203

Division Lecturer:

**AARON P. MITCHELL**; Carnegie Mellon Univ., Pittsburgh, PA

Presentation Title:

**Candida Gene Regulation During Infection**

3:00 p.m.

**DIVISION Y (Gen-Probe Joseph Public Health Award)**

Session:

**159 Biothreats and Other Disasters: Is Your Lab Prepared?**

See Page 85

Tuesday, May 21 | 8:15 a.m. – 10:45 a.m. | Meeting Room 605

Division Lecturer:

**JUDY ISAAC-RENTON**; British Columbia Pub. Hlth. Microbio. and Reference Lab, Vancouver, BC, Canada

Presentation Title:

**Better Tools for Front-line Laboratories**

10:15 a.m.

**DIVISION Z**

Session:

**155 The Good, the Bad and the Ugly: Food Microbiology in the Omics Age** | See Page 84

Tuesday, May 21 | 8:15 a.m. – 10:45 a.m. | Four Seasons Ballroom 3

Division Lecturer:

**THADDEUS B. STANTON**; Natl. Animal Disease Res. Ctr., Ames, IA

Presentation Title:

**Drugs, Bugs and the Swine Intestinal Microbiome**

8:15 p.m.

**DIVISION AA**

Session:

**002 Intricacies of Host-Microbe Co-evolution** | See Page 51

Sunday, May 19 | 8:15 a.m. – 10:45 a.m. | Four Seasons Ballroom 3

Division Lecturer:

**JEROEN SAEIJ**; Massachusetts Inst. of Tech., Cambridge, MA

Presentation Title:

**Susceptibility to Infection: A Complex Interplay Between Host and Parasite Genotypes**

8:45 a.m.

**DIVISION A****Business Meeting**

Sunday, May 19 | 12:00 p.m. – 1:00 p.m.

Meeting Room 405

**DIVISIONS B, D AND E****Business Meeting and Richard and Mary Finkelstein Student Travel Grant Presentations** | See Page 90

Tuesday, May 21 | 2:00 p.m. – 3:30 p.m. | Mile High Ballroom 1

**DIVISION C****Business Meeting**

Sunday, May 19 | 1:00 p.m. – 2:30 p.m.

Meeting Room 712

**DIVISION F****Business Meeting**

Sunday, May 19 | 11:00 a.m. – 12:00 p.m.

Meeting Room 601

**Mixer**

Sunday, May 19 | 5:45 p.m. – 7:30 p.m.

Capitol Ballroom 4 (Hyatt)

**DIVISION G****Business Meeting and Mixer**

Sunday, May 19 | 6:00 p.m. – 9:00 p.m.

Capitol Ballroom 5 (Hyatt)

**DIVISION I****Business Meeting**

Sunday, May 19 | 12:30 p.m. – 1:30 p.m.

Meeting Room 109

**DIVISION L****Business Meeting**

Sunday, May 19 | 11:00 a.m. – 2:00 p.m.

Meeting Room 605

**DIVISION M****Business Meeting and Division Lecture, Gisela Mosig and Nestle Phage Award Presentations** | See Page 58

Sunday, May 19 | 1:00 p.m. – 2:30 p.m. | Meeting Room 705

**DIVISION N****Business Meeting**

Sunday, May 19 | 1:45 p.m. – 2:45 p.m.

Meeting Room 205

**DIVISION O****Business Meeting**

Sunday, May 19 | 11:00 a.m. – 2:45 p.m.

Meeting Room 401

**DIVISION P****Business Meeting**

Tuesday, May 21 | 12:00 p.m. – 1:00 p.m.

Meeting Room 401

**DIVISION Q****Business Meeting**

Monday, May 20 | 11:00 a.m. – 12:00 p.m.

Meeting Room 203

**DIVISION T****Business Meeting**

Sunday, May 19 | 5:30 p.m. – 6:00 p.m.

Meeting Room 207

**DIVISION U****Business Meeting**

Monday, May 20 | 2:00 p.m. – 2:30 p.m.

Meeting Room 401

**DIVISION V****Business Meeting**

Sunday, May 19 | 11:00 a.m. – 11:30 a.m.

Meeting Room 712

**DIVISION W****Business Meeting**

Sunday, May 19 | 1:45 p.m. – 2:30 p.m.

Mile High Ballroom 1

**DIVISION X****Business Meeting**

Tuesday, May 21 | 2:30 p.m. – 3:00 p.m.

Mile High Ballroom 3

**DIVISION Y****Business Meeting**

Monday, May 20 | 11:00 a.m. – 12:00 p.m.

Meeting Room 205

**DIVISION Z****Business Meeting**

Monday, May 20 | 11:00 a.m. – 12:00 p.m.

Meeting Room 207

**Mixer**

Sunday, May 19 | 5:45 p.m. – 7:30 p.m.

Meeting Room 304

## DIVISION A

### Antimicrobial Chemotherapy

Jeffrey Alder, *Chair*  
Keith Klugman, *Chair-elect*  
Hannah Wexler, *Councilor*

## DIVISION B

### Microbial Pathogens

Nicholas Cianciotto, *Chair*  
Steven Blanke, *Chair-elect*  
Karen Ottemann, *Councilor*

## DIVISION C

### Clinical Microbiology

Sheldon Campbell, *Chair*  
Susan Sharp, *Chair-elect*  
Barbara Robinson-Dunn, *Councilor*

## DIVISION D

### Microbe-Host Interactions

Marvin Whiteley, *Chair*  
Olaf Schneewind, *Chair-elect*  
Kevin McIver, *Councilor*

## DIVISION E

### Immunology

Maya Saleh, *Chair*  
David Mosser, *Chair-elect*  
Peter Murray, *Councilor*

## DIVISION F

### Medical Mycology

John Perfect, *Chair*  
Maurizio Del Poeta, *Chair-elect*  
Jennifer Lodge, *Councilor*

## DIVISION G

### Mycoplasmology

John Glass, *Chair*  
Chris Minion, *Chair-elect*  
Lawrence Silbart, *Councilor*

## DIVISION H

### Genetics and Molecular Biology

Sidney Kushner, *Chair*  
Joseph Peters, *Chair-elect*  
Susan Rosenberg, *Councilor*

## DIVISION I

### General Microbiology

Joerg Graf, *Chair*  
Eric Stabb, *Chair-elect*  
Esther Angert, *Councilor*

## DIVISION J

### Cell and Structural Biology

Daniel Kearns, *Chair*  
Briana Burton, *Chair-elect*  
Zemer Gitai, *Councilor*

## DIVISION K

### Microbial Physiology & Metabolism

Tyrell Conway, *Chair*  
Jared Leadbetter, *Chair-elect*  
Mechthild Pohlschroder, *Councilor*

## DIVISION L

### Healthcare Epidemiology

Connie Price, *Chair*  
Tom Talbot, *Chair-elect*  
Stephen Weber, *Councilor*

## DIVISION M

### Bacteriophage

Carlos E. Catalano, *Chair*  
Louis Temple, *Chair-elect*  
Graham Hatfull, *Councilor*

## DIVISION N

### Microbial Ecology

Karsten Zengler, *Chair*  
K. Eric Wommack, *Chair-elect*  
Joel Kostka, *Councilor*

## DIVISION O

### Fermentation & Biotechnology

George Garrity, *Chair*  
Badal Saha, *Chair-elect*  
Zonglin Liu, *Councilor*

## DIVISION P

### Food Microbiology

Francisco Diez-Gonzalez, *Chair*  
Pina Fratamico, *Chair-elect*  
Frank Burns, *Councilor*

## DIVISION Q

### Environmental & General Applied Microbiology

Jill Stewart, *Chair*  
Donna Fennell, *Chair-elect*  
Gerben Zylstra, *Councilor*

## DIVISION R

### Evolutionary and Genomic Microbiology

Rachel Whitaker, *Chair*  
Jennifer Gardy, *Chair-elect*  
Nicole Perna, *Councilor*

## DIVISION S

### DNA Viruses

Lindsey M. Hutt-Fletcher, *Chair*  
Katherine Spindler, *Chair-elect*  
Lou Laimins, *Councilor*

## DIVISION T

### RNA Viruses

Leslie Parent, *Chair*  
Kim Green, *Chair-elect*  
John Patton, *Councilor*

## DIVISION U

### Mycobacteriology

Sabine Ehrh, *Chair*  
Kathleen McDonough, *Chair-elect*  
Miriam Braunstein, *Councilor*

## DIVISION V

### Clinical & Molecular Diagnostic Immunology

Moon Nahm, *Chair*  
Nahed Ismail, *Chair-elect*  
Deshratn Asthana, *Councilor*

## DIVISION W

### Microbiology Education

Robert Bauman, *Chair*  
Laurie Caslake, *Chair-elect*  
Laura Mays Hoopes, *Councilor*

## DIVISION X

### Molecular, Cellular & General Biology of Eukaryotes

George Sprague, Jr., *Chair*  
N. Louis glass, *Chair-elect*  
Michael Levandowsky, *Councilor*

## DIVISION Y

### Public Health

Dee Pettit, *Chair*  
Joanne Bartkus, *Chair-elect*  
Michael Pentella, *Councilor*

## DIVISION Z

### Animal Health Microbiology

Shawn Bearson, *Chair*  
Paul Plummer, *Chair-elect*  
Shelley Rankin, *Councilor*

## DIVISION AA

### Free-living, Symbiotic & Parasitic Protists

Peter Myler, *Chair*  
Gustavo Arrizabalaga, *Chair-elect*  
Upinder Singh, *Councilor*



## Friday, May 17

Start Time	End Time	Event	Location	Room
8:00 a.m.	11:30 a.m.	Membership Board Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 3
8:00 a.m.	3:00 p.m.	JCM Editors' Meeting	Hyatt Regency Denver at Colorado CC	Granite A

## Saturday, May 18

8:00 a.m.	4:00 p.m.	Journals Board Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 1
9:00 a.m.	12:00 p.m.	ABMLI Board Meeting	Hyatt Regency Denver at Colorado CC	Sandstone
1:30 p.m.	4:00 p.m.	Branch Officers Forum	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 5
2:00 p.m.	5:00 p.m.	ABMM Board Meeting	Hyatt Regency Denver at Colorado CC	Sandstone
3:30 p.m.	6:00 p.m.	ASM Press Committee Meeting	Hyatt Regency Denver at Colorado CC	Granite A
6:00 p.m.	9:00 p.m.	CVI Editors' Meeting	Hyatt Regency Denver at Colorado CC	Agate A

## Sunday, May 19

7:00 a.m.	9:00 a.m.	JCM Editorial Board Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 1
9:00 a.m.	12:00 p.m.	Education Board Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 5
11:00 a.m.	12:45 p.m.	CPEP & Program Directors Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 6
11:00 a.m.	1:00 p.m.	Committee on Microbiological Issues Impacting Minorities	Hyatt Regency Denver at Colorado CC	Limestone
12:00 p.m.	1:30 p.m.	Committee on Biodefense	Hyatt Regency Denver at Colorado CC	Agate A
12:00 p.m.	2:00 p.m.	JB Editorial Board Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 1
12:00 p.m.	2:00 p.m.	Committee on Minority Education	Hyatt Regency Denver at Colorado CC	Sandstone
12:00 p.m.	2:00 p.m.	IAI Editors' Meeting	Hyatt Regency Denver at Colorado CC	Granite A
12:30 p.m.	2:00 p.m.	Meeting of the Committee on Awards	Hyatt Regency Denver at Colorado CC	Marble
2:00 p.m.	4:00 p.m.	Committee on International Education	Hyatt Regency Denver at Colorado CC	Limestone
5:30 p.m.	7:00 p.m.	Education Board Reception	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 2-3
6:00 p.m.	9:00 p.m.	AEM Editors' Meeting	Hyatt Regency Denver at Colorado CC	Granite A
7:00 p.m.	10:30 p.m.	Awards Dinner and Presentation	Denver Performing Arts Complex	Chambers Grant Salon

## Monday, May 20

7:00 a.m.	8:30 a.m.	Committee on Professional Affairs	Hyatt Regency Denver at Colorado CC	Sandstone
7:00 a.m.	8:30 a.m.	American College of Microbiology Board Meeting	Hyatt Regency Denver at Colorado CC	Marble
7:00 a.m.	9:00 a.m.	AEM Editorial Board Meeting	Hyatt Regency Denver at Colorado CC	Centennial Ballroom F
7:00 a.m.	9:00 a.m.	IAI Editorial Board Meeting	Hyatt Regency Denver at Colorado CC	Centennial Ballroom G
9:00 a.m.	11:00 a.m.	Committee on Environmental Microbiology	Hyatt Regency Denver at Colorado CC	Limestone
11:00 a.m.	12:00 p.m.	ASM NSF LINK Orientation	Colorado Convention Center	Meeting Room 503
12:00 p.m.	1:30 p.m.	EcoSal Plus Editorial Board Meeting	Hyatt Regency Denver at Colorado CC	Agate A-B
12:00 p.m.	2:00 p.m.	Committee on Agricultural and Food Microbiology	Hyatt Regency Denver at Colorado CC	Marble
3:00 p.m.	4:30 p.m.	Committee on the Status of Women in Microbiology Open Forum Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 2
4:30 p.m.	6:00 p.m.	Committee on the Status of Women in Microbiology Reception	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 1
5:30 p.m.	6:30 p.m.	ABMM/ABMLI Diplomate Reception	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 5
9:00 p.m.	10:30 p.m.	Annual Minority Microbiologists' Mixer	Hyatt Regency Denver at Colorado CC	Centennial Ballroom A

## Tuesday, May 21

7:00 a.m.	8:30 a.m.	Committee on the Laboratory Practices	Hyatt Regency Denver at Colorado CC	Agate A-B
8:00 a.m.	10:00 a.m.	Mentoring Breakfast	Hyatt Regency Denver at Colorado CC	Centennial Ballroom F
11:45 a.m.	1:30 p.m.	American Academy of Microbiology Fellows Meeting and Luncheon	Hyatt Regency Denver at Colorado CC	Centennial Ballroom F
5:30 p.m.	7:30 p.m.	ASM Council Meeting	Hyatt Regency Denver at Colorado CC	Capitol Ballroom 2

## Wednesday, May 22

8:00 a.m.	2:00 p.m.	Division Officer Meeting	Hyatt Regency Denver at Colorado CC	Centennial Ballroom F
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## Award Laureates Presenting Lectures

ASM congratulates the 2013 General Meeting Award laureates and encourages asm2013 attendees to come and listen to their award lectures. The awards are listed alphabetically by day of presentation.

### Sunday, May 19

#### Abbott Award in Clinical and Diagnostic Immunology

Honors a distinguished scientist in the field of clinical or diagnostic immunology.



*Session:*

**Innate and Adaptive Immune Responses to Infection** | See Page 54

8:15 a.m.–10:45 a.m. | Meeting Room 712

*Award Lecturer:*

**Jennifer Puck**; University of California, San Francisco

*Presentation Title:*

**Early Detection of Severe Combined Immuno-deficiency by Newborn Screening**

9:45 a.m.

#### Promega Biotechnology Research Award

Honors outstanding contributions to the application of biotechnology through fundamental microbiological research and development.



*Session:*

**Pumping at the Microbial Well for Fuels, Chemicals and Materials** | See Page 52

8:15 a.m.–10:45 a.m. | Mile High Ballroom 3

*Award Lecturer:*

**Jay Keasling**; University of California, Berkeley

*Presentation Title:*

**Advanced Plant to Advanced Fuel**

8:15 a.m.

#### ASM Lifetime Achievement Award (Sponsored by AbbVie)

Honors an individual who has made sustained contributions to the microbiological sciences.



*Session:*

**The Roles of Antibiotics in Nature: A Long-Standing Enigma** | See Page 64

3:00 p.m.–5:30 p.m. | Four Seasons Ballroom 1

*Award Lecturer:*

**Julian Davies**; University of British Columbia, Vancouver, Canada

*Presentation Title:*

**Small Molecules Rule the World**

3:00 p.m.

#### ABMM/ABMLI Professional Recognition Award

Recognizes an ABMM or ABMLI Diplomate for outstanding contributions to the professional recognition of clinical microbiologists and/or immunologists.



*Session:*

**Challenges to Surveillance of Antimicrobial Resistance in the Global Setting** | See Page 58

3:00 p.m.–5:30 p.m. | Meeting Room 712

*Award Lecturer:*

**Gary Doern**; University of Iowa College of Medicine, Iowa City

*Presentation Title:*

**Surveillance for Antimicrobial Resistance: Why Bother?**

5:00 p.m.

#### Carski Foundation Distinguished Undergraduate Teaching Award

Recognizes distinguished teaching of microbiology to undergraduate students and for encouraging them to subsequent achievement.



*Session:*

**Citizen Microbiology: Enhancing Microbiology Education and Research with the Help of the Public** | See Page 60

3:00 p.m.–5:30 p.m. | Mile High Ballroom 1

*Award Lecturer:*

**Graham Hatfull**; University of Pittsburgh, Pennsylvania

*Presentation Title:*

**Authentic Research for Novice Scientists: Phage Discovery and Genomics by Undergraduate Students**

3:00 p.m.

#### DC White Research and Mentoring Award

Recognizes distinguished accomplishments in interdisciplinary research and mentoring in microbiology.



*Session:*

**Hooking Up in the Ocean** | See Page 61

3:00 p.m.–5:30 p.m. | Four Seasons Ballroom 3

*Award Lecturer:*

**Farooq Azam**; University of California, San Diego

*Presentation Title:*

**Microbial Structuring of Marine Ecosystems: Significance of Micro-scale Interactions**

3:00 p.m.

#### GlaxoSmithKline International Member of the Year Award

Honors a distinguished microbiologist who has exhibited exemplary leadership in the international microbiological community.



*Session:*

**The Bug Stops Here: Cellular Barriers to Infection** | See Page 58

3:00 p.m.–5:30 p.m. | Meeting Room 203

*Award Lecturer:*

**Xavier Nassif**; Medical School Paris Descartes and the Hospital Necker-Enfants Malades, France

*Presentation Title:*

***Neisseria* Crossing Endothelial Cells at the Blood-brain Barrier**

3:00 p.m.

**USFCC/J. Roger Porter Award**

Recognizes outstanding efforts by a scientist who has demonstrated the importance of microbial biodiversity through sustained curatorial or stewardship activities for a major resource used by the scientific community.



*Session:*

**Clinical Relevance of Multiple Pathogens as Accessed by New Technology** | See Page 60

3:00 p.m.–5:30 p.m. | Meeting Room 601

*Award Lecturer:*

**Lenie Dijkshoorn**; Leiden University Medical Center, Netherlands

*Presentation Title:*

**Evolving Technologies Elucidating the Clinical Significance of *Acinetobacter***

5:00 p.m.

## Monday, May 20

**BD Award for Research in Clinical Microbiology**

Honors a distinguished clinical microbiologist for outstanding research accomplishments leading to or forming the foundation for important applications in clinical microbiology.



*Session:*

**Impact of Rapid Molecular Diagnostic Tools on Infection Control Practices** | See Page 72

8:15 a.m.–10:45 a.m. | Meeting Room 605

*Award Lecturer:*

**Christine C. Ginocchio**; North Shore-Long Island Jewish Health System, Lake Success, New York

*Presentation Title:*

**Rapid Detection and Identification of Blood Stream Pathogens**

8:15 a.m.

**Procter & Gamble Award in Applied and Environmental Microbiology**

Recognizes distinguished achievement in research and development in applied (non-clinical) and environmental microbiology.



*Session:*

**Microbes in Action! Dynamics of Single Cells to Communities** | See Page 70

8:15 am–10:45 a.m. | Mile High Ballroom 3

*Award Lecturer:*

**Mary Lidstrom**; University of Washington, Seattle, WA

*Presentation Title:*

**Methane Cycling by Methanotrophic Bacteria**

9:15 a.m.

**Maurice Hilleman/Merck Award**

ASM's premier award for major contributions to pathogenesis, vaccine discovery, vaccine development, and/or control of vaccine-preventable diseases.



**Individual Lecture** | See Page 73

11:00 a.m.–12:00 p.m. | Four Seasons Ballroom 1

*Award Lecturer:*

**Emil C. Gotschlich**; Rockefeller University, NYC, New York

*Presentation Title:*

**Perspectives on the Early History of Conjugate Vaccines**

11:00 a.m.

**bioMérieux Sonnenwirth Award for Leadership in Clinical Microbiology**

Recognizes a distinguished microbiologist for the promotion of innovation in clinical laboratory science, dedication to ASM, and the advancement of clinical microbiology as a profession.



*Session:*

**What About Us? STIs Other than Gonorrhea and Chlamydia: What Public Health, Your Laboratory, Your Clinicians and Your Patients Need to Know**  
See Page 82

3:00 p.m.–5:30 p.m. | Meeting Room 601

*Award Lecturer:*

**Roberta B. Carey**; Centers for Disease Control and Prevention, Atlanta, Georgia

*Presentation Title:*

**The ART of Clinical Microbiology**

3:00 p.m.

## Tuesday, May 21

**Eli Lilly and Company-Elanco Research Award**

Rewards fundamental research of unusual merit in microbiology or immunology.



*Session:*

**Environmental Adaptation, Diversity and Reverse Ecology** | See Page 83

8:15 a.m.–10:45 a.m. | Four Seasons 1

*Award Lecturer:*

**Martin Polz**; Massachusetts Institute of Technology, Cambridge, MA

*Presentation Title:*

**Ecological, Genetic and Social Structure of Microbial Populations in the Wild**

8:15 a.m.

**Gen-Probe Joseph Public Health Award**

Honors a distinguished microbiologist who has exhibited exemplary leadership and service in the field of public health.



*Session:*

**Biothreats and Other Disasters: Is Your Lab Prepared?** | See Page 85

8:15 am–10:45 a.m. | Meeting Room 605

*Award Lecturer:*

**Judy Isaac-Renton**; British Columbia Centre for Disease Control Public Health Microbiology & Reference Laboratory, Provincial Health Services Authority Laboratories, Vancouver, Canada

*Presentation Title:*

**Better Tools for Front-line Laboratories**

10:15 a.m.

**asm2014 Awards Deadline July 1!**

The deadline is fast approaching for awards to be presented at asm2014! To submit a nomination, please visit: <http://bit.ly/2014awards>.

## Award Laureates Not Presenting

The award laureates below should also be congratulated. These awards do not include a lecture presentation.

### ASM Founders Distinguished Service Award



Recognizes a member of ASM for outstanding contributions to the Society in a volunteer capacity at the national level.

**Alice Schauer Weissfeld**  
Microbiology Specialists Incorporated  
Houston, Texas

### ASM Graduate Microbiology Teaching Award



Honors an individual for exemplary teaching of microbiology and mentoring of students at the graduate and postgraduate levels and for encouraging students to subsequent achievement.

**Jo Handelsman**  
Yale University  
New Haven, Connecticut

### EMD Millipore Alice C. Evans Award



Honors a member of ASM for major contributions toward the full participation and advancement of women in microbiology.

**Joan Steitz**  
Yale University  
New Haven, Connecticut

### Merck Irving S. Sigal Memorial Awards



Recognize and award excellence in basic research in medical microbiology and infectious diseases.

**Neal Alto**  
University of Texas Southwestern Medical Center  
Dallas, Texas



**Emily Troemel**  
University of California  
San Diego, California

### Moselio Schaechter Distinguished Service Award



Honors an ASM member who has shown exemplary leadership and commitment towards the substantial furthering of the profession of microbiology in research, education or technology in the developing world.

**Nancy Gore Saravia**  
Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM)  
Cali, Colombia

### Raymond W. Sarber Awards



Recognize students at the undergraduate and predoctoral levels for research excellence and potential.

**Riley Ennis**  
Dartmouth College  
Hanover, New Hampshire



**Jevgenia Zilberman-Rudenko**  
Oregon Health and Science University  
Portland, Oregon

### Scherago-Rubin Award



Recognizes an outstanding, bench-level clinical microbiologist.

**Barbara A. Brown-Elliott**  
University of Texas Health Science Center  
at Tyler Mycobacteria/Nocardia Laboratory  
Tyler, Texas

### Siemens Healthcare Diagnostics Young Investigator Award



Recognizes research excellence and potential to further the educational or research objectives of an outstanding young clinical scientist.

**Carey-Ann Burnham**  
Washington University School of Medicine  
and Barnes Jewish Hospital  
St. Louis, Missouri

### William A. Hinton Research Training Award



Honors outstanding contributions toward fostering the research training of underrepresented minorities in microbiology.

**Alison Gammie**  
Princeton University  
Princeton, New Jersey

## Membership Board 2013 Career Development Grants for Postdoctoral Women Awardees

**Seemay Chou, Ph.D.**; University of Washington,  
Seattle, Washington

**Trinity L. Hamilton, Ph.D.**; Pennsylvania State University,  
University Park, Pennsylvania

**Michelle C. Swick, Ph.D.**; The University of Texas Health  
Science Center at Houston, Houston, Texas



## ABMM and ABMLI Newly Certified Diplomates

The American Board of Medical Microbiology (ABMM) certifies the expertise of doctoral-level microbiologists seeking to direct public health or clinical microbiology laboratories. The American Board of Medical Laboratory Immunology (ABMLI) certifies the expertise of doctoral-level immunologists seeking to direct laboratories engaged in the practice of medical laboratory immunology. ABMM and ABMLI certifications are recognized by federal and state governmental agencies as significant components toward meeting licensure requirements to direct laboratories engaged in the microbiological diagnosis of human disease. They are recognized under the Clinical Laboratory Improvement Amendments of 1988 final rule and in all 12 states that require licensure.

To learn more about the ABMM and ABMLI and how to certify your worth, visit [bit.ly/get-certified](http://bit.ly/get-certified).

### The American Board of Medical Microbiology (ABMM) is pleased to welcome the following newly certified Diplomates:

**Amos Adler**; National Center for Infection Control Laboratory, Tel-Aviv Sourasky Medical Center and the Ministry of Health, Israel

**Muna Alyousef**; Dubai, United Arab Emirates

**Adam Barker**; ARUP Laboratories, University of Utah, Salt Lake City, UT

**Zenda Berrada**; San Mateo County Public Health Laboratory, San Mateo, CA

**Kendall Bryant**; Orlando Regional Medical Center, Orlando, FL

**Paul D. Fey**; University of Nebraska Medical Center, Omaha, NE

**Karen M. Frank**; Clinical Center, National Institutes of Health, Bethesda, MD

**Omai Garner**; University of California Los Angeles (UCLA) Health System, Los Angeles, CA

**William A. Glover, II**; Washington State Public Health Laboratories, Shoreline, WA

**Azza Khalifa**; Maternity and Children Hospital Laboratory, Al-Ahsa, Saudi Arabia

**Todd M. Lasco**; St. Luke's Episcopal Hospital, Houston, TX

**Lixia Liu**; Indiana State Department of Health Laboratories, Indianapolis, IN

**Jessica Minion**; Regina Qu'Appelle Health Region, Saskatchewan, Canada

**Brian Mochon**; Banner Gateway Medical Center, Banner MD Anderson Cancer Center, Gilbert, AZ

**Milena Pitashny**; Texas Children's Microbiome Center, Baylor College of Medicine, Houston, TX

**Samina Sayyed**; King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia

**Mark Simons**; Naval Medical Center, San Diego, CA

**Saad J. Taj-Aldeen**; Hamad Medical Corporation, Doha, Qatar

**Elitza S. Theel**; Mayo Clinic, Rochester, MN

**Gerald T. Van Horn, III**; North Shore-Long Island Jewish Health System, Lake Success, NY

**Bing Wang**; FRCPC, Kelowna General Hospital, British Columbia, Canada

**Lars Westblade**; Long Island Jewish Medical Center, New Hyde Park, NY

### The American Board of Medical Laboratory Immunology (ABMLI) is pleased to welcome the following newly certified Diplomates:

**Abdullah Alsuwaidan**; Chicago Medical School, Rosalind Franklin University of Medicine and Science, North Chicago, IL

**Brian Curtis**; BloodCenter of Wisconsin, Milwaukee, WI

**Vijaya Knight**; National Jewish Health, Denver, CO

**Gabriel Maine**; Beaumont Health System, Royal Oak, MI

**Rim Sghiri**; Dammam Regional Laboratory and Blood Bank, Dammam, Saudi Arabia

**Zhijun Yin**; Covance, Inc., Indianapolis, IN

## International Exchange Programs and Grants

### HEATLEY-PAYNE EXCHANGE PROGRAM FOR EARLY CAREER SCIENTISTS

Funded jointly by ASM and the United Kingdom's Society for General Microbiology, this grant enables one member from each society to present an abstract at the annual General Meeting of the other society and visit a nearby research laboratory.

**Siobhan Watkins**; Portsmouth University, Portsmouth, UK

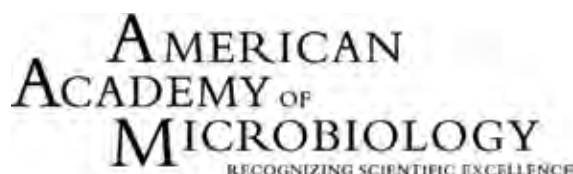
### CARLYN HALDE LATIN AMERICAN STUDENT TRAVEL GRANT

This travel grant, administered in collaboration with the Medical Mycological Society of the Americas (MMSA), supports the travel of a medical microbiologist from Latin America, Puerto Rico or the Caribbean to present an abstract and participate in the ASM General Meeting.

**Lizaida Perez**; University of Puerto Rico, San Juan, PR

American Academy of Microbiology Fellows are invited to come enjoy the Academy Lounge in the convention center. In the lounge you may meet and mingle with other Academy Fellows and Academy Staff. The lounge will be open on Sunday until Tuesday from 7:00 a.m. to 5:00 p.m. in Meeting Room 612. Please be sure to stop by!

The American Academy of Microbiology is honored to welcome the following 87 new Fellows, elected in recognition of their records of scientific achievement and original contributions that have advanced microbiology. These new Fellows will be honored at the annual Fellows Luncheon and Meeting, held Tuesday, May 21 at 11:45 a.m. until 1:30 p.m. in Centennial Ballroom F within the convention center. If you're an Academy Fellow, stop by the lounge for more details or to pick up an invitation.



**Salim S. Abdool Karim;** Center for the AIDS Program of Research in South Africa (Durban)

**Munirul Alam;** International Centre for Diarrheal Disease Research, Bangladesh (Dhaka)

**Karen Arndt;** University of Pittsburgh, PA

**Monsef Benkirane;** Institut de Génétique Humaine, CNRS, Montpellier, France

**Jeffrey M. Bergelson;** Children's Hospital of Philadelphia, University of Pennsylvania, PA

**Marshall E. Bloom;** Rocky Mountain Laboratories, NIAID/NIH, Hamilton, MT

**Elizaveta Bonch-Osmolovskaya;** Winogradsky Institute of Microbiology RAS, Moscow, Russia

**Carlos Bustamante;** University of California, Berkeley, CA

**Michael Caparon;** Washington University School of Medicine, St. Louis, MO

**Louise T. Chow;** University of Alabama at Birmingham, AL

**Jon Clardy;** Harvard Medical School, Boston, MA

**Myron S. Cohen;** University of North Carolina-Chapel Hill, NC

**Richard Condit;** University of Florida, Gainesville, FL

**Tyrrell Conway;** University of Oklahoma, Norman, OK

**Peggy A. Cotter;** University of North Carolina-Chapel Hill, NC

**Blossom Damania;** University of North Carolina-Chapel Hill, NC

**Joseph DeRisi;** University of California, San Francisco, CA

**Tamara Lea Doering;** Washington University School of Medicine, St. Louis, MO

**Valerian V. Dolja;** Oregon State University, Corvallis, OR

**Maria Gloria Domínguez-Bello;** University of Puerto Rico, Rio Piedras, PR

**Xinnian Dong;** Duke University, Durham, NC

**Harold L. Drake;** University of Bayreuth, Germany

**Nicole Dubilier;** Max Planck Institute for Marine Microbiology, Bremen, Germany

**Stanislav Dusko Ehrlich;** MetaGenoPoliS, Institut National de la Recherche Agronomique, Paris, France

**Michael Ehrmann;** University Duisburg-Essen, Germany

**Paul T. Englund;** Johns Hopkins University School of Medicine, Baltimore, MD

**Michael Follows;** Massachusetts Institute of Technology, Cambridge, MA

**Georg Fuchs;** University of Freiburg, Germany

**Takema Fukatsu;** National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

**Shou-Jiang Gao;** University of Southern California, Los Angeles, CA

**Mariano A. Garcia-Blanco;** Duke University and Duke-NUS Graduate Medical School, Singapore

**Partho Ghosh;** University of California, San Diego, CA

**Ursula Goodenough;** Washington University, St. Louis, MO

**Michael W. Gray;** Dalhousie University, Halifax, NS, Canada

**Maria J. Harrison;** Boyce Thompson Institute for Plant Research, Ithaca, NY

**Steven M. Holland;** Laboratory of Clinical Infectious Diseases, NIAID, NIH, Bethesda, MD

**James T. Hollibaugh;** University of Georgia, Athens, GA

**Terence Hwa;** University of California, San Diego, CA

**Michael Ibba;** The Ohio State University, Columbus, OH

**Janet Jansson;** Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA

**Vijay Juneja;** USDA-ARS-Eastern Regional Research Center, Wyndmoor, PA

**Kami Kim;** Albert Einstein College of Medicine, Bronx, NY

**Dennis Marc Klinman;** NCI, Frederick, MD

**H. Clifford Lane;** NIAID, NIH, Bethesda, MD

**Richard E. Lloyd;** Baylor College of Medicine, Houston, TX

**Jennifer Jane Loros;** The Audrey and Theodor Geisel School of Medicine at Dartmouth, Hanover, NH

**David A. Low;** University of California, Santa Barbara, CA

**Erich R. Mackow;** Stony Brook University, NY

**Robert E. Mandrell;** USDA, Albany, CA

**Robert L. Modlin;** University of California, Los Angeles, CA

**Søren Molin;** The Technical University of Denmark, Lyngby

**Guido C. Mora;** Universidad Andres Bello, Santiago, Chile

**Philip Murphy;** NIAID, NIH, Bethesda, MD

**Xavier Nassif;** Université Paris Descartes, Faculté de Médecine, Hôpital Necker-Enfants Malades, Paris, France

**Scott O'Neill;** Monash University, Clayton, Australia

**R. John Parkes;** Cardiff University, United Kingdom

**Matthew R. Parsek;** University of Washington School of Medicine, Seattle, WA

**Edward J. Pearce;** Washington University School of Medicine, St. Louis, MO

**Eric M. Phizicky;** University of Rochester School of Medicine and Dentistry, NY

**Roger J. Pomerantz;** Merck & Co., North Wales, PA

**Jacques Ravel;** University of Maryland School of Medicine, Institute for Genome Sciences, Baltimore, MD

**Forest Rohwer;** San Diego State University, San Diego, CA

**Susan M. Rosenberg;** Baylor College of Medicine, Houston, TX

**Mirja S. Salkinoja-Salonen;** University of Helsinki, Helsinki, Finland

**George P.C. Salmond;** University of Cambridge, Cambridge, United Kingdom

**Stewart Shuman;** Sloan-Kettering Institute for Cancer Research, MSKCC, New York, NY

**Vanessa Sperandio;** University of Texas Southwestern Medical Center, Dallas, TX

**Alfred Spormann;** Stanford University, Stanford, CA

**Raymond J. St. Leger;** University of Maryland, College Park, MD

**Michael Starnbach;** Harvard Medical School, Boston, MA

**Gregory Stephanopoulos;** Massachusetts Institute of Technology, Cambridge, MA

**Surachai Supattapone;** The Audrey and Theodor Geisel School of Medicine at Dartmouth, Hanover, NH

**Kenneth S. Thomson;** Creighton University, Omaha, NE

**Paula Traktman;** Medical College of Wisconsin, Milwaukee, WI

**B. Gillian Turgeon;** Cornell University, Ithaca, NY

**Rodney Kim Tweten;** University of Oklahoma Health Sciences Center, Oklahoma City, OK

**Alex van Belkum;** bioMérieux, S.A., La Balme les Grottes, France

**Jörg Vogel;** University of Würzburg, Germany

**Michael Wagner;** University of Vienna, Austria

**Mark J. Walker;** Australian Infectious Diseases Research Centre, St. Lucia

**Alison Weiss;** University of Cincinnati, Cincinnati, OH

**Sean P. J. Whelan;** Harvard Medical School, Boston, MA

**Bryan Raymond George Williams;** Monash Institute of Medical Research, Monash University, Clayton, Australia

**George B. Witman;** University of Massachusetts Medical School, Worcester, MA

**Gerard D. Wright;** McMaster University, Hamilton, ON, Canada

**Jiunn-Jong Wu;** College of Medicine, National Cheng Kung University, Tainan, Taiwan

**Mark Young;** Montana State University, Bozeman, MT

For information about election to the Fellowship in the American Academy of Microbiology, please visit: <http://academy.asm.org>.

## ASM Education Board Fellows, Awardees, and Honorable Mentions

*Funds are provided by The American Society for Microbiology*

#### 2012–2014 ASM/CDC Postdoctoral Research Fellowship (Fellows)

**Heather Carleton**, CDC, Atlanta  
**Elizabeth Dietrich**, CDC, Fort Collins  
**Kelly Dunford**, CDC, Atlanta  
**Kelly Liebman**, CDC, Atlanta  
**Mahamoudou Ouattara**, CDC, Atlanta  
**Justine Pompey**, CDC, Atlanta  
**Amy Schuh**, CDC, Atlanta  
**Jessica Spengler**, CDC, Atlanta

#### 2011–2013 ASM/CDC Postdoctoral Research (Fellows)

**Angela Bosco-Lauth**, CDC, Fort Collins  
**Xiangyu Deng**, CDC, Atlanta  
**Janna Futch**, CDC, Atlanta  
**Tammi Johnson**, CDC, Fort Collins  
**Joan Kenney**, CDC, Fort Collins  
**Luke Kingry**, CDC, Fort Collins  
**Theodros Tsegaye**, CDC, Atlanta  
**Jacklyn Wong**, CDC, Atlanta

#### 2010–2012 ASM/CDC Postdoctoral Research (Fellows)

**Sheila Akinyi**, CDC, Atlanta  
**Haileeyesus Belay**, CDC, Atlanta  
**Shaw Gargis**, CDC, Atlanta  
**Sean Griffing**, CDC, Atlanta  
**Segundo Lascano**, CDC, Atlanta  
**Shannon McNulty**, CDC, Atlanta  
**Janice Van Zee**, CDC, Fort Collins

#### 2012 ASM Robert D. Watkins Graduate Research Fellowship (Fellows)

**Carmen Dickinson-Copeland**,\* Morehouse School of Medicine  
**Kalani Halemano**,\* University of Colorado, Denver  
**Ankunda Kariisa**,\* University of North Carolina, Chapel Hill  
**Jordan Mar**,\* University of California, San Francisco  
**Kristen Merino**,\* Tulane University School of Medicine

#### 2012 ASM Robert D. Watkins Graduate Research Fellowship (Honorable Mentions)

**James Goggins**, Tulane University School of Medicine  
**Estevan Santana**, The Ohio State University

#### 2011–2014 ASM Robert D. Watkins Graduate Research (Fellows)

**Corrie Ortega**, University of Washington  
**Jennifer Juarez**,\* University of Texas Health Science Center at Houston  
**Nana Wilson**, Morehouse School of Medicine

**Sophonie Jean**, Virginia Commonwealth University

**Rodrigo Gonzalez**,\* University of North Carolina at Chapel Hill

**Alexis Valentin-Vargas**,\* The University of Arizona

**Khavong Pha**, University of California, Davis

#### 2010–2013 ASM Robert D. Watkins Graduate Research (Fellows)

**Jennifer Abrams**,\* University of Texas Health Science Center at Houston

**Shandee Dixon**,\* University of Michigan Medical School

**Matthew Gaynor**,\* The University of Texas at El Paso

**Jeremy Gilbreath**,\* Uniformed Services University

**Aiisa Lehman**,\* Stanford University

**Nyree Maes**, Yale University

**Ekaette Mbong**,\* University of Alabama

#### 2009–2012 ASM Robert D. Watkins Graduate Research (Fellows)

**Tawanna Childs**, University of Massachusetts Amherst

**Jasmine Clark**,\* Emory University

**Emilee Colon**, University of Puerto Rico Medical Sciences Campus

**Pascale Guiton**,\* Washington University in St. Louis

**Camille Hardiman**,\* Yale University

**Shandra Justicia Leon**,\* Georgia Institute of Technology

#### 2012 ASM Undergraduate Research Fellowship (Fellows)

**Joseph Angeloni**,\* Clemson University

**Jordan Baker**,\* Sam Houston State University

**Miles Black**,\* Washington University in St. Louis

**Kimbria Blake**, Rochester Institute of Technology

**Nathaniel Burkholder**, James Madison University

**Roman Camarda**,\* University of Washington

**Jessica Chopyk**, University of Delaware

**Joanna Coker**,\* University of California, San Diego

**Madelyn Crawford**,\* The University of Tennessee

**Andrew Cunningham**,\* University of Wisconsin

**Uyen Dang**,\* University of Texas at Arlington

**Eric Dunham**,\* University of Montana

**Kimberly Filcek**,\* Radford University

**Stephen Firkins**,\* Ohio State University

**Erin Fletcher**,\* San Diego State University

**Bobby Geiger**, Otterbein University

**Amelia Haj**, University of Minnesota-Twin Cities

**Jessica Haugen**,\* Colorado State University

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**Kaitlin Hughes**,\* University of New Mexico

**Jessica Hunter**,\* Michigan State University

**Jordan Jensen**,\* Brigham Young University

**Erica Kirkpatrick**,\* University of Florida

**Samuel Kitara**, College of Wooster

**Nina Kogekar**,\* Swathmore College

**Katherine Kondratuk**,\* South Dakota State University

**Gloria Le**,\* Clayton University

**Emma Lewis**,\* Barnard College/Columbia University

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**Erin Nawrocki**,\* Allegheny College

**Pierce O'Neil**,\* University of Kansas

**Michael Onofre**, Loyola Marymount University

**Amanda Pattison**, Cedar Crest College

**Jesse Pyle**, Texas A&M University

**Chiara Ricc-Tam**,\* University of California-San Diego

**Geoffrey Riddell**,\* University of Wisconsin-Milwaukee

**Matthew Sarna**,\* University of Notre Dame

**Vivian Shi**,\* University of California, Los Angeles

**Abigail Simmons**,\* Carnegie Mellon University

**Joshua Smith**,\* Michigan State University

**Christopher Stahl**,\* Ohio State University

**Breanne Steffan**,\* North Dakota State University

**Courtney Szyjka**,\* SUNY at Buffalo

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**Jane Wang**,\* University of California, Los Angeles

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**Elizabeth Westcott**,\* Albany College of Pharmacy and Health Sciences

**Jesse Young**,\* University of New Mexico

**Kate Zeigeler**,\* Utica College

#### 2012 ASM Undergraduate Research Fellowship (Honorable Mentions)

**Katharine Andrews**, Texas A&M University

**Heather Branstetter**, Missouri University of Science and Technology

**Michael Connolly**, The Pennsylvania State University

**Folasuyi Richardson**, Alabama State University

**Amber Schmidt**, Montana State University

**Cody Schott**, Northwestern University

**Sara Smith**, Clemson University

**Laura Whitmore**, Montana State University

#### 2013 ASM Undergraduate Research Capstone Program (Awardees)

**Matthew Allen-Daniels**, Virginia Commonwealth University

**Joshua Ames**, Kansas State University

**Tasha Barr**, University of California, Davis

**Shayla Duncan**, Alabama State University

**Kirsten Embretson**, California State University, Long Beach

**Tammy Gonzalez**, University of North Dakota

**Michael Guzman**, Portland State University

**Kofi Gyan**, University of Ottawa

**Marley Hilleger**, San Diego State University

**Diana Hooker-Romero**, San Jose State University

**Brandon Kirby**, Bluefield State College

**Xiang Liu**, Emory University

**Alexandra Montano**, University of Washington

**Elizabeth Ogunrinde**, Florida State University

**Jana Soares**, St. Edward's University

**Tyehimba Turner**, Dominican University

**Irene Yim**, Skyline College

**Erin Zess**, University of Wisconsin, Madison

#### 2012 ASM Undergraduate Research Capstone Program (Awardees)

**Miles Black**, Washington University in St. Louis

**Joshua Brown**, University of West Florida

**Stephanie DeLeon**, South Plains College

**Jordan Krebs**, Lycoming College

**Alexandra Lopez**, Interamerican University of Puerto Rico

**Maria Ortiz**, California State University Long Beach

\* Institution participated in Education Board Fellowship Cost Sharing Program

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Anthony Tran

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Rachel Conrad  
Kimberly Dill-McFarland  
Stephanie Rosales

**DIVISION AA**

Marijo Roiko

**GISELA MOSIG AWARD**

Amanda L. Seaton  
See Page 58

**NESTLE PHAGE AWARD**

Joe Bondy-Denomy  
See Page 58

**DIVISION P AWARD WINNER**

*Sponsored by Dr. Omar A. Oyarzabal*  
Eliot Stanton

**OUTSTANDING STUDENT POSTER**

Sabrina Ali  
Brent Anderson  
Marinus Barnard  
Glenn Capodagli  
Heliodoro Cardenas  
Charlotte Collingwood  
Deanna Colton  
Jacob Cram  
Robert Davis  
Juwen DuBois  
Ryan Ferguson  
Caleb Fischer  
Beniam Ghebremedhin  
Ana Guimaraes  
Fengguang Guo  
Jocelyn Hauser  
Amanda Henson  
Jordan Jenson  
Kristen Johnson  
Jisun Kim  
Nicholas Leiby  
Rita Luu  
Ankit Malik  
David Merriam  
Dipu Mohan Kumar  
Hesham Nawar  
Shuping Nie  
Solomon Opoku  
Cameron Parsons  
V. Ryan Perry  
Marijo Roiko  
Amanda Seaton  
Viplendra Shakya  
Rana Singleton  
Tiffany Tse  
Jessica Tyson  
Seth Wenner  
Rebecca Whitney  
Nana Wilson  
Yaqi You

**Richard and Mary Finkelstein Awards**

Beth Dalsing  
Jocelyn Hauser  
Andrew Hryckowian

Alexis Kordis  
P. David McMullen  
Joshua Willix

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## asm2013 Corporate Supporters



The American Society for Microbiology acknowledges the following companies for their support of asm2013. On behalf of our leadership and members, we thank them for their continued commitment and appreciate their generous contributions.



### BD Diagnostics

Booth 401

Aisle Signs | ABMM/ABMLI  
Diplomate Reception



### Roche Diagnostics Corporation

Booth 725 | Lanyards & Mobile App



### Siemens Healthcare Diagnostics

Booth 101 | Expocards



### Hologic

Booth 1001

Mobile App | ABMM/ABMLI  
Diplomate Reception



### Eppendorf

Booth 301 | President's Forum



### Quartzy

Poster Networking Cards



### Cepheid

Booth 538 | International Lounge

### ABMM/ABMLI Diplomate Reception



### Bio-Rad

Booth 815



### Focus Diagnostics

Booth 125



### Luminex

Booth 907



### Quest Diagnostics

### Supporters of the American Academy of Microbiology

#### ASM Lifetime Achievement Award



#### Sonnenwirth Award for Leadership in Clinical Microbiology



### Biomerieux

Booth 701

#### Eli Lilly and Company Research Award



### Elanco

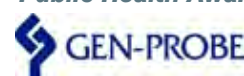


#### EMD Millipore Alice C. Evans Award



Booth 833

#### Gen-Probe Joseph Public Health Award



Booth 1001

#### GlaxoSmithKline International Member of the Year Award



#### Maurice Hilleman/Merck Award and the Merck Irving S. Sigal Memorial Award



#### Procter & Gamble Award in Applied and Environmental Microbiology



#### Promega Biotechnology Research Award



Booth 217

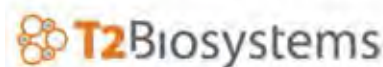


Satellite symposia are non-commercial scientific sessions supported by industry to complement the official program and to extend the educational experience of meeting attendees. Satellite symposia are not part of the official asm2013 scientific sessions as planned by the General Meeting Program Committee.

## Sunday, May 19

### **T2MR Direct Detection of Candida in Whole Blood: Rapid, Species-Specific Identification of Candida Infections**

*Supported by T2 Biosystems*



6:45 p.m. – 9:00 p.m.

Embassy Suites Denver - Downtown

1420 Stout Street

Meeting Room: Cripple Creek 1

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6:45 p.m.

#### **Welcome Remarks**

**John McDonough**

CEO, T2 Biosystems

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7:00 p.m.

#### **Candidemia Today: Diagnostic and Therapeutic Landscape**

**Michael Pfaller, MD**

Professor Emeritus, University of Iowa

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7:30 p.m.

#### **T2Candida as a Rapid and Accurate Method to Identify Species-specific Candida Infections**

**Peter Pappas, MD**

Principal Investigator, Mycoses Study Group, Professor, University of Alabama, Birmingham

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8:00 p.m.

#### **Discussion**

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8:30 p.m.

#### **Closing Remarks**

#### **Program Overview**

Candida infections carry a mortality rate that is greater than 40%, and these patients incur significant costs that are driven by an average of 40 days of hospitalization time, including over 9 days in the intensive care unit. Early initiation of effective therapy is crucial to assure optimal outcomes for patients with candidemia and to reduce costs. Blood culture, the current gold standard for detecting and identifying Candida, takes 2 to 5 days to provide the species-specific results that are needed to determine targeted therapy. There is a significant unmet need for more rapid diagnostics to assist both in the identification of candidemic patients and the timely delivery of appropriate therapy which has been proven to dramatically reduce mortality and costs. This educational activity will provide the attendees with the latest information on the challenges of diagnosing and treating Candida. The session will also provide an overview of T2Candida, an investigational in vitro diagnostic

test that utilizes T2MR technology and is currently being studied clinically to assess the test's ability to detect directly five species of *Candida* in whole blood in approximately three hours and with a targeted limit of detection of approximately 1 CFU/mL. This symposium will be in lecture format and will include a discussion session for the audience to directly interact with the speakers. T2Candida is intended for investigational use only. The performance characteristics of this product have not been established and the device is not yet cleared by the FDA for commercial use.

### **Complete, High-Resolution Whole Genome Mapping Applications in Public Health and Health Care Settings**

*Supported by OpGen, Inc.*



7:00 p.m. – 9:30 p.m.

Hyatt Regency Denver at Colorado Convention Center

650 15th Street

Meeting Room: Mineral Hall BC

#### **Speaker by Topic:**

#### **Whole Genome Mapping: A new paradigm for strain typing in public health settings**

**Mike Miller, PhD, D(ABMM)**

Director, Microbiology Technical Services, LLC

#### **The Hospital Microbiome Project: Tracking microbial life by comparative genomics**

**Dr. Jack A. Gilbert**

Principal Investigator, Hospital Microbiome Project

Argonne National Laboratory

#### **The 100K Genome Project/OpGen Partnership: Large-scale, highly curated genomes**

**Dr. Bart Weimer**

Director, 100K Pathogen Genome Project

Director, BGI@Davis

Director Genomics Integration Core, West Coast

Metabolomics Center

University of California, Davis

#### **Program Overview**

Characterization and strain-typing in support of microbial pathogen outbreak identification and resolution has evolved from phenotypic analysis to more robust molecular genetic analysis. OpGen's Whole Genome Mapping has been recently applied to sub-typing analysis of food-borne pathogens and hospital acquired infections, bridging the gap between PFGE and whole-genome sequencing. This symposium will provide attendees an overview of OpGen's high resolution, whole genome mapping technology and its applications in food-pathogen outbreak analysis, hospital acquired infection epidemiology, and validation of infectious organism reference genomes to accelerate the diagnosis of food-borne illness.

## Monday, May 20

### **xTAG® Gastrointestinal Pathogen Panel Scientific Exchange**

*Supported by Luminex*

**Luminex**

5:30 p.m. – 7:00 p.m.

Hyatt Regency Denver at Colorado Convention Center

650 15th Street

Meeting Room: Mineral Hall A

#### **Program Overview**

Luminex Corporation is hosting a poster symposium for those interested in learning more about the first FDA-cleared multiplex test capable of ruling out > 90% of known gastrointestinal pathogens in approximately five hours. Learn from early adopters' evaluations of the xTAG GPP assay and from Luminex's R&D staff. In addition, come see Luminex's latest highly integrated solution that will enable labs to obtain the benefit of molecular methods without investing in specialized lab space or technicians. Cocktails and appetizers will be provided. The xTAG GPP assay is a fast and comprehensive test that rules out the majority of pathogens as the cause of diarrheal disease in roughly 80% of all samples tested. In as little as five hours, laboratories will obtain results for 11 pathogens in a quick and streamlined workflow that eliminates the complexity of managing multiple samples and test methods. The xTAG GPP IVD represents a valuable tool to diagnostic and public health laboratories. Extensive analytical and clinical validations were required to support the de novo 510(k) clearance of 11 disease causing pathogens. The established performance characteristics together with the comprehensiveness of the panel will enable laboratories to re-state the way in which they rule-in and rule-out infectious gastroenteritis.

*Visit us at booth # 907 to learn more about the xTAG GPP assay and register for this symposium!*

# Sunday, May 19

## Rapid Detection of KPC Gene Variants in Gram-Negative Pathogens Using High-Resolution Melting and ScreenClust Analyses

Sponsor:  
Qiagen



11:00 a.m. – 11:45 a.m.

Product Theater Booth #1307 in Exhibit Hall

Refreshments will be provided.

Speaker:

**Nancy D. Hanson, PhD**

Professor, Department of Medical Microbiology, Director of Molecular Biology Center for Research in Anti-Infectives and Biotechnology, Creighton University School of Medicine, Omaha, NE

### Program Overview

In the United States, the production of the *Klebsiella pneumoniae* carbapenemase (KPC) is an important mechanism of carbapenem-resistance in Gram-negative pathogens. Infections with KPC-producing organisms are associated with increased morbidity and mortality; therefore, the rapid detection of KPC-producing pathogens is critical in patient care and infection control. We developed a real-time PCR assay complemented with traditional high-resolution melting (HRM) analysis, as well as statistically based genotyping, using the Rotor-Gene ScreenClust HRM software to both detect the presence of blaKPC and differentiate between KPC-2-like and KPC-3-like alleles. A total of 166 clinical isolates of Enterobacteriaceae, *Pseudomonas aeruginosa*, and *Acinetobacter baumannii* with various  $\beta$ -lactamase susceptibility patterns were tested in the validation of this assay; 66 of these organisms were known to produce the KPC  $\beta$ -lactamase. The real-time PCR assay was able to detect the presence of blaKPC in all 66 of these clinical isolates (100% sensitivity and specificity). HRM analysis demonstrated that 26 had KPC-2-like melting peak temperatures, while 40 had KPC-3-like melting peak temperatures. Sequencing of 21 amplified products confirmed the melting peak results, with 9 isolates carrying blaKPC-2 and 12 isolates carrying blaKPC-3. This PCR/HRM assay can identify KPC-producing Gram-negative pathogens in as little as 3 h after isolation of pure colonies and does not require post-PCR sample manipulation for HRM analysis, and ScreenClust analysis easily distinguishes blaKPC-2-like and blaKPC-3-like alleles. Therefore, this assay is a rapid method to identify the presence of blaKPC enzymes in Gram-negative pathogens that can be easily integrated into busy clinical microbiology laboratories.

## Cutting Edge Microbiology Sequencing for Research with the Ion PGM™ System

Sponsor:  
Life Technologies



12:00 p.m. – 12:45 p.m.

Product Theater Booth #1307 in Exhibit Hall

Lunch will be served.

Speaker by Topic:

### PGM Applications for Microbiome Studies

**Joseph Petrosino, PhD**

Assistant Professor, Baylor College of Medicine Director, Alkek Center for Metagenomics and Microbiome Research

### NGS Microbial Typing for Public Health Microbiology

**Dag Harmsen, MD**

Head of Research, Department of Periodontology University Munster, Germany Co-managing Director of Ridom

## The Promise of Illumigene®-Benefits of Molecular Testing both clinically and economically

Sponsor:  
Meridian Bioscience, Inc.



1:00 p.m. – 1:45 p.m.

Product Theater Booth #1307 in Exhibit Hall

Speaker:

**Jeffrey R. Softcheck, BS, MBA**

Director, Laboratory, Outpatient Cardiology, and Outpatient Testing Silver Cross Hospital

- MBA in Health Sector Management and Leadership, and Change Management from DePaul University in Chicago, IL
- BS in Math/Actuarial Sciences and BBA in Business Management from the University of St. Francis in Joliet, IL

### Program Overview

Molecular testing has the potential to impact the clinical laboratory and institutions by improving the clinical outcome of patients with more accurate results in a shorter amount of time. These attributes also have an impact on the economical side of the healthcare setting. The Promise of illumigene® from Meridian Bioscience provides healthcare systems with a platform that delivers Definitive Answers, Confident Results™, which allows for optimal patient management and helps guide clinicians to provide appropriate treatment in a timely manner. *C. difficile* testing with illumigene® *C. difficile* allows for compliance with ASM guidelines and helps guide therapy and isolation decisions as well as eliminates the need for empiric therapy. Testing with illumigene® *C. difficile* can reduce healthcare costs related to isolation, length of stay and antibiotic stewardship. illumigene® GBS is fully compliant with CDC guidelines for Group B Strep antepartum screening of pregnant women. It allows for appropriate treatment of mothers at the time of delivery ensuring best outcome for babies. illumigene® Group A Streptococcus provides a more definitive, accurate result than rapid tests or traditional culture for optimal patient care. Patients can receive appropriate antibiotic therapy as soon as possible. The illumigene® platform shows economic value through consolidation of tests with simplified methodology that does not require a capital expense or service contract.

## Monday, May 20

### Rapid and Reliable Gene Construction with gBlocks™ Gene Fragments and Gibson Assembly™ Method

Sponsor:  
Integrated DNA Technologies



11:00 a.m. – 11:45 a.m.

Product Theater Booth #1307 in Exhibit Hall

Refreshments will be provided.

Speaker:

**Michel Cannieux, PhD**

#### Program Overview

Gene cloning using PCR is a well-established and effective technique when constructing genes using native DNA sequences. However, when modifying or assembling novel genes, traditional PCR methods can be very inefficient. This often leads researchers to either assemble the new sequence de novo using oligonucleotides or they turn to a gene synthesis service provider to generate such constructs. Integrated DNA Technologies (IDT) now offers in addition to a standard gene synthesis service: a novel, rapid, and reliable method to build and clone the genes you need at a fraction of the cost of full gene synthesis services, using gBlocks™. gBlocks Gene Fragments are double-stranded, sequence-verified DNA blocks up to 500 base pairs. Their high sequence fidelity and rapid delivery time make gBlocks Gene Fragments ideal for a range of biology applications, including easy assembly of multiple gene fragments to reliably generate larger gene constructs. The goal of this workshop is to enable the bench scientist to use gBlocks to easily and rapidly construct novel DNA sequences using the Gibson Assembly Method. Products, cloning protocols, and applications will be discussed in addition to troubleshooting recommendations.

### The Genomics Revolution in Microbiology Powered by Next-Generation Sequencing

Sponsor: Illumina, Inc.



2:15 p.m. – 3:00 p.m.

Product Theater Booth #1307 in Exhibit Hall

Refreshments will be provided.

Speakers:

**Omayma Al-Awar**

Manager, Field Marketing, Illumina, Inc.

**Clotilde Teiling, Sr.**

Sr. Product Manager, Microbiology, Illumina, Inc.

#### Program Overview

Next generation sequencing is revolutionizing the field of microbiology. From the ability to distinguishing bacterial strains that differ by as little as 1 SNP, to the ability to study microbial populations and host-pathogen interactions, Illumina provides a portfolio of genomics solutions that are enabling new discovery across the field of microbiology. Please join us for an overview of Illumina's genomics technologies and examples of how the research community is leveraging them to make cutting edge discoveries in Microbiology.

## Tuesday, May 21

### Integration of Target-enriched Multiplex PCR into Conventional Microbiology Test Protocols Drives Antibiotic Stewardship and Improves Patient Outcomes

Sponsor: Diatherix Laboratories



11:00 a.m. – 11:45 a.m.

Product Theater Booth #1307 in Exhibit Hall

Refreshments will be provided.

Speaker:

**Carol R. Quinter PhD**

Director, Microbiology and Molecular Technology  
Kettering Health Network, Dayton, Ohio

#### Program Overview

The alliance of executive leadership, physicians, and laboratory scientists creates a powerful driving force in quality organizations which strive for improved patient and financial outcomes. The role of the laboratory scientist is to understand the impact of innovative technology outside the laboratory with an eye on antimicrobial stewardship and isolation day reduction. The role of the organization is to understand that return on investment based on capital costs/cost per test/ and revenue is an outdated concept when developing and approving laboratory budgets. The use of advanced, innovative molecular technology such as Target-enriched multiplex PCR (Diatherix Laboratories, Huntsville, Alabama), when integrated into conventional microbiology test algorithms, enhances the ability of the microbiology laboratory to produce accurate and complete etiologic diagnosis of infectious disease processes. This, in combination with the molecular detection of resistance, increases the outcome of antimicrobial stewardship programs. Review of several case studies will provide evidence that technology which provides sensitive, specific and timely results to physicians for actionable decisions, results in significant reduction in the time to initiate effective antimicrobial therapy, and results in improved outcomes.

### Molecular Detection of Bacterial Gastroenteritis

Sponsor: HOLOGIC



12:00 p.m. – 12:45 p.m.

Product Theater Booth #1307 in Exhibit Hall

Boxed lunch will be available.

Speaker:

**Blake W. Buchan, PhD**

Instructor of Pathology, Medical College of Wisconsin  
and Associate; Director, Clinical Microbiology, Dynacare  
Laboratory, Milwaukee, WI

#### Program Overview

The rapid detection of bacterial pathogens associated with gastroenteritis is critical to patient care and infection control. To offer a fast and accurate alternative to culture, Hologic Inc. has developed the real-time PCR ProGastro® SSCS assay for the detection and differentiation of Salmonella, Shigella, Campylobacter (C. coli and C. jejuni) and Shiga Toxin 1 (stx1) and Shiga Toxin 2 (stx2) producing E. coli. Laboratory experience and data from the ProGastro SSCS clinical trial will be presented as well as a background on the benefits of a molecular enteric panel compared to stool culture.





**113th General Meeting | American Society for Microbiology**  
May 18–21, 2013 | Denver, Colorado

## Shuttle Service to Colorado Convention Center

Complimentary shuttle service is provided between the Colorado Convention Center (CCC) and select official asm2013 hotels as listed on this flyer. Signs will be posted in the lobby of each shuttle hotel. Please check the sign in your hotel lobby for additional information and changes.

### Hotels and Boarding Locations

#### Route #1

2. Brown Palace Hotel
3. Comfort Inn Downtown
12. Sheraton Denver Hotel

#### Boarding Location

At Comfort Inn Downtown  
Curbside on Tremont Place  
Curbside on Court Place

#### Route #2

13. Westin Denver Downtown

#### Boarding Location

Curbside in front

#### Walk Hotels

The following hotels are located within walking distance of the Colorado Convention Center, therefore, shuttle service is not provided.



1. Hyatt Regency at Colorado Convention Center
4. Courtyard Denver Downtown
5. Crowne Plaza Denver
6. The Curtis (a DoubleTree Hotel)
7. Denver Marriott City Center
8. Embassy Suites
9. Grand Hyatt
10. Hilton Garden Inn
11. Magnolia

### Shuttle Hours

Service every 15-20 minutes  
during the times listed below

#### Saturday, May 18

7:30 a.m. – 8:45 p.m. To/from hotels and CCC  
8:45 p.m. – 9:30 p.m. \* From CCC to hotels

#### Sunday, May 19

6:30 a.m. – 5:45 p.m. To/from hotels and CCC  
5:45 p.m. – 6:30 p.m. \* From CCC to hotels

**Note: The Colfax Marathon is taking place on Sunday morning. From 6:30am-11:30am, guests staying at Route #1 hotels will board on Tremont between 16<sup>th</sup> St. and 17<sup>th</sup> St. Guests staying at the Westin Denver Downtown will board on Arapahoe near 16<sup>th</sup> St. Travel delays are expected from 6:30am-11:30am, with heaviest delays from 9:30am-11:30am so please allow extra travel time. Regular shuttle service is expected to resume at 11:30am from normal boarding locations.**

#### Monday, May 20

6:30 a.m. – 5:45 p.m. To/from hotels and CCC  
5:45 p.m. – 6:30 p.m. \* From CCC to hotels

#### Tuesday, May 21

6:30 a.m. – 5:45 p.m. To/from hotels and CCC  
5:45 p.m. – 6:30 p.m. \* From CCC to hotels

\* Indicates time last shuttle departs Colorado Convention Center returning to hotels.

### Hotel Map and Boarding Locations



Brown denotes  
shuttle boarding  
location

Blue denotes walk  
to one of the  
shuttle locations

Gray denotes walk  
to CCC

Red denotes alternate boarding location during Colfax Marathon



If you have questions about the shuttle or if you need to make a reservation for a wheelchair-accessible shuttle please see the shuttle supervisor at the Colorado Convention center or call KUSHNER & ASSOCIATES at (310) 274-8819 ext. 210.





**1 Hyatt Regency at Colorado Convention Center—HQ**

650 15th St  
(303) 436-1234

**2 Brown Palace**

321 17th St  
(303) 297-3111

**3 Comfort Inn**

401 17th St  
(303) 296-0400

**4 Courtyard Denver Downtown**

934 16th St  
(303) 571-1114

**5 Crowne Plaza Denver**

1450 Glenarm Pl  
(303) 573-1450

**6 The Curtis (a Doubletree Hotel)**

1405 Curtis St  
(303) 571-0300

**7 Denver Marriott City Center**

1701 California St  
(303) 297-1300

**8 Embassy Suites**

1420 Stout St  
(303) 592-1000

**9 Grand Hyatt**

1750 Welton St  
(303) 295-1234

**10 Hilton Garden Inn**

1400 Welton St  
(303) 603-8000

**11 Magnolia**

818 17th St  
(303) 607-9000

**12 Sheraton Denver Hotel**

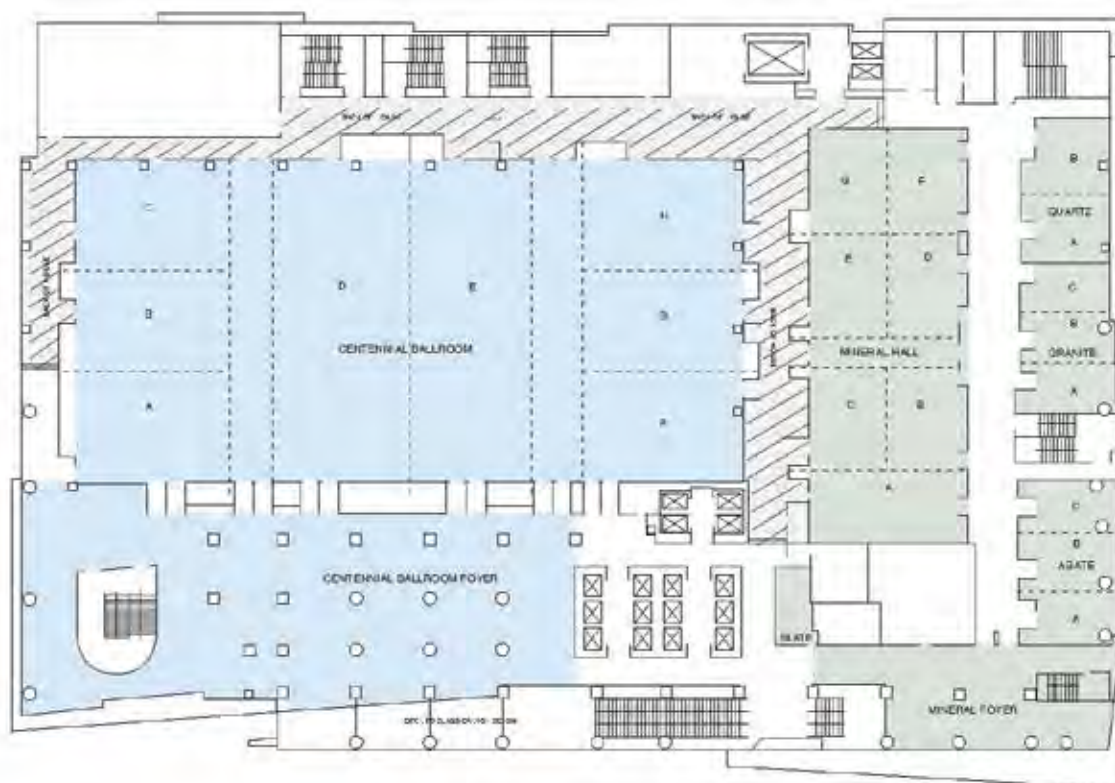
1550 Court Pl  
(303) 893-3333

**13 Westin Denver Downtown**

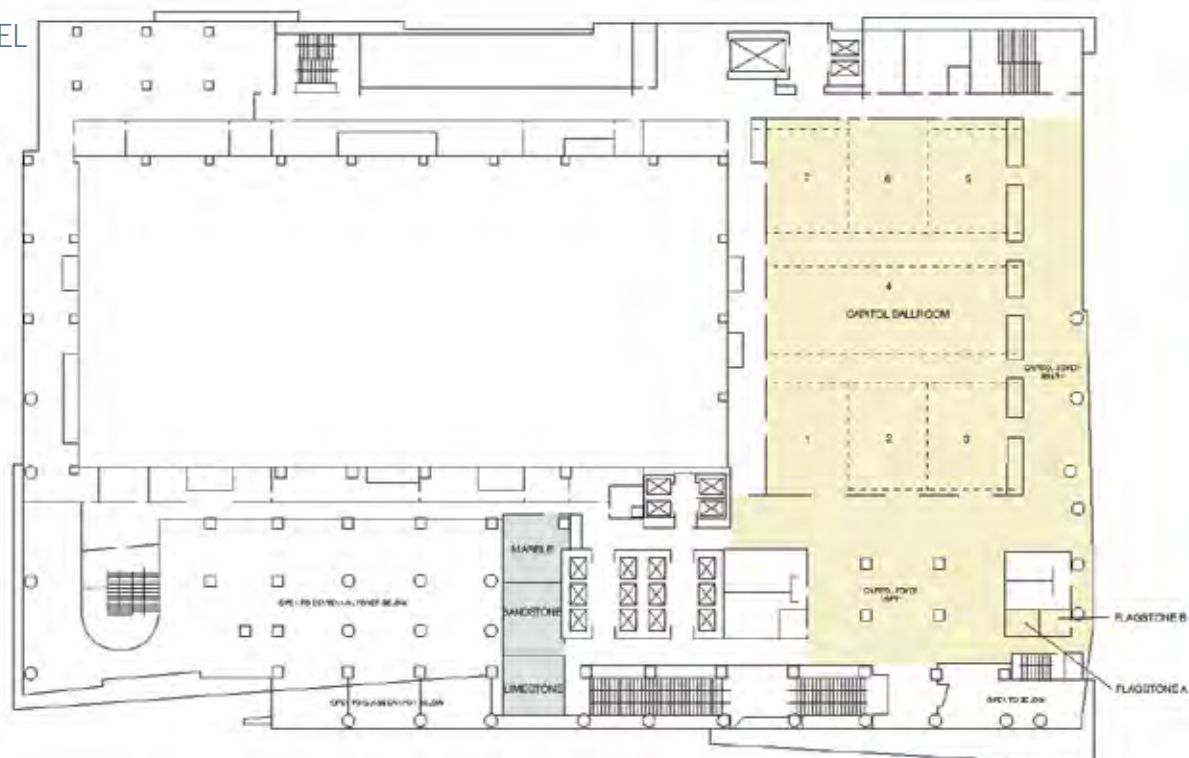
1672 Lawrence St  
(303) 572-9100

Hyatt Regency Denver  
At Colorado Convention Center

### THIRD LEVEL



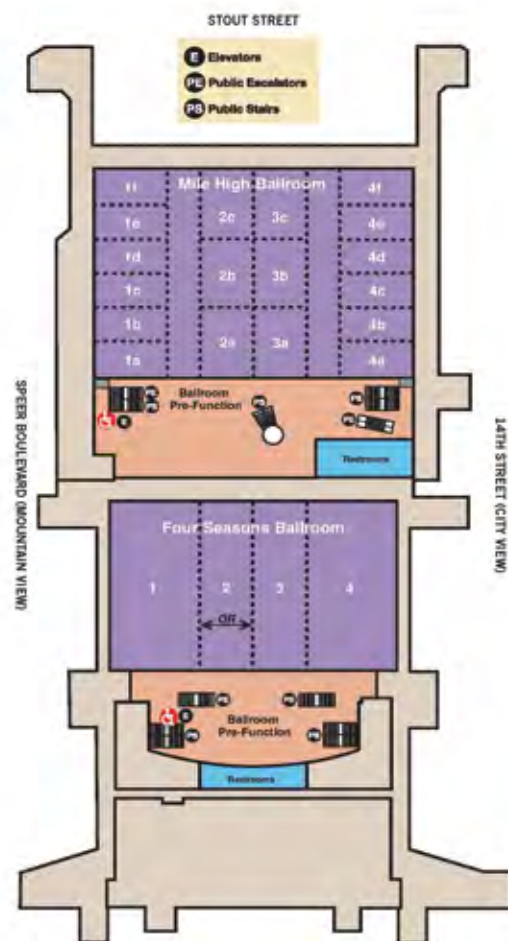
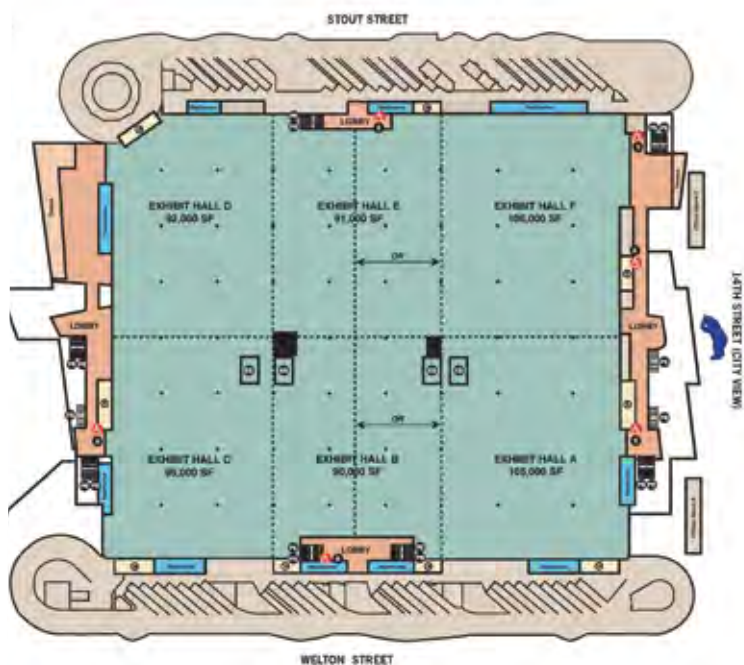
#### FOURTH LEVEL



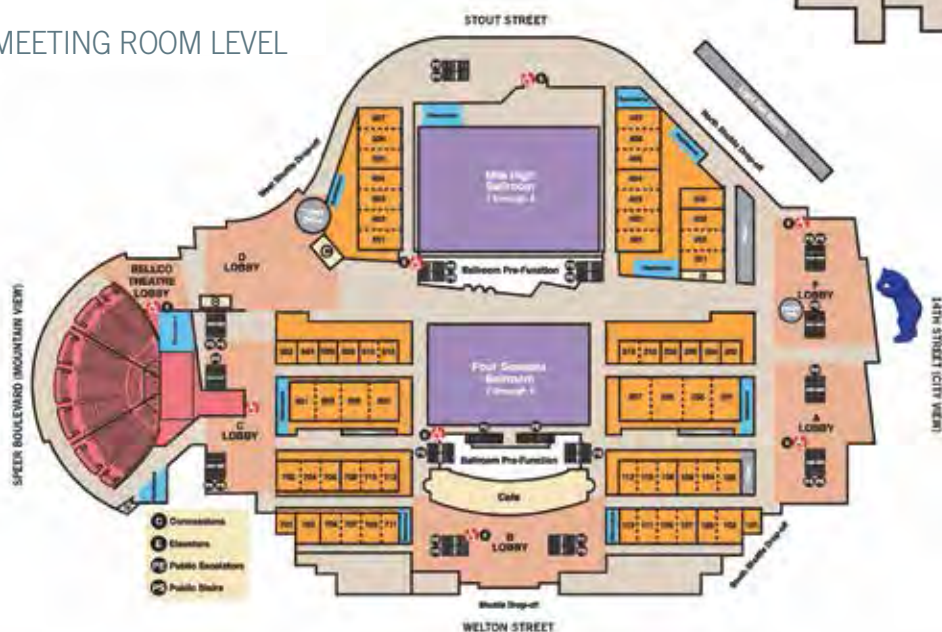
# Colorado Convention Center

## BALLROOM LEVEL

### EXHIBIT LEVEL



### MEETING ROOM LEVEL





## Americans with Disabilities Act

Persons requiring special services at the convention center (wheelchair-accessible transportation, sign interpreters, etc.) are asked to stop by ASM Headquarters in Meeting Room 301. Since requests were due as part of the registration process, on-site requests will be fulfilled based on availability.

## ATM

There are 3 ATM locations: 1 in B Lobby, near the glass exit doors, 1 at the bottom of the red ramp, near E-Central in the registration area, and 1 near the Bellco Theater and Meeting Room 602.

## Badge Policies

**Badges must be picked up at Registration in the Colorado Convention Center.** Photo ID is required. For security reasons, all attendees are required to wear their badge for entry into session rooms. Please note that badges are the property of ASM and must be relinquished at any time at the discretion of ASM staff.

### Workshop Only Badges

- Access to only the workshops paid for at registration

### Attendee Badges

- Access into all scientific sessions
- Access to the Opening Reception and ASM Live
- Access to the Exhibit Hall and Poster Sessions
- Unlimited use of the courtesy shuttle
- Continuing education credit

### Guest Badges

- Access to the Exhibit Hall and Poster Sessions
- Unlimited use of the courtesy shuttle
- Access to the Opening Session and Reception
- Attendees wearing guest badges will not be permitted into scientific session rooms

### One-Day Badges

- Access into all scientific sessions for the day printed on badge
- Access to the Exhibit Hall and Poster Sessions
- Unlimited use of the courtesy shuttle

### Exhibits Only Badges

- Access to the Exhibit Hall and Poster Sessions
- Unlimited use of the courtesy shuttle
- Attendees wearing exhibits only badges will not be permitted into scientific session rooms

### Exhibitor Badges

- Entrance into the Exhibit Hall during installation and dismantling hours
- Entrance into the Hall two hours before the Hall opens (3 hours before on Sunday) and one hour after it closes
- Unlimited use of the courtesy shuttle
- Attendees wearing exhibitor badges will not be permitted into scientific session rooms

## Press Badges

- Access into all scientific sessions
- Access to the Exhibit Hall and Poster Sessions
- Unlimited use of the courtesy shuttle
- Members of the press must register for the meeting and pay the appropriate registration fee to receive continuing education credit

## Business Center

The Business Center in A Concourse, between Registration and Four Seasons Ballroom, offers numerous services, including digital printing, packing & shipping, packaging materials, and last-minute office supplies to meet your needs.

### Location

Colorado Convention Center, A Concourse, between Registration and Four Seasons Ballroom

Phone: (720) 904-2300 | Fax: (720) 904-0796

### Hours:

Saturday, May 18.....7:30 a.m. – 5:30 p.m.  
 Sunday, May 19.....7:30 a.m. – 5:30 p.m.  
 Monday, May 20.....7:30 a.m. – 5:30 p.m.  
 Tuesday, May 21.....7:30 a.m. – 5:30 p.m.

## Cameras and Recording

Audio/video recorders, cameras, and photographs are not allowed in session rooms or in the exhibit and poster areas.

## Certificate of Attendance

A Certificate of Attendance will be available beginning Monday, May 20 at all registration counters.

## Child Safety

Children are not permitted entry into session rooms. Also, children under the age of 18 are not permitted on the Exhibit Hall floor during setup or dismantling hours. During scheduled show hours, exceptions are made when parents or guardians complete and sign a Minor Release Form. This form is available in the ASM Information Booth in the Atrium and in the ASM Headquarters Office in Meeting Room 301. Strollers are not allowed in the Exhibit Hall and may be checked at the coat and baggage check.

## Childcare Services

Professional childcare services will be available in Meeting Room 506 through *Tots on the Spot*. Rates are:

\$5/hour for ages 5 and up  
 \$6.50/hour ages 2-5  
 \$8/hour ages 0-1

*Plus \$25 registration fee and 5 hour minimum*

For more information, visit Tots on the Spot's website at [www.totsonthespot.com](http://www.totsonthespot.com).

## Coat and Baggage Check

A coat and baggage check is located on the Atrium.

### Hours:

Sunday, May 19.....7:00 a.m. – 6:00 p.m.  
Monday, May 20.....7:30 a.m. – 6:00 p.m.  
Tuesday, May 21.....7:30 a.m. – 6:00 p.m.

## E-Central

Use E-Central to access:

- Obtain a continuing education certificate
- CE Portal
- Locating presenters, sessions and topics
- Build a conference itinerary
- Leave and retrieve messages
- Send and receive e-mail
- Submit an idea for asm2014 or the 2015 ASM Conferences

### Locations :

#### E -Central #1, Lobby A (near Registration)

Saturday, May 18.....7:30 a.m. – 8:00 p.m.  
Sunday, May 19.....7:00 a.m. – 6:00 p.m.  
Monday, May 20.....7:30 a.m. – 6:00 p.m.  
Tuesday, May 21.....7:30 a.m. – 5:30 p.m.

#### E-Central #2, Upper A Lobby (outside Exhibit Hall A)

Sunday, May 19.....7:00 a.m. – 6:00 p.m.  
Monday, May 20.....7:30 a.m. – 5:30 p.m.  
Tuesday, May 21.....7:30 a.m. – 5:30 p.m.

#### E-Central #3, Exhibit Hall F

Sunday, May 19.....10:45 a.m. – 4:00 p.m.  
Monday, May 20.....10:45 a.m. – 4:00 p.m.  
Tuesday, May 21.....10:45 a.m. – 2:45 p.m.

## Exhibit Hall

Location: Exhibit Hall F

The Exhibit Hall is open:

Sunday, May 19.....10:45 a.m. – 4:00 p.m.  
Monday, May 20.....10:45 a.m. – 4:00 p.m.  
Tuesday, May 21.....10:45 a.m. – 2:45 p.m.

See the *Meeting & Exhibit Guide* in your registration bag for more information on the Exhibit Hall activities.

## ExpoCard

The ExpoCard has your contact and demographic information electronically encoded. Several services are accessible when the ExpoCard is used:

**In the Exhibit Hall:** The ExpoCard serves as an electronic business card, allowing you to easily and quickly leave your address information for follow-up with companies exhibiting products that interest you.

**E-Central:** You may gain access to the services outlined with the swipe of the ExpoCard.

## Final Program and Abstracts

All registrants receive the *Final Program*, *Abstracts on CD-ROM*, and *Meeting & Exhibit Guide* as part of the registration fee. Additional copies of the *Abstracts on CD-ROM* may be purchased for \$50 on-site at any registration counter in the convention center. After the meeting, the *Final Program* and *Abstracts on CD-ROM* may be purchased, while supplies last, from ASM Press by visiting <http://estore.asm.org>.

## First Aid

**Location:** Near Meeting Room 507

A First Aid Station will be staffed at the Colorado Convention Center during meeting hours. If you feel ill or need a place to lie down, go to the First Aid Station. In case of a medical emergency in the Colorado Convention Center, please dial 200 from any house phone or 303-228-8030 from your mobile phone.

## Food and Beverage

Full service food stands will be available Saturday–Tuesday, throughout the Colorado Convention Center and in the Exhibit Hall.

## Future Meetings Booth

A bulletin board for posting notices concerning future meetings will be located at the Future Meetings Booth in Lobby A. Announcements displayed elsewhere will be discarded.

## Housing

Any changes to hotel reservations should be made directly with the hotel. If you have any problems with your reservation or need to change hotels, please visit the Housing Assistance Counter located at Registration Assistance in the lobby of the Colorado Convention Center.

## Information Booth

The asm2013 Information Booth will be located in the Atrium.

The following information will be available:

- Meeting Information
- Approved Affiliated Events
- Program Changes and Updates
- Minor Release Forms for Exhibit Hall Entrance
- Denver Information

There will also be an information desk in the Atrium staffed with experts from Denver who will be able to assist you with restaurant reservations and activities while in Colorado.

## Lost and Found

Unattended personal belongings will be removed and taken to the ASM Headquarters Office located in Meeting Room 301.



## Messages

Messages may be left or retrieved at E-Central (see E-Central section for locations and hours). Mail and other forms of communication can be directed to the individual at the hotel where he or she is registered.

## Nursing Room

A Nursing Room will be available for use during asm2013. Please visit Headquarters in Meeting Room 301 for additional information.

## Parking

The Colorado Convention Center encourages the use of public transit and the ASM Shuttle Busses first. However, parking facilities do exist close to the convention center. For more information about nearby garages as well as a parking map, please visit <http://denverconvention.com/attend-an-event/parking>.

## Poster Information

### Call4Posters

The Call4Posters™ Booth is located inside the Poster Hall, Exhibit Hall A.

### Poster Entrance

Poster presenters must have their acceptance letter and meeting badge to enter the Exhibit Hall during non-Exhibit Hall hours (no exceptions can be made). A security officer will be stationed at the entrance to confirm admission into Exhibit Hall A.

### Poster Presentations

Posters will be presented in Exhibit Hall A, Sunday – Tuesday, from 10:45 a.m. – 12:30 p.m. and 1:00 p.m. – 2:45 p.m. Posters must remain on display from 9:00 a.m. – 5:30 p.m. on the day of presentation.

### Poster Networking Cards

Quartz has provided 25 free Poster Networking Cards to every poster presenter. Pick up the cards at the Quartz Booth located inside the Poster Hall in Exhibit Hall A.

### Poster Storage

Complimentary poster storage, for posters and poster containers only, is located in the rear of Exhibit Hall A. Posters not removed or left in the Poster Storage area will be discarded on the last day of asm2013.

## Procedures

### MORNING PROCEDURES

Presenters may mount their poster between 7:30 a.m. – 9:00 a.m. on their scheduled presentation date.

### AFTERNOON PROCEDURES

Presenters must remove their poster between 5:30 p.m. – 6:00 p.m. on their scheduled presentation date.

Posters remaining on the boards after this time will be discarded.

Any unauthorized persons in the Poster/Exhibit Hall before or after the scheduled times will be asked to leave by ASM staff or security.

## Outstanding Student Posters

The Outstanding Student Poster Session is dedicated to highlighting exceptional students for outstanding research efforts. To qualify for consideration the abstract had to demonstrate an interdisciplinary nature. Forty posters were selected from across the four Divisional Groups for this special session.

## Program Changes

Daily updates and changes to the *Final Program* will be highlighted in the addendum included in the registration bag as well as on the event app and the walk-in slides of each session room at the beginning of the session.

## asm2013 Registration

### Workshops (Lobby A)

Saturday, May 18..... 7:30 a.m. – 12:00 p.m.

### Express Pre-Registration (Lobby A)

Saturday, May 18..... 12:00 p.m. – 8:00 p.m.

Sunday, May 19 ..... 7:00 a.m. – 6:00 p.m.

Monday, May 20 ..... 7:30 a.m. – 11:30 a.m.

### Registration Assistance (Lobby A)

Saturday, May 18..... 12:00 p.m. – 8:00 p.m.

Sunday, May 19 ..... 7:00 a.m. – 6:00 p.m.

Monday, May 20 ..... 7:30 a.m. – 6:00 p.m.

Tuesday, May 21 ..... 7:30 a.m. – 3:30 p.m.

## Sessions and Room Capacity

All scientific sessions will be held at the Colorado Convention Center. A map of the Convention Center can be located in the *Meeting & Exhibit Guide* and on page 35 of this *Final Program*. The General Meeting Program Committee attempts to determine the popularity and estimated attendance level for each session. Please accept our apologies in advance should the demand exceed the number of seats in a particular session. For safety reasons, ASM must adhere to all room capacity regulations prescribed by the Colorado Convention Center and the Fire Marshall of Colorado. Attendance is on a first-come, first-served basis. ASM requests that attendees use every available seat before resorting to standing. Sitting in aisles is a hazard, and ASM requests that you not do so.

## Shipping

Mail and other packages should be shipped to your hotel. Personal mail and packages will not be accepted at the Colorado Convention Center. If you need to have a package shipped from Denver, please visit your hotel's business center or the Business Center in the convention center (in the corridor between Registration and Four Seasons Ballroom).

## Shuttle Service

Please see page 32 for complete shuttle detail including boarding locations and hours of operation. A shuttle bus flyer and signage will also be placed in each hotel.

## Smoking Policy

The Colorado Convention Center prohibits smoking inside the building and anywhere within 25' of doors or air intakes.

## Speaker Ready Room

Speakers may preview their presentation in the Speaker Ready Room in Meeting Room 107 of the Convention Center. ASM requests that speakers submit their electronic presentation files to the AV operator in the Speaker Ready Room at least 4 hours prior to their presentation time.

Saturday, May 18.....6:30 a.m. – 7:00 p.m.

Sunday, May 19.....6:30 a.m. – 6:00 p.m.

Monday, May 20.....6:30 a.m. – 6:00 p.m.

Tuesday, May 21.....6:30 a.m. – 3:00 p.m.

## Telephone Numbers

ASM Headquarters Office .....303-228-8350

First Aid ..... X200 from any house phone or 303-228-8030

Press Room.....303-228-8351

Shuttle Bus.....303-228-8352

## Transportation

### Airports

Denver International Airport is the only major airport to be built in the United States in the last 25 years. The current facility can accommodate 50 million passengers a year without any additional construction.

### Ground Transportation from the Airport

There are numerous ground transportation options available at Denver International Airport. The Ground Transportation Information Counter is located in the central area on Level 5 of Jeppesen Terminal. Counter hours are 6:30 a.m. – 11:30 p.m. daily.

Services include:

- Destination information for companies serving the airport
- Maps and directions to transportation pick-up/drop-off areas
- Hotel shuttle information
- Brochures and printed materials for companies serving the airport
- Arrangements for large groups

Contact Ground Transportation at (303) 342-4059 or at [ground.transportation@flydenver.com](mailto:ground.transportation@flydenver.com).

### Skyride Public Bus Service

Public bus service is provided by the Regional Transportation District (RTD). SkyRide is RTD's convenient, affordable bus service to and from Denver International Airport.

Catch frequent SkyRide buses throughout the RTD service area at bus stops, and at many Park-n-Rides, every day of the year. One-way SkyRide fares are just \$9, \$11, or \$13 depending on your boarding and destination locations. Buses depart about every 15 minutes during peak hours, and our drivers will help you load and unload your luggage. It's the only way to travel to and from DIA.

SkyRide service to DIA operates from approximately 3:30 a.m. to midnight, with the last bus leaving DIA at 1:28 a.m.

### Shuttle from the Airport

Commuter shuttles, also known as shared ride services, operate regularly from DIA. Individual operators may provide pre-arranged, on-demand, and/or charter services for locations within the Denver Metro area and other locations within the state of Colorado. Some providers may also provide service to locations outside the state. Please contact a shuttle provider directly for more information on fees and destinations served. Commuter shuttles pick-up and drop-off from Jeppesen Terminal Level 5, Island 3, outside doors 505-507 (east side) and 510-512 (west side). A list of shuttle providers can be found at [www.flydenver.com](http://www.flydenver.com).

### Taxicabs from the Airport

Taxis are readily available and provide service to the Denver metro area and surrounding counties. Some companies may also provide service to other destinations within the state of Colorado. Check with your cab company of choice (or with your driver at the airport) for more information on fares and destinations served.

### Flat Rate Charges

The following popular destinations have flat-rate charges (one-way fare, airport access fee already included):

- Boulder: \$88.15
- Downtown Denver: \$55.15
- Denver Tech Center: \$61.15
- Broomfield and Louisville Area: \$70.15 (Yellow Cab only)

### Metered Taxi Rates

Fares to all other metro area destinations are based on the taxi's meter. For example, a one-way taxi ride from the airport to Cherry Creek Shopping Center (near downtown Denver) typically costs \$62 to \$65, plus a \$4.15 airport access fee for each metered taxi trip.

Taxis pick-up and drop-off from Jeppesen Terminal, Level 5, Island 1, outside Doors 507 through 511 (Terminal East) and Doors 506 through 510 (Terminal West). A complete list of taxi companies can be found at [www.flydenver.com](http://www.flydenver.com)

### Taxi Service

24-hour dependable service is available to and from all destinations. Taxi cabs are also easily accessible at the Convention Center, major hotels, and other downtown locations.

# Continuing Education Program

## Intended Audience

asm2013 is designed to meet the needs of professionals in the field of microbiology, particularly clinical microbiologists, pathologists, researchers, pharmacists, physicians, and other health care professionals.

Current trends will be covered regarding:

- Animal Health Microbiology
- Antimicrobial Chemotherapy
- Bacteriophage
- Biology of Eukaryotes
- Cell and Structural Biology
- Environmental and General Applied Microbiology
- Evolutionary and Genomic Microbiology
- Fermentation and Biotechnology
- Food Microbiology
- Free-Living, Symbiotic, and Parasitic Protists
- Genetics and Molecular Biology
- Immunology (Clinical and Diagnostic)
- Medical Mycology
- Microbial Ecology
- Microbial Pathogenesis
- Microbial Physiology and Metabolism
- Microbiology (General, Clinical, and Medical)
- Microbiology Education
- Molecular, Cellular and General
- Mycobacteriology
- Mycoplasma
- Nosocomial Infections
- Parasitology
- Public Health
- Virology

## Objectives

The asm2013 covers fundamental microbial cell biology, genetics and physiology, environmental and applied microbiology and microbial ecology, pathogenesis and clinical microbiology and infectious diseases. The meeting showcases the central role of microbes in the biosphere by reporting today's best science in the diverse areas influenced by microbes. The breadth of this meeting provides participants opportunities for immersion in fields of specialization as well as forays into different disciplines.

- Upon completion of asm2013 attendees should be able to:
- Use new technologies, new practices, and developments in clinical microbiology to improve their clinical practice and patient outcomes;
- Recognize and interpret critical information regarding physiology, genetics, and cell biology of microbes;
- Discuss key updates in the areas of microbial pathogenesis, environmental microbiology and applied microbiology; and
- Synthesize new data on the roles of microbes in health and disease, and aspects of host immunity to infectious diseases.

## Continuing Education



### Professional Acknowledgment for Continuing Education (P.A.C.E.®):

ASM is an approved provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.® Program.



**California Clinical Laboratory Scientists (CLS):** ASM is accredited by the California Department of Health Services to offer continuing education for California Clinical Laboratory Scientists. All sessions designated for CE credit will also qualify for California CE credit toward CLS license renewal.



**Florida Clinical Laboratory Personnel:** ASM is accredited by the Florida Department of Health to provide continuing education for Florida Clinical Laboratory Personnel. All sessions designated for CE credit will also qualify for Florida CE credit toward license renewal.

**Other CE Licenses:** You may obtain a Participation Statement of Credit by completing the activity evaluation. This is a detailed statement that documents your participation in the activity.



## Continuing Medical Education

The France Foundation is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The France Foundation designates this live activity for a maximum of 24.5 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**The American Medical Association (AMA)** has determined that physicians not licensed in the U.S. who participate in this CME activity are eligible for *AMA PRA Category 1 Credit(s)*<sup>™</sup>.

Diplomates of the American Board of Medical Microbiology, Diplomates of the American Board of Medical Laboratory Immunology, and Registrants of the National Registry of Certified Microbiologists who are MDs and DOs may earn *AMA PRA Category 1 Credit(s)*<sup>™</sup> toward recertification. All other Diplomates and Registrants may claim Participation, CA or FL credits toward recertification. Each professional should claim credit commensurate with their level of participation in the activity.

## Unapproved Use Disclosure

The France Foundation requires CME faculty (speakers) to disclose to the attendees when products or procedures being discussed are off-label, unlabeled, experimental, and/or investigational (not FDA approved); and any limitations on the information that is presented, such as data that are preliminary or that represent ongoing research, interim analyses, and/or unsupported opinion. Faculty in this activity may discuss information about pharmaceutical agents that is outside of US Food and Drug Administration approved labeling. This information is intended solely for continuing medical education and is not intended to promote off-label use of these medications. If you have questions, contact the medical affairs department of the manufacturer for the most recent prescribing information.

## How to Claim

1. Keep your badge! You will need your registration confirmation number or badge ID to claim your credits.
2. Login to the ASM CE Portal with your ASM eStore user name and password. If you do not have a user name and password, select the **"Need Help Logging In?"** link.
3. Once logged in, you will be directed to your **"My Activities"** page.
4. Click on the **"Claim Credits for Live Meetings"** button on the right side of the screen.
5. Select **"asm2013—113th General Meeting"** from the Available Activities table. If you are claiming credit for a workshop, please select **"Workshops asm2013— 113th General Meeting"** or **"Exhibitor Exam asm2013: 113th General Meeting"** to claim credits for completing the exam.
6. On the Activities Overview Page, scroll to the bottom of the page to enter your badge ID. The badge ID may be obtained from your printed badge or from your emailed confirmation letter.
7. Choose what type of credit you would like to claim. asm2013 offers four types of continuing education credit. Please choose the certificate that is applicable to your needs:
  - Continuing Medical Education for physicians *AMA PRA Category 1 Credit(s)*<sup>™</sup>
  - Professional Acknowledgment for Continuing Education (P.A.C.E.)<sup>®</sup>
  - California Clinical Laboratory Scientists (CLS)
  - Florida Clinical Laboratory Personnel
  - Participation

## Disclosure

It is the policy of The France Foundation to ensure balance, independence, objectivity, and scientific rigor in all its sponsored educational activities. All faculty, activity planners, content reviewers, and staff participating in CME activity will disclose to the participants any significant financial interest or other relationship with manufacturer(s) of any commercial product(s)/device(s) and/or provider(s) of commercial services included in this educational activity. The intent of this disclosure is not to prevent a person with a relevant financial or other relationship from participating in the activity, but rather to provide participants with information on which they can base their own judgments. The France Foundation has identified and resolved any and all conflicts of interest prior to the release of this activity. A listing of faculty disclosures will be made available at the start of each session.

The planners, reviewers, editors, staff, CME committee, or other members at The France Foundation who control content have no relevant financial relationships to disclose.

Sessions eligible for **Professional Acknowledgment for Continuing Education (P.A.C.E.)<sup>®</sup>** will be denoted with **P.A.C.E.** When Claiming ASCLS P.A.C.E.<sup>®</sup> credits, please refer to the P.A.C.E.<sup>®</sup> numbers listed after each speaker's presentation title.

Sessions eligible for **California Clinical Laboratory Scientists (CLS)** will be denoted with **CA**.

Sessions eligible for **Florida Clinical Laboratory Personnel** will be denoted with **FL**.

Sessions eligible for **Continuing Medical Education** for physicians *AMA PRA Category 1 Credit(s)*<sup>™</sup>, will be denoted with **CME**.





Saturday, May 18

**Career Development Workshops****WORKSHOP****WS-01 Careers in Microbiology**

8:30 a.m. – 12:00 p.m.

Location: Four Seasons Ballroom 3

**Convener:****Eleanor M. Jennings**; Total Environmental Concepts, Inc., Alexandria, VA**Faculty:****E. Erin Mack**; DuPont, Newark, DE**Luis A. Rios-Hernandez**; Univ. of Puerto Rico at Mayaguez, Mayaguez, PR**Toby D. Allen**; Coskata, Inc., Warrenton, IL

The Career Development Committee workshop aims to expose students and postdocs to differing career paths. In addition to listening to the speakers presentations, the participants will be encouraged to meet with the speakers in break-out sessions to address their specific questions. This Membership Board workshop will be held in conjunction with a career session hosted by the Education Board.

Upon completion of this workshop, participants should be able to:

- Identify three less-traditional career paths and unique programs.
- Meet with the speakers to ask their specific questions.

**Course Level:** Beginner

**WORKSHOP****WS-02 Everything You Need to Know About Obtaining a Successful and Fulfilling Microbiology Career**

1:00 p.m. – 4:30 p.m.

Location: Four Seasons Ballroom 3

**Convener/Faculty:****Neil Baker**; The Ohio State Univ., Columbus, OH

Take control of your future! Identify a career that suits your personality, interest, and needs. In this interactive session that utilizes a "speed dating technique" to promote lively and informative discussions, participants will hear about the work, culture and people in different roles and at different work sites; e.g., clinical microbiology in a hospital or reference laboratory; public health in state or government labs; sales, marketing and business development in a biological company; quality assurance in a pharmaceutical or food company; research team for start-up company; analyst in a defense security agency; teacher in high school and/or community college; scientist in government policymaking or journalist reporting science news; and academic medicine.

Upon completion of this workshop, participants should be able to:

- Distinguish the diversity of microbiology career opportunities at all educational levels.
- Speak more knowledgeably about the different pathways to becoming a microbiologist.
- Identify careers more suitable to one's personality, interest and needs.
- Meet with the speakers to ask their specific questions.

**Course Level:** Beginner

**Half Day Workshops**

MORNING: 8:30 a.m. – 12:00 p.m.

**WORKSHOP****WS-03 High-Throughput Phenotyping and Comparative Phenomics**

8:30 a.m. – 12:00 p.m.

Location: Meeting Room 607

**Conveners:****Joseph Sturino**; Faculty of Genetics, Texas A&M Univ., College Station, TX**Eric Altermann**; AgRes. Limited, Palmerston North, New Zealand**Faculty:****Barry R. Bochner**; Biolog, Inc., Hayward, CA.**Kimberly A. Bishop-Lilly**; Naval Med. Res. Ctr., Henry M. Jackson Fdn., Fort Detrick, MD**Nikolay Bliznyuk**; Univ. of Florida, Gainesville, FL**Jeremy Zucker**; The Broad Inst., Cambridge, MA

Phenomics is the systematic study of global cellular phenotypes that arise as a function of genotype and its environmental context. Although the differentiation of biological systems as a function of observable phenotype predates the discovery of their molecular components, which includes DNA (and its systems biology sub-discipline, genomics), epigenetic heritability (epigenomics), RNA (transcriptomics), proteins (proteomics), and metabolites (metabolomics). However, high-throughput phenotyping studies, high-throughput cellular phenomic studies have only emerged recently due to their labor- and data-intensive nature. Speakers will highlight critical advancements, including the development of standardized platform chemistries, phenotype database management, and bioinformatics, that have transformed high-throughput phenotypic data into a vibrant, functional sub-discipline within systems biology. This session will bring together leading experts in the field and provide specific examples of how comparative phenomics can be used to interrogate the genomes of microorganisms.

Upon completion of this workshop, participants should be able to:

- Define how high-throughput phenotyping has been applied to microbial and mammalian cell research.
- Relate how phenotype microarray datasets have been analyzed and integrated to provide a global understanding of cellular metabolic capacity.
- Recognize how phenotype microarray-based approaches may provide a deeper understanding of cellular metabolism.

**Course Level:** Intermediate

## WORKSHOP

CME PACE CA FL

**WS-04 Quality Management (ISO 15189?) What Has Been, What is Coming and Why You Should Care?**

8:30 a.m. – 12:00 p.m.

Location: Meeting Room 407

ASCLS P.A.C.E.®: 273-554-13

**Convener:**

Nancy E. Cornish; CDC, Atlanta, GA

**Faculty:**

Michael A. Noble; Univ. of British Columbia (UBC), Vancouver, Canada

Devery Howerton; CDC, Atlanta, GA

Alice S. Weissfeld; Microbiol. Specialists Inc., Houston, TX

Nancy E. Cornish; CDC, Atlanta, GA

The costly personal and economic impact of medical errors has raised awareness of quality management in healthcare services. Limited resources must be used wisely by laboratory staff, hospital administrators and clinical personnel in order to provide assurance of accurate laboratory results throughout the Laboratory Testing cycle which include pre- and post- analytic phases. Our historical perspective of quality control and quality assurance as defining quality, needs to be updated to sync with the more global view of internationally accepted quality activities and then applied to a laboratory's work flow. This session will clarify the new terminology in use for Quality Management Systems, provide definitions, and discuss in depth the QMS model including documentation, principles of ethical practice and path of workflow concepts. In addition, discussion and guidance on planning and implementation of a QMS program and practical solutions, tips and tools to use to get started, will be presented.

Upon completion of this workshop, participants should be able to:

- Utilize Quality Management System principles and tools to begin to develop a model plan to ensure accurate laboratory results are provided by your laboratory.
- Recognize the developing global and local (USA) perspectives of Quality Management Systems.
- Identify and define the new terminology and methods in use for Quality Management Systems.

Course Level: Intermediate

## WORKSHOP

**WS-05 Single-Cell Microscopy**

8:30 a.m. – 12:00 p.m.

Location: Meeting Room 704

*Developed by the Junior Advisory Group***Conveners:**

Tim Miyashiro; Pennsylvania State Univ., University Park, PA

Magdia De Jesus; Wadsworth Ctr., New York State Dept. of Health, Albany, NY

**Faculty:**

Mark Goulian; Univ. of Pennsylvania, Philadelphia, PA

Ido Golding; Baylor Coll. of Med., Houston, TX

Thierry Emonet; Yale Univ., New Haven, CT

Long Cai; California Inst. of Technology, Pasadena, CA

Recent advances in fluorescence microscopy have enabled microbiologists to study microbes at their most basic unit: the individual cell. Participants will hear from microbiologists that are developing inter-disciplinary approaches based on single-cell microscopy. This workshop will also provide participants with an opportunity to

examine individual bacterial cells on the stage of commercially-available microscopes.

Upon completion of this workshop, participants should be able to:

- Design single-cell experiments based on fluorescent markers and fluorescent protein fusions.
- Use a fluorescence microscope to take images of single cells.
- Analyze single-cell images using advanced software.

Course Level: Beginner

**Half-Day Workshops**

AFTERNOON: 1:00 p.m. – 4:30 p.m.

## WORKSHOP

**WS-09 Scientific Writing: Essentials for Success**

1:00 p.m. – 4:30 p.m.

Location: Meeting Room 407

**Convener:**

Susan J. Marriott; BioSci. Writers, LLC, Houston, TX

**Faculty:**

Susan J. Marriott; BioSci. Writers, LLC, Houston, TX

Sonia K. Morgan-Linnell; BioSci. Writers, LLC, Houston, TX

Scientists recognize that publishing and funding success are key factors in career advancement, and that this success requires an ability to write clearly and effectively. Unfortunately, most scientists receive no formal training in scientific writing and must learn these skills by trial and error. The "Scientific Writing: Essentials for Success" workshop meets attendee needs for professional training in scientific writing and communication. This expertly led workshop will teach participants to communicate scientific ideas effectively in manuscripts, grants, and other works. In today's highly competitive publishing and funding environment, scientists are actively seeking opportunities to learn these skills and hone their existing writing skills.

Upon completion of this workshop, participants should be able to:

- Prepare clearer and more effective manuscripts, grants, presentations, and other works of scientific writing.
- Summarize typical manuscript and grant proposal submission and acceptance processes.
- Identify the sections and organization of key manuscript components and describe the information that belongs in each.

Course Level: Intermediate/Advanced

## WORKSHOP

**WS-10 Test Methods for Evaluating Topical Antimicrobial Products**

1:00 p.m. – 4:30 p.m.

Location: Meeting Room 607

**Conveners:**

John F. Krowka; Personal Care Products Council, Washington, DC

Francis H. Kruszewski; American Cleaning Inst., Washington, DC

**Faculty:**

Charles N. Haas; Drexel Univ., Philadelphia, PA

James P. Bowman; James P. Bowman &amp; Associates LLC, Loveland, OH

George Fischler; Gefmeyer Consulting LLC, Phoenix, AZ

David R. Macinga; GOJO Industries, Inc., Akron, OH

Andrea L. Waggoner; The Dial Corp., A Henkel Company, Scottsdale, AZ

Topical antimicrobial hand cleansing products are widely used by consumers in various types of settings such as in the home, in food handling and in healthcare to enhance the reduction of disease-causing microorganisms that may be present on hands. Both *in vitro* and *in vivo* test methods are used for evaluating the efficacy of topical antimicrobial products. Over the past few years many of the ASTM methods have been modified and a variety of new methods have been developed to evaluate the activity of rinse-off and leave-on topical antimicrobial products. The workshop will include the following topics: microbial risk modeling, statistical evaluations of test data, and *in vivo* and *in vitro* test.

Upon completion of this workshop, participants should be able to:

- Identify *in vitro* methods for evaluating the efficacy of topical antimicrobial products.
- Identify *in vivo* methods for evaluation the efficacy of topical antimicrobial products.
- Describe basic statistical methods that can be used in the analysis of efficacy test data.

**Course Level:** Intermediate

## WORKSHOP

### WS-24 Studying Whole-Genome Microbial Epigenetics

**1:00 p.m. – 4:30 p.m.**

**Location:** Meeting Room 111

#### Conveners:

**Jonas Korfach;** Pacific Biosciences, Menlo Park, CA

**Michael Jennings;** Griffith Univ., Gold Coast, Queensland, Australia

#### Faculty:

**Bart C. Weimer;** UC Davis Sch. of Vet. Med., Davis, CA

**Michael Jennings;** Griffith Univ., Gold Coast, Queensland, Australia

**Peter Evans;** FDA Ctr. for Food Safety and Applied Nutrition, College Park, MD

**Brian Anton;** New England Biolabs, Ipswich, MA

**Garth D. Ehrlich;** Allegheny Singer Res. Inst., Pittsburgh, PA

**Sebastian Suerbaum;** Med. Microbiology and Hospital Epidemiology, Hannover Med. Sch., Hannover, Germany

**Gregory P. Harhay;** USDA Meat Animal Res. Ctr. (USMARC), Clay Center, NE

With the advent of single molecule, real-time (SMRT®) sequencing, it is now possible to study complete microbial epigenomes. It has been known for decades that methylation and other types of epigenetic modifications in bacteria are responsible for much more than restriction-modification mechanics, but genome-scale study of most modifications, such as methylated adenine, has been impossible. Methylation is also associated with gene expression and phase variation, replication, virulence, and more. Speakers will describe how to apply whole-epigenome studies to the understanding of microbial biochemistry and function. Systematic approaches combining complete *de novo* assemblies and annotations, methylation, and transcriptomes will be discussed. The basic principles of SMRT® Sequencing as they apply to epigenetics will also be covered.

Upon completion of this workshop, participants should be able to:

- Discuss how SMRT Sequencing is able to detect the key types of bacterial methylation.
- Design an experiment to apply whole-genome epigenetic study of microbes to the study of biological function.
- Choose a service lab to run a sequencing study with the appropriate instrumentation.

**Course Level:** Beginner

## Full Day Workshops

**8:30 a.m. – 4:30 p.m.**

### WORKSHOP



### WS-12 The Business of Science in the Modern Health Care Era: Selection, Verification and Validation of Tests in the Clinical Microbiology Laboratory

**8:30 a.m. - 4:30 p.m.**

**Location:** Meeting Room 207

ASCLS P.A.C.E.®: 273-556-13

#### Convener:

**Robert J. Tibbetts;** Henry Ford Hlth. Sys., Detroit, MI

#### Faculty:

**Robert J. Tibbetts;** Henry Ford Hlth. Sys., Detroit, MI

**Michael Loeffelholz;** Univ. of Texas Med. Branch, Galveston, TX

**Elizabeth M. Marlowe;** Southern California Permanente Med. Grp., North Hollywood, CA

In today's healthcare environment laboratorians are increasingly being asked to cost justify the implementation of new diagnostic tests. In addition to the traditional costs of choosing a new assay, there are costs that are often overlooked such as, test verification and validation. While required by CAP as part of a laboratory's quality assurance plan, concise guidelines for verification and validation of laboratory tests are described for clinical laboratories (Cumitech 31A, CLSI & CAP) however, they do not provide a concise "how to" scenario. This workshop will provide an overview of how to build and present an appropriate business case to administrators, as well as, provide examples of verification and validation. Discussions will cover experimental design and data analysis, suitable for quality assurance and interventional studies. Case studies will be presented.

Upon completion of this workshop, participants should be able to:

- Describe key features to building a strong business case for laboratory practices.
- Select experimental approaches to evaluation and implementation of laboratory practices.
- Define verification and validation.

**Course Level:** Intermediate

### WORKSHOP



### WS-13 Clinical Microbiology Board Review Course

**8:30 a.m. - 4:30 p.m.**

**Location:** Meeting Room 603

ASCLS P.A.C.E.®: 273-557-13

#### Convener:

**Romney M. Humphries;** UCLA, Los Angeles, CA

#### Faculty:

**Jennifer Dien Bard;** Univ. of Southern California, Los Angeles, CA

**Susan Butler-Wu;** Univ. of Washington, Seattle, WA

**Amanda T. Harrington;** VA Puget Sound Hlth. Care System, Seattle, WA

**April Abbott;** Univ. of Washington, Seattle, WA

**Romney M. Humphries;** UCLA, Los Angeles, CA

This session is designed to provide a one-day intensive review of essential topics in clinical microbiology. The workshop is geared to individuals studying for board examinations that feature clinical microbiology and to practicing clinical microbiologists or infectious diseases clinicians desiring a refresher course on the basic topics in

clinical microbiology. The course will be presented in the case-based format, with emphasis on diagnostic testing, best practices in clinical microbiology, and regulatory considerations for directing a clinical microbiology laboratory.

Upon completion of this workshop, participants should be able to:

- Review basic concepts in bacteriology, antimicrobial susceptibility testing, mycology, parasitology, virology and mycobacteriology.
- Define best practices for diagnostic testing for many common and unusual infectious diseases.
- Explain key regulatory and biosafety considerations for the clinical microbiology laboratory.

**Course Level:** Advanced

## WORKSHOP



### WS-14 Clinical Mycobacteriology Update-2013

**8:30 a.m. - 4:30 p.m.**

**Location:** Meeting Room 201

ASCLS P.A.C.E.®: 273-558-13

#### Convener:

**Barbara Robinson-Dunn;** Beaumont Hlth. System, Royal Oak, MI

#### Faculty:

**Barbara Robinson-Dunn;** Beaumont Hlth. System, Royal Oak, MI

**Gerri S. Hall;** Cleveland Clinic, Cleveland, OH

**Edward Desmond;** California State Dept. of Publ. Health/Microbial Diseases Lab., Richmond, CA

The practice of clinical mycobacteriology is changing rapidly with guidelines for molecular detection of *M. tuberculosis* from clinical specimens and the detection of interferon gamma to supplement or replace PPD testing. Rapidly growing *Mycobacterium* spp. are assuming an ever-more important role in disease production and these isolates have variable susceptibility patterns. Biochemical identification of isolates of *Mycobacterium* spp. is being replaced by molecular methods and mass spectrometry. This workshop will integrate conventional and molecular approaches for the detection and identification of *Mycobacterium* spp. Changes in taxonomy will be discussed as will new approaches to antimycobacterial susceptibility testing. Clinical cases will be used to highlight interesting issues. A discussion of Actinomycetes that are increasingly difficult to identify will be included.

Upon completion of this workshop, participants should be able to:

- Analyze common clinically relevant species of *Mycobacterium* and their epidemiology.
- Evaluate new and current tests for the detection of *M. tuberculosis* from clinical specimens.
- Evaluate conventional, molecular and mass spectrometry approaches to the identification of *Mycobacterium* spp..

**Course Level:** Intermediate

## WORKSHOP

### WS-15 Computational Tools for Analyzing Microbial Metabolism

**8:30 a.m. - 4:30 p.m.**

**Location:** Meeting Room 405

#### Convener:

**Jennifer L. Reed;** Univ. of Wisconsin, Madison, WI

#### Faculty:

**Jennifer L. Reed;** Univ. of Wisconsin, Madison, WI

**Josh Hamilton;** Univ. of Wisconsin, Madison, WI

**Joonhoon Kim;** Univ. of Wisconsin, Madison, WI

Constraint-based models of metabolism can be rapidly generated from genome annotations. These models are capable of analyzing experimental data (e.g. uptake/secretion rates or expression data) to predict flux distributions through genome-scale metabolic networks. In this workshop participants will learn how to use publicly available resources to reconstruct genome-scale metabolic networks. Participants will also learn how to convert these reconstructions into a computational model that can be queried to answer a wide range of questions regarding cellular metabolism. Such as how to identify optimal pathways (e.g. how to make the most amount of a particular product), how to predict the effects of gene deletions on metabolism, and how to analyze expression data to help predict metabolic fluxes. The workshop is very hands-on and participants will work directly with the models themselves to answer these types of questions.

Upon completion of this workshop, participants should be able to:

- Reconstruct genome-scale metabolic networks from genome annotations.
- Compute metabolic fluxes that maximize an objective (e.g. growth or product formation).
- Predict the effects of metabolic gene knockouts on growth and metabolic fluxes.

**Course Level:** Beginner

## WORKSHOP

### WS-16 Do-it-yourself Microbial Genome Sequence Analysis

**8:30 a.m. - 4:30 p.m.**

**Location:** Meeting Room 605

#### Conveners:

**W. Florian Fricke;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

**Michelle G. Giglio;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

#### Faculty:

**Michelle G. Giglio;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

**W. Florian Fricke;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

**David Rasko;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

**Hervé Tettelin;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

**David Riley;** Inst. for Genomic Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

The workshop will introduce scientists new to the microbial genomics field to the concepts of basic genome sequence analysis. It will guide participants through the bioinformatic steps involved in genome assembly, gene finding, functional annotation, and comparative genome analysis. During the workshop participants will run example analyses from their own laptop computers using freely available bioinformatics resources, i.e. the open access CloVR tool for automated sequence analysis pipelines and the DIAG compute cloud for large-scale data processing. Upon completion of this workshop participants will be able to run similar microbial genome analyses from any desktop computer connected to the Internet without requiring additional local bioinformatics software or hardware support. The Workshop is modeled based on the well-established and highly popular IGS Genomics



workshop that has been held at the Institute for Genome Sciences for many years.

Upon completion of this workshop, participants should be able to:

- Describe the important steps involved in microbial genome sequence assembly, annotation and comparative analysis.
- Recommend bioinformatic techniques and tools to perform these steps.
- Perform the corresponding analysis on their own data from their own local desktop or laptop computers with Internet access, without additional local bioinformatics software or hardware resources.

**Course Level:** Beginner

## WORKSHOP



### WS-18 Intestinal Protozoa and Helminths

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 403

ASCLS P.A.C.E.®: 273-560-13

#### Conveners:

**Lynne S. Garcia;** LSG & Associates, Santa Monica, CA

**Gary Procop;** Cleveland Clinic, Cleveland, OH

#### Faculty:

**Lynne S. Garcia;** LSG & Associates, Santa Monica, CA

**Gary Procop;** Cleveland Clinic, Cleveland, OH

**Betty Bandoh;** Univ. of Ghana, Legon Accra, Ghana

Topics include development of laboratory test menus; specimen ordering, collection (including new UNIVERSAL fixatives), testing, reporting, report comments; clinical relevance; and management and proficiency testing pitfalls. Diagnostic problems, new methods (fecal immunoassays, molecular testing), emerging pathogens, and problem issues related to intestinal protozoa, and helminths will be included (amebae, flagellates, ciliates, coccidia, microsporidia, nematodes, cestodes, trematodes). Organism recovery, diagnosis, morphology, and potential artifact situations will be included. Specific issues will be illustrated using case histories from immunocompetent, as well as immunocompromised patients. An extensive handout will be provided—7 CEU

Upon completion of this workshop, participants should be able to:

- Develop a protocol for specimen collection and transport for their laboratories.
- Identify the primary intestinal protozoans and helminths that are found in patients in the U.S. including those who have travelled to the developing world.
- List the intestinal parasites more likely to be detected in immunocompromised patients.

**Course Level:** Intermediate

## WORKSHOP



### WS-19 Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry in Clinical Microbiology

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 705

ASCLS P.A.C.E.®: 273-561-13

#### Conveners:

**Robin Patel;** Mayo Clinic, Rochester, MN

**Melissa Miller;** UNC Sch. of Med., Chapel Hill, NC

**Nathan A. Ledebor;** Med. Coll. of Wisconsin, Milwaukee, WI

#### Faculty:

**Robin Patel;** Mayo Clinic, Rochester, MN

**Melissa Miller;** UNC Sch. of Med., Chapel Hill, NC

**Nathan A. Ledebor;** Med. Coll. of Wisconsin, Milwaukee, WI

**Melissa Jones;** UNC Hlth. Care, Chapel Hill, NC

**Neil W. Anderson;** Med. Coll. of Wisconsin, Milwaukee, WI

Matrix assisted laser desorption ionization time-of-flight mass spectrometry is increasingly used in clinical laboratories. It has been widely-adopted in Europe and is making its way into laboratories in the United States. The technology itself is rapidly evolving. The goal of this workshop is to present state-of-the-art matrix assisted laser desorption ionization time-of-flight mass spectrometry use in clinical microbiology. There will be live instrument demonstrations on the Bruker and bioMérieux systems.

Upon completion of this workshop, participants should be able to:

- Describe the principle of matrix assisted laser desorption ionization time-of-flight mass spectrometry.
- Examine the clinical application of matrix assisted laser desorption ionization time-of-flight mass spectrometry in microbiology.
- Compare and contrast the Bruker and bioMérieux matrix assisted laser desorption ionization time-of-flight mass spectrometry systems.

**Course Level:** Beginner

## WORKSHOP

### WS-20 Metagenomic Approaches: Frontiers of Annotation and Assembly, Networking and Discovery

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 710

*Developed by the Junior Advisory Group*

#### Conveners:

**Andrea Ottesen;** FDA-(CFSAN) Ctr. for Food Safety and Applied Nutrition, College Park, MD

**Filipa Godoy-Vitorino;** Interamerican Univ. of Puerto Rico, San Juan, PR

#### Faculty:

**Antonio Gonzalez;** Univ. Colorado at Boulder, Boulder, CO

**J. Gregory Caporaso;** Univ. of Arizona, Flagstaff, AZ

**James Robert White;** Independent Computational Biologist, Baltimore, MD

**Adina Howe;** Argonne Natl. Labs, East Lansing, MI.

**David M. Needham;** Univ. of Southern California, Los Angeles, CA

**Jed Fuhrman;** Univ. of Southern California, Los Angeles, CA

**Matthew Sullivan;** Univ. of Arizona, Tucson, AZ

**Bonnie Hurwitz;** Univ. of Arizona, Tucson, AZ

**A. Murat Eren;** Josephine Bay Paul Ctr. for Comparative Molecular Biology and Evolution MBL, Woods Hole, MA

**Jose C. Clemente;** Mount Sinai Sch. of Med., New York, NY

#### Invited Participants:

**Rob Knight;** Univ. of Colorado at Boulder, Boulder, CO

**Yoshiki Vazquez Baeza;** Univ. of Colorado at Boulder, Boulder, CO

**Will V. Treuren;** Univ. of Colorado at Boulder, Boulder, CO

**Daniel McDonald;** Univ. of Colorado at Boulder, Boulder, CO

**Catherine Lozupone;** Univ. of Colorado at Boulder, Boulder, CO

The workshop will highlight an exciting array of leading bioinformatics and data visualization tools—presented by developers and users. Several prominent labs will discuss their bioinformatics packages and assistants will be on hand to provide technical instruction for specific applications within the featured pipelines.



Upon completion of this workshop, participants should be able to:

- Select and implement pertinent bioinformatics tools for specialized metagenomic datasets.
- Setup data mapping files for input to Qiime, Mothur, Cytoscape pipelines.
- Use Qiime Metagenomics on the Cloud.

**Course Level:** Beginner, Intermediate, Advanced

## WORKSHOP



### WS-21 Molecular Typing of Bacterial Pathogens in 2013: Mining the Data & Interpreting the Results

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 401

ASCLS P.A.C.E.®: 273-562-13

#### Convener:

**Dag Harmsen;** Univ. Hosp. Münster, Münster, Germany

#### Faculty:

**Dag Harmsen;** Univ. Hosp. Münster, Münster, Germany

**Richard Goering;** Creighton Univ. Med. Ctr., Omaha, NE

**Talima Pearson;** Northern Arizona Univ., Flagstaff, AZ

**William Klimke;** NCBI/NLM/NIH, Bethesda, MD

At the completion of this educational activity, participants will be able to understand and to apply various methods for molecular typing of bacteria. Focus of this workshop will be on current and future techniques, such as MLVA, MLST and next-gen sequencing and their pros and cons for different problems. Participants will be able to analyze and interpret generated typing data. Resources available for analysis and interpretation will be discussed. Demonstrations of selected resources will be presented.

Upon completion of this workshop, participants should be able to:

- Discuss the overview of available molecular typing techniques.
- Illustrate how different typing methods compare.
- Describe the principles of next generation sequencing (NGS) and SNP or genome-wide gene by gene typing.

**Course Level:** Intermediate

## WORKSHOP



### WS-22 Selected Topics in Pediatric Clinical Microbiology

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 601

ASCLS P.A.C.E.®: 273-563-13

#### Conveners:

**Mario J. Marcon;** Retired, Westerville, OH

**Rangaraj Selvarangan;** Children's Mercy Hosp., Kansas City, MO

#### Faculty:

**Mario J. Marcon;** Retired, Westerville, OH

**Rangaraj Selvarangan;** Children's Mercy Hosp., Kansas City, MO

This workshop will review a number of topics relating to the laboratory diagnosis of infectious diseases of particular importance to pediatric patients. Topics to be reviewed may include the following agents and associated diseases: *S. pyogenes* and streptococcal pharyngitis,

*Bordetella* spp and the pertussis syndrome, *Mycoplasma pneumoniae* and respiratory disease, *Campylobacter* spp and STEC GI disease, bacterial agents associated with cystic fibrosis, influenza and RSV infections, HSV, enterovirus and parechovirus CNS infections, bacteremia and line sepsis, osteomyelitis and septic arthritis, *Clostridium difficile* disease in children.

Upon completion of this workshop, participants should be able to:

- Describe the epidemiology, spectrum of disease and clinical significance of the pathogens to be discussed
- Recommend methods most appropriate for specimen collection, transport, and laboratory detection of these pathogens
- Recognize the advantages and limitations of molecular methods vs. traditional diagnostic methods such as culture, antigen detection, and serology for detection of these pathogens

**Course Level:** Intermediate

## WORKSHOP



### WS-23 Update on Molecular Virology for Clinical Diagnosis

8:30 a.m. - 4:30 p.m.

**Location:** Meeting Room 205

ASCLS P.A.C.E.®: 273-564-13

#### Convener:

**Christine C. Ginocchio;** North Shore-LIJ Hlth. System Lab., New Hyde Park, NY

#### Faculty:

**Christine C. Ginocchio;** North Shore-LIJ Hlth. System Lab., New Hyde Park, NY

**Randall T. Hayden;** St. Jude Children's Res. Hosp., Memphis, TN

**Matthew J. Binnicker;** Mayo Clinic, Rochester, MN

This session will provide an update on the current molecular diagnostics techniques and assays (FDA cleared/approved, LDTs) available for the diagnosis of viral infections for the following syndromes: respiratory, CSF, enteric infections. In addition, specific lectures will address HPV and the new diagnostic tests recently approved by FDA, viral load monitoring for hepatitis B and C, HIV and transplantation (CVM, EBV, BK and JC). The advantages and limitations of each method/assay will be discussed, role of LDTs in the current regulatory environment, and what is currently needed and in development to increase diagnostic capabilities of all size laboratories.

Upon completion of this workshop, participants should be able to:

- Describe the appropriate specimen collection and processing procedures based on sample source and clinical indication
- List the syndromes for which molecular testing is highly advantageous
- Describe the various types of molecular testing formats available for clinical diagnosis

**Course Level:** Intermediate

## Opening Session

### 001 Microbes: Nature's Mighty Engineers

Saturday, May 18

5:00 p.m. – 7:30 p.m.

Location: Mile High Ballroom 1-4

#### Conveners:

**Margaret McFall-Ngai**; Univ. of Wisconsin-Madison,  
Madison, WI

**Arturo Casadevall**; Albert Einstein Coll. of Med.,  
Bronx, NY

**Jeff F. Miller**; Univ. of California-Los Angeles,  
Los Angeles, CA

5:00 p.m. – 5:30 p.m.

### Opening Remarks and Award Announcements

#### Presentations:



5:30 p.m. – 6:00 p.m.

### Bacterial Cell Cycle Regulation: Location, Location, Location

**Christine Jacobs-Wagner**; Yale Univ., New  
Haven, CT



6:00 p.m. – 6:30 p.m.

### The Killers, the Cures, and the Limits of Life: Frontiers of Science in the Unseen World

**Nathan D. Wolfe**; Global Viral, Metabiota,  
Univ. of San Francisco, San Francisco, CA



6:30 p.m. – 7:30 p.m.

### Engineering by Evolution

**Frances H. Arnold**; California Inst. of Tech.,  
Pasadena, CA

ASM Lecturer

## Opening Reception



Saturday, May 18

7:30 p.m. – 9:00 p.m.

Location: Four Seasons Ballroom

Join your colleagues in the Four Seasons Ballroom to kick-off asm2013! Light hors d'oeuvres and drinks will be served.





## Sunday, May 19

## Division Lectures

Division	Time	Location	Session #
A	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 4	005
F	8:15 a.m. – 10:45 a.m.	Meeting Room 601	009
I	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 1	004
N	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 1	004
O	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 3	003
V	8:15 a.m. – 10:45 a.m.	Meeting Room 712	008
AA	8:15 a.m. – 10:45 a.m.	Four Seasons Ballroom 3	002
M	1:00 p.m. – 2:30 p.m.	Meeting Room 705	
K	3:00 p.m. – 5:30 p.m.	Meeting Room 109	072
S	3:00 p.m. – 5:30 p.m.	Meeting Room 207	078
T	3:00 p.m. – 5:30 p.m.	Meeting Room 207	078
U	3:00 p.m. – 5:30 p.m.	Meeting Room 205	071
W	3:00 p.m. – 5:30 p.m.	Mile High Ballroom 1	066

## Business Meetings

Division	Time	Location
F	11:00 a.m. – 12:00 p.m.	Meeting Room 601
O	11:00 a.m. – 2:45 p.m.	Meeting Room 401
L	11:00 a.m. – 2:00 p.m.	Meeting Room 605
V	11:00 a.m. – 11:30 a.m.	Meeting Room 712
A	12:00 p.m. – 1:00 p.m.	Meeting Room 405
I	12:30 p.m. – 1:30 p.m.	Meeting Room 109
M	1:00 p.m. – 2:30 p.m.	Meeting Room 705
C	1:00 p.m. – 2:30 p.m.	Meeting Room 712
W	1:45 p.m. – 2:30 p.m.	Mile High Ballroom 1
N	1:45 p.m. – 2:45 p.m.	Meeting Room 205
T	5:30 p.m. – 6:00 p.m.	Meeting Room 207
G	6:00 p.m. – 9:00 p.m.	Capitol Ballroom 5 (Hyatt)

## PLENARY

## 002 Intricacies of Host-Microbe Co-evolution

8:15 a.m. – 10:45 a.m.

Location: Four Seasons Ballroom 3

## Convener:

Victor J. Torres; New York Univ. Sch. of Med., New York, NY

## Presentations:

8:15 a.m.

**The Evolution of Antimicrobial HDL: The Good Cholesterol?**

Jayne Raper; Hunter Coll., New York, NY

8:45 a.m.

**Susceptibility to Infection: A Complex Interplay between Host and Parasite Genotypes**

Jeroen Saeij; MIT, Cambridge, MA

Division AA Lecturer

9:15 a.m.

**Molecular Arms Races Between Primates and Poxviruses**

Nels C. Elde; Univ. of Utah, Salt Lake City, UT

9:45 a.m.

**Cellular Receptors Dictate the Susceptibility of Human Leukocytes to *Staphylococcus aureus* Leukotoxins**

Victor J. Torres; New York Univ. Sch. of Med., New York, NY

10:15 a.m.

**What the Chimpanzee Microbiome Tells Us about the Human Microbiome**

Howard Ochman; Yale Univ., New Haven, CT

Commensal and pathogenic microbes have evolved to live and replicate within host tissues. Therefore mammalian environments have exerted strong selection pressure over microbes which can be reflected in their genomes and determine host range and virulence properties. Microbial infection has also exerted strong selection pressure on animals and these traits can facilitate resistance or susceptibility to microbial infection. In this session we will explore examples by which bacteria, viruses, and parasites avoid host killing by targeting specific molecules and/or pathways involved in anti-microbial responses. In addition, we will also examine how mammalian genomic diversity affects the host response to microbial infections and influence the outcome of infection.

Upon completion of this session, participants should be able to:

- Define different mechanisms by which the mammalian host has evolved to resist infections by microbes.
- Contrast diverse strategies exploited by pathogens to subvert host defenses.
- Identify techniques employed to study host-pathogen evolution.

## PLENARY

**003 Pumping at the Microbial Well for Fuels, Chemicals and Materials**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 3

**Conveners:**

Joy Doran-Peterson; Univ. of Georgia, Athens, GA

George M. Garrity; Michigan State Univ., East Lansing, MI

**Presentations:**

8:15 a.m.

**Advanced Plant to Advanced Fuel**

Jay D. Keasling; Univ. of California-Berkeley, Berkeley, CA

Promega Biotechnology Research Award

8:45 a.m.

**Is There a Path to Cellulosic Biofuels?**

Thomas W. Jeffries; Univ. of Wisconsin-Madison, Madison, WI

Division O Lecturer

9:15 a.m.

**Elucidating Connections Between Regulation of Primary and Carbon and Nitrogen Metabolism and Lipid Biosynthesis in Model Marine Eukaryotic Microalgae**

Andrew Allen; J. Craig Venter Inst., San Diego, CA

9:45 a.m.

**Development of Microbial Catalysts for the Production of Basic and Intermediate Chemicals from Renewable Feedstocks**

Steve Van Dien; Genomatica, San Diego, CA

10:15 a.m.

**Biorenewable Chemicals**

Brent Shanks; Iowa State Univ., Ames, IA

Microorganisms produce a wide variety of products that may be used for fuels, biochemicals, and bio-based materials. Advances in metabolic pathway engineering, synthetic biology, information processing, mathematical modeling, and gene expression regulatory networks have enabled a variety of new technologies to push the frontier of bio-based materials forward at a rapid pace. Attendees will hear experts in the field describe their latest methods development and applications of new techniques for understanding microbial processes including metabolism, gene regulation, and capturing the synthetic power of biology to build microbial chemical factories.

Upon completion of this session, participants should be able to:

- Describe important new tools available for metabolic pathway engineering and systems biology approaches.
- Review examples of microbial products generated via synthetic biology and novel pathway design.
- Compare different potential forms of bioenergy produced by harnessing the capabilities of microorganisms.

## PLENARY

**004 Putting 'Omics to the Test**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 1

**Convener:**

Joerg Graf; Univ. of Connecticut, Storrs, CT

**Presentations:**

8:15 a.m.

**A Day in the Life of Marine Picoplankton: The (Transcriptomic) Motion Picture**

Edward F. Delong; MIT, Cambridge, MA

8:45 a.m.

**Assembly and Adaptive Evolution of Simple Microbial Communities**

David A. Stahl; Univ. of Washington, Seattle, WA

Division N Lecturer

9:15 a.m.

**From 'Omics to the Environment and Back: Unraveling how Chemosynthetic Symbionts Gain Energy and Carbon**

Nicole Dubilier; Max Planck Inst. of Marine Microbiol., Bremen, Germany

Division I Lecturer

9:45 a.m.

**Life on Leaf Surfaces: Commonality in Diversity**

Julia Vorholt; Swiss Federal Inst. of Tech., Zürich, Switzerland

10:15 a.m.

**Newly Discovered Viral Restriction Factors**

Thomas E. Shenk; Princeton Univ., Princeton, NJ

Genomic, transcriptomic and proteomic approaches are transforming all fields of microbiology. 'Omic approaches can provide an overview of the physiology of microbes and microbial communities that leads to the development of testable hypotheses. In this session, marine and terrestrial environments; microbe-microbe, microbe-plant and microbe-animal interactions; and beneficial and pathogenic associations will be investigated using 'omic techniques. The presentations in this session will describe how hypotheses generated by these approaches were tested experimentally revealing new insight into *in vivo* physiology.

Upon completion of this session, participants should be able to:

- Discuss the power of genomic, transcriptomic and proteomic approaches to improve our understanding of microbial physiology.
- Discuss the benefit of combining hypothesis testing approaches with different 'omics approaches.
- Describe the physiology of microorganisms in their natural habitat.

## PLENARY

**005 Translating Knowledge of Bacterial Pathogenesis into Next Generation Antimicrobials**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 4

**Convener:**

Gerard J. Nau; Univ. of Pittsburgh Sch. of Med., Pittsburgh, PA

**Presentations:**

8:15 a.m.

**Antibiotic Treatment of Bacterial Infections: Pharmacodynamics Meets Population Dynamics Meets Immunology**

Bruce R. Levin; Emory Univ., Atlanta, GA

Division A Lecturer

8:45 a.m.

**Developing Platforms for Antimicrobial Discovery**

Kim Lewis; Northeastern Univ., Boston, MA



9:15 a.m.

**Expanding the Language of Bacterial Quorum Sensing using Synthetic Ligands**

Helen Blackwell; Univ. of Wisconsin-Madison, Madison, WI

9:45 a.m.

**Novel Antimicrobials Might be Right in Front of Our Eyes**

Suzanne M. J. Fleiszig; Univ. of California-Berkeley, Berkeley, CA

10:15 a.m.

**Targeting Virulence Factor Secretion in Gram-negative Pathogens**

Donald Moir; Microbiotix, Inc., Worcester, MA

Antibiotic resistance among human pathogens is an ever-increasing problem with global public health implications. Fewer new antibiotics, however, are being developed to combat antibiotic resistant pathogens. Compounding the deficit of new therapies is a lack of new targets and new mechanisms of action. Fundamental insights into microbiology, how bacteria develop drug resistance, and how they cause disease are fertile grounds for discovering the next generation of novel antimicrobial compounds. Attendees will learn about the discovery of new targets and new compounds to tackle the problem of antibiotic resistance. Approaches described by the speakers harness knowledge from basic studies in microbiology, chemistry, and evolutionary biology. The perspectives of both academic and industry labs will also be represented.

Upon completion of this session, participants should be able to:

- Review challenges of increasing antibiotic resistance and developing new therapeutics.
- Discuss approaches to identify new therapeutic targets and discover biologically active compounds.
- Discuss examples where information on bacterial pathogenesis was used to develop new therapeutic approaches.

## SYMPOSIUM

**006 Best Practices for Consolidation of Clinical Microbiology Labs and Shared Services in Public Health Labs**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 705

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Linoj P. Samuel; Henry Ford Hlth. Syst., Detroit, MI

Michael A. Pentella; Univ. of Iowa, Iowa City, IA

**Presentations:**

8:15 a.m.

**Experiences with the Consolidation of Two Community Hospital Laboratories to Form a Core Community Laboratory (273-525a-13)**

Larry D. Gray; Trihealth Clinical Microbiol. Lab., Cincinnati, OH

8:45 a.m.

**Consolidation of Clinical Virology Laboratory Services (273-525b-13)**

Melinda Nye; Lab. Corp. of America, Burlington, NC

9:15 a.m.

**A Lab's-eye View of the Short Marriage and Predictable Divorce of Two Eminent Hospital Systems in Northern California (273-525c-13)**

Ellen Jo Baron; Stanford Univ. and Cepheid, Sunnyvale, CA

9:45 a.m.

**The Laboratory Efficiencies Initiative (273-525d-13)**

John Ridderhof; CDC, Atlanta, GA

10:15 a.m.

**Shared Services in the Public Health Lab of the Future (273-525e-13)**

Michael A. Pentella; Univ. of Iowa, Iowa City, IA

The landscape of clinical microbiology and public health laboratories has been changing throughout the nation. Clinical microbiology labs are evolving into core facilities at an accelerated pace. Public Health labs are searching for efficiencies and experimenting with sharing of services. This process while allowing laboratories to pool resources, technology and expertise can be fraught with problems that could compromise the quality of laboratory results and alienate stakeholders. This session will draw on the experience of the speakers to examine the successes, pitfalls and problems encountered during the integration of clinical microbiology labs and changes in public health laboratories. The speakers will discuss the potential solutions and tools available to tackle some of the commonly encountered hurdles in order to maintain and even improve the quality of services through the process. Addressing consolidation in the clinical microbiology lab, the session will discuss how to communicate with and engage all of the major participants in the process such as physicians, infection control, laboratory and administrative staff to ensure a smooth transition. Examining change in the public health lab, the session will evaluate the impact of the laboratory efficiencies initiative, shared services and the efforts being made to limit their impact on public health services.

Upon completion of this session, participants should be able to:

- Identify the key hurdles related to maintaining quality of services during consolidation of clinical microbiology laboratories.
- Describe the impact of shared services on the role of public health laboratories in healthcare.
- Evaluate potential solutions to commonly encountered problems during integration of laboratory services.

Course Level: Intermediate

## SYMPOSIUM

**007 Clinical and Microbiological Updates of Established and Newly Emerging Mycobacterium Species**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Adrian M. Zelazny; NIH, Bethesda, MD

Barbara A. Brown-Elliott; The Univ. of Texas Hlth. Sci. Ctr. at Tyler, Tyler, TX

**Presentations:**

8:15 a.m.

**Mycobacterium tuberculosis Diagnostics and Susceptibility Testing (273-526a-13)**

Gail L. Woods; Central Arkansas Veterans Hlthcare Syst., Little Rock, AR

8:45 a.m.

**Interferon Gamma Release Assays for the Diagnosis of Mycobacterium tuberculosis Infection (273-526b-13)**

David M. Warshauer; Wisconsin State Lab. of Hygiene, Madison, WI

9:15 a.m.

**Clinical Aspects of NTM Infections in 2013** (273-526c-13)

Richard J. Wallace Jr.; The Univ. of Texas Hlth. Ctr., Tyler, TX

9:45 a.m.

**Update on Taxonomy and Antimicrobial Susceptibility Testing of Nontuberculous Mycobacteria (NTM)** (273-526d-13)

Barbara A. Brown-Elliott; The Univ. of Texas Hlth. Sci. Ctr. at Tyler, Tyler, TX

10:15 a.m.

**Genomics, Proteomics and Clinical Mycobacteriology** (273-526e-13)

Adrian M. Zelazny; NIH, Bethesda, MD

This session will discuss recent developments in clinical mycobacteriology including clinical features, diagnostic methods and antibiotic susceptibility testing of *Mycobacterium tuberculosis* and nontuberculous mycobacteria (NTM). The two FDA approved interferon gamma release assays (IGRAs), Quantiferon® and T-SPOT.TB® will be described. Attendees will learn about current CLSI guidelines, quality control, interpretation and reporting of susceptibility testing for *M. tuberculosis* complex, as well as newer commercial molecular assays. The participant will also hear the latest taxonomic changes and controversies of NTM. Among the rapidly growing mycobacteria, newly described members within the *M. abscessus* "complex" have been increasingly reported as agents of postsurgical infections, cosmetic procedures, and recalcitrant (and multidrug resistant) respiratory infections in patients with impaired lung functions and cystic fibrosis. The session will include a discussion of the current CLSI guidelines for antimicrobial susceptibility testing and novel resistance mechanisms of rapidly growing mycobacteria, as well as susceptibility testing of slowly growing NTM in particular *Mycobacterium avium* complex. Finally, the participant will hear applications of novel approaches (MALDI TOF MS, targeted sequencing, whole genome sequencing) in clinical mycobacteriology and in particular NTM.

Upon completion of this session, participants should be able to:

- Discuss indications, methodology and interpretation of interferon gamma release assays, new commercial molecular assays and antibiotic susceptibility testing for *M. tuberculosis* complex.
- Describe clinical impact, diagnosis, taxonomy, antibiotic susceptibility testing and resistance mechanisms of new and emerging clinically significant Nontuberculous Mycobacteria (NTMs), in particular *M. avium* complex and rapidly growing mycobacteria.
- Discuss the applications of novel approaches (i.e. MALDI-TOF, targeted sequencing, whole genome sequencing) for identification, typing, inferring antibiotic resistance and virulence of NTMs.

**Course Level:** Intermediate

## SYMPOSIUM

**008 Innate and Adaptive Immune Responses to Infection**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Deshratn Asthana; Univ. of Miami, Miami, FL

Moon H. Nahm; Univ. of Alabama at Birmingham, Birmingham, AL

**Presentations:**

8:15 a.m.

**The Varied Roles of NOD-like Receptors during Immunization** (273-527a-13)

Stephanie Eisenbarth; Yale Sch. of Med., New Haven, CT

8:45 a.m.

**Immune Based Therapies: The Good, Bad and Ugly** (273-527b-13)

Peter G. Pappas; Univ. of Alabama at Birmingham, Birmingham, AL

9:15 a.m.

**Innate and Adaptive Immune Responses to Pneumococcal Capsule** (273-527c-13)

Moon H. Nahm; Univ. of Alabama at Birmingham, Birmingham, AL

9:45 a.m.

**Early Detection of Severe Combined Immunodeficiency by Newborn Screening** (273-527d-13)

Jennifer Puck; Univ. of California at San Francisco, San Francisco, CA

Abbott Award in Clinical and Diagnostic Immunology and Division V Lecturer

10:15 a.m.

**Innate and Adaptive Responses to Infection** (273-527e-13)

Deshratn Asthana; Univ. of Miami, Miami, FL

Innate and adaptive immunity are first and second line of defenses against infections. The mechanisms of innate immunity exist before encounter with microbes and is rapidly activated before the development of adaptive immune responses. Innate immunity is the oldest mechanism of defense against microbes and has evolved along with microbes to protect all multicellular organisms from infections.

The innate immune system uses cell-associated pattern recognition receptors to recognize structures called pathogen-associated molecular patterns, which are shared by microbes. Whereas adaptive immune response, such as production of antibodies against a particular pathogen occurs during the lifetime of an individual as an adaptation to infection with that pathogen. In many cases, an adaptive immune response confers lifelong protective immunity to reinfection with the same pathogen. Session will cover various aspects of innate and adaptive immune responses in clinical settings, relevance to successful vaccine development and recent advances in laboratory assessment of markers of interest for both of these immune responses.

Upon completion of this session, participants should be able to:

- Describe innate and adaptive immune responses in the context of therapies.
- Articulate challenges that limit successful development of vaccines.
- Demonstrate knowledge and skills for developing assays for monitoring immune responses to infection, immunization and therapy.

**Course Level:** Intermediate

## SYMPOSIUM

**009 Outbreaks of Invasive Fungal Infections: Search, Find and Destroy Them**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 601

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convenor:**

Jesús V. Guinea Ortega; Gregorio Marañón Hosp., Madrid, Spain

**Presentations:****8:15 a.m.****Searching for Nosocomial Outbreaks of Invasive Fungal Infections: The Role of New Diagnostic Tools** (273-528a-13)

Sean Zhang; The Johns Hopkins Univ. Sch. of Med., Baltimore, MD

**8:45 a.m.****Finding and Destroying Nosocomial Outbreaks due to *Aspergillus* and *Candida*: Epidemiology, Ecology and Air-Patient Relationship** (273-528b-13)

Jesús V. Guinea Ortega; Gregorio Marañón Hosp., Madrid, Spain

**9:15 a.m.****Finding and Destroying Nosocomial Outbreaks due to *Mucorales* and Rare Fungi: Ecology, Presentation and Overview of Antifungals for Prophylaxis and Treatment** (273-528c-13)

Dimitrios P. Kontoyiannis; Univ. of Texas M.D. Anderson Cancer Ctr., Houston, TX

Division F Lecturer

**9:45 a.m.****Finding Nosocomial Outbreaks of Invasive Fungal Infections: Use of Molecular Typing Procedures to Unravel the Relationship between Isolates** (273-528d-13)

Corné H. W. Klaassen; Canisius Wilhelmina Hosp., Nijmegen, Netherlands

**10:15 a.m.****Multi-state Outbreak of Fungal Meningitis and other Fungal Infections Associated with Contaminated Methylprednisolone Acetate, 2012–2013** (273-528e-13)

Anne E. Purfield; CDC, Atlanta, GA

Patients with invasive fungal infections (IFIs) show a high mortality. Outbreaks of IFIs are particularly dramatic and a high number of patients may become involved. The majority of nosocomial outbreaks of IFIs are caused by *Aspergillus*, *Candida*, or *Mucorales*. Attendees will be able to update their knowledge on the epidemiology of fungal species causing outbreaks of IFI and the patients involved. The management of the patients outside and inside the hospital will be also reviewed. The first presentation will be focused on the diagnosis of IFIs in patients that become infected during an IFI outbreak; the role of the microbiology laboratory and the available diagnostic tools will be also presented. The second and third presentations will be a summary of the epidemiology of the patients involved in IFI outbreaks and the species more commonly found. The fourth presentation will be a review of the typing procedures to achieve molecular characterization of fungal isolates in order to prove the presence of similar genotypes infecting different patients; this step is critical to disclose the source of the outbreak. Finally, an outbreak of fungal meningitis and other infections associated with contaminated methylprednisolone acetate in 2012–2013 was the largest health care associated infection outbreak in U.S. history. The fifth presentation will review the epidemiology and public health response for this outbreak.

Upon completion of this session, participants should be able to:

- Describe the main fungal pathogens causing outbreaks of invasive fungal infections and patients affected.
- Identify the microbiology tools available for the characterization of the outbreaks.
- Discuss the pharmacological and non-pharmacological measures to control the outbreaks.

**Course Level:** Intermediate**SYMPOSIUM****010 You Want Me to Culture What?: Challenging Clinical and Non-clinical Samples in Microbiology****8:15 a.m. – 10:45 a.m.****Location:** Meeting Room 605

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convener**

Amy L. Leber; Nationwide Children's Hosp., Columbus, OH

**Presentations:****8:15 a.m.****Culture of Prosthetic Devices and Catheter Tips: Current Best Practices** (273-529a-13)

Aaron Tande; Mayo Clinic, Rochester, MN

**8:45 a.m.****Water, Water Everywhere: Culturing of Medical Water and Fluids** (273-529b-13)

Matthew J. Arduino; CDC, Atlanta, GA

**9:15 a.m.****Air Sampling in the Hospital: Not Just a lot of Hot Air** (273-529c-13)

Alice S. Weissfeld; Microbiol. Specialists Inc., Houston, TX

**9:45 a.m.****Autopsy Microbiology: The Big Chill** (273-529d-13)

Carol Rauch; Vanderbilt Univ. Sch. of Med., Nashville, TN

**10:15 a.m.****Sticks and Stones May Break My Bones: Culture of Objects** (273-529e-13)

Amy L. Leber; Nationwide Children's Hosp., Columbus, OH

This session will cover issues related to culture of challenging clinical and non-clinical specimens. In an era of healthcare reform and evidenced-based medicine, it is important to use the most clinically relevant and cost effective methods in all aspects of microbiology. While there is some consensus about the more routine aspects of clinical testing, much less information is available about the five topics covered in this symposium. The goal of the session is to provide information to support medically relevant, regulatory-compliant, and fiscally prudent processes. For prosthetic devices and catheter tips, recent advances concerning process and culture have demonstrated an increase in yield to detect infections. Little has been written or standardized concerning monitoring of the hospital environment (including water and air). It is often confusing what types of regulations apply and the effectiveness of these strategies in prevention of hospital associated infections (HAI) is not fully understood. The topics of autopsy microbiology and culturing unusual objects are areas where laboratorians are often faced with the dilemma if, or to what extent, cultures should be worked up. All of these topics are often overlooked and this session provides an opportunity to share ideas and uncover areas where more data would be useful to standardize practice.

Upon completion of this session, participants should be able to:

- Identify culture and incubation conditions that improve detection of infections related to prosthetic devices and catheter tips.
- List applicable regulatory and guidance documents related to culture of water or air in the hospital setting.
- Determine the extent of culture and work-up necessary for specimens from autopsy and for objects related to human injury.

**Course Level:** Intermediate

## POSTER SESSIONS

**011 – 034 Poster Sessions see pages 101 – 118**

10:45 a.m. – 12:30 p.m.

Location: Exhibit Hall A

## SPECIAL INTEREST SYMPOSIUM

**035 Accomplishments and Legacy of the Soviet Biological Weapons Program, 1928–1992**

11:00 a.m. – 12:15 p.m.

Location: Mile High Ballroom 3

*Developed by the Center for the History of Microbiology/ASM Archives Committee***Convenor:****James A. Poupard**; Pharma Inst. of Philadelphia, Inc., Philadelphia, PA**Presentation:**

11:00 a.m.

**Accomplishments and Legacy of the Soviet Biological Weapons Program, 1928–1992****Raymond A. Zilinskas**; Center for Nonproliferation Studies, Monterey Inst. of Intl. Studies, Monterey, CA

The session's main objective is to describe and explain the Soviet Union's biological warfare (BW) program as directed against humans, from its origins in the late 1920s to the USSR's dissolution in December 1991, paying special attention to its accomplishments related to weaponized bacterial and viral pathogens. The session will also clarify the possible threats that the program's remnants, as lodged in present day Russian Ministry of Defense's secret biological research institutes, pose to world peace.

Upon completion of this session, participants should be able to:

- Discuss the Soviet BW program's history, staffing, facilities, and objectives.
- Discuss the R&D undertaken to weaponize bacteria using genetic engineering techniques.
- Discuss the R&D undertaken to weaponize viruses using both classical and genetic engineering techniques.

## DIVISION BUSINESS MEETINGS

**Division V Business Meeting**

11:00 a.m. – 11:30 a.m.

Location: Meeting Room 712

**Division F Business Meeting**

11:00 a.m. – 12:00 p.m.

Location: Meeting Room 601

**Division L Business Meeting**

11:00 a.m. – 2:00 p.m.

Location: Meeting Room 605

**Division O Business Meeting**

11:00 a.m. – 2:45 p.m.

Location: Meeting Room 401

## SPECIAL INTEREST SYMPOSIUM

**036 Early Microbe Hunters Overcoming Biases and Barriers**

11:00 a.m. – 1:30 p.m.

Location: Mile High Ballroom 1

*Developed by the Center for the History of Microbiology/ASM Archives Committee; with Co-Sponsorship from the Committee on the Status of Women in Microbiology, the Committee on Microbiological Issues Impacting Minorities, and the Underrepresented Members Committee***Conveners:****Joan W. Bennett**; Rutgers Univ., New Brunswick, NJ**Marian Johnson-Thompson**; Univ. of District of Columbia, Washington, DC**Presentations:**

11:00 a.m.

**How Fungi Brought Me to a Brighter Future****Arturo Casadevall**; Albert Einstein Coll. of Med. of Yeshiva Univ., Bronx, NY

11:30 a.m.

**Long Before a Committee on the Status of Women in Microbiology, There Was A. C. Evans****Lorraine A. Findlay**; Nassau County Comm. Coll. and Univ. Med. Ctr., Garden City, NY

12:00 p.m.

**Putting a New Face on the ASM Presidency****Clifford W. Houston**; Univ. of Texas Med. Branch, Galveston, TX

12:30 p.m.

**Motivations and Mind Sets of "Model Minorities"****Alice S. Huang**; California Inst. of Technology, Pasadena, CA

1:00 p.m.

**Role Models of the Past: William Hinton, Ruth Moore and Others****Marian Johnson-Thompson**; Univ. of Dist. of Columbia, Washington, DC

The earliest microbiologists were nearly all men with roots in European culture. Nevertheless, from its earliest years, microbiology has attracted many remarkable women and minorities who had to overcome unusual hurdles in order to become professionals. Nowadays we work to attract and retain diverse populations into scientific careers. By studying the history of our profession and by examining the motivations, experiences and educational paths that allowed pioneer "outsider" microbiologists to overcome the biases and barriers inherent in the culture of microbiology, we can learn lessons that can be applied to contemporary recruitment and retention efforts. We can also learn the significance of diversity in advancing microbiology.

Upon completion of this session, participants should be able to:

- Develop a deeper understanding of the challenges faced by women and minority microbiologists in the 20th Century.
- Examine the way in which the human factors present in laboratories, classrooms, hospital and other institutional settings can impact the practice of scientific careers.
- Recognize the subtle and complex forms of covert bias still faced by women and minorities in the 21st Century.



## SPECIAL INTEREST SYMPOSIUM

**037 Oceans and Human Health: The Microbiological Perspective**

11:00 a.m. – 1:30 p.m.

Location: Mile High Ballroom 4

*Developed by the Public and Scientific Affairs Board, Committee on Environmental Microbiology***Convener:****D. J. Grimes;** Univ. of Southern Mississippi, Oceans Springs, MS**Presentations:**

11:00 a.m.

**Opening Remarks and an Application of Remote Sensing to Predict Human Health Risks from the Ocean****D. J. Grimes;** Univ. of Southern Mississippi, Oceans Springs, MS

11:05 a.m.

**Vibrios in the Coastal Ocean****Erin K. Lipp;** Univ. of Georgia, Athens, GA

11:35 a.m.

**Upland Sources of Fecal Indicators and Pathogens to Lake Michigan****Sandra McLellan;** Univ. of Wisconsin-Milwaukee, Milwaukee, WI

12:05 p.m.

**Vibrios (and other Bacteria?) as Sources of Bioactive Compounds****Mark Hamann;** Univ. of Mississippi, Oxford, MS

12:35 p.m.

**Toxic Cyanobacteria in the Coastal Ocean****Hans Paerl;** Univ. of North Carolina, Chapel Hill, NC

1:05 p.m.

**Microbiomics of Corals (or Bottlenose Dolphins or Both?)****Pam Morris;** Univ. of South Carolina, Columbia, SC

Oceans interact with humans in both positive and negative ways and this interaction has become the foundation for an emerging “meta-discipline” called Oceans and Human Health. Several of the many disciplines comprising OHH include oceanography, waterborne and seafood borne diseases, harmful algal blooms, epidemiology, comparative animal physiology, natural products and synthetic organic chemistry, pharmacology, toxicology, social sciences, engineering, and other ocean-related areas. This session will focus on the microbiological aspects of OHH, both harmful and beneficial effects.

Upon completion of this session, participants should be able to:

- Examine the impact of microbiology on society.
- Identify the impact of microbiology on the environment.
- Assess the impact of microbiology on human health.

## SPECIAL INTEREST SYMPOSIUM

**038 Saving the World with Microbes: Science for Diplomacy and Sustainable Development**

11:00 a.m. - 1:30 p.m.

Location: Four Seasons Ballroom 3

*Developed by the International Board***Convener:****Jason Rao;** Director for ASM International Affairs**Presentations:**

11:00 am

**Opening Remarks****Jason Rao;** Director for ASM International Affairs

11:15 am

**Weaving Science into U.S. Public Diplomacy****Frances Colón;** U.S. Dept. of State, Washington, DC

11:45 am

**Case Study: Organic Networks for Global Public Health Security****Joseph Fair;** Metabiota, Inc., San Francisco, CA

12:15 pm

**Case Study: Global Science for Sustainable Development****Eva Harris;** Univ. of California, Berkeley, CA

12:45 pm

**Q/A Discussion**

Interested in using your science in an international setting? Considering a non-traditional pathway in science policy, development or diplomacy? Come hear how you can make a difference. Speakers will present a range of personal experiences where the global grand challenges in science, development and diplomacy were advanced through individual contributions.

The common language of science creates new pathways for collaboration and enables the flow of scientific information between nations and societies whose relations might otherwise be limited. As such, science diplomacy facilitated by ASM can contribute to enhanced collaboration across national, political, and cultural boundaries, defining and addressing emerging challenges that cannot be solved by individual nations. ASM members are in a unique position to contribute expertise and mobilize targeted solutions by engaging the international scientific community through research, innovation, and evidence-based policy making to meet common global health and environmental challenges. This not only meets the highest mission of the Society, but also supports its growth and evolution.

Upon completion of this session, participants should be able to:

- Discuss the intersection of science and diplomacy.
- Discuss best practices for building sustainability.
- Seek opportunities via ASM to contribute to meeting Grand Global Challenges through science diplomacy.

## DIVISION BUSINESS MEETINGS

**Division A Business Meeting**

12:00 p.m. - 1:00 p.m.

Location: Meeting Room 405

**Division I Business Meeting**

12:30 p.m. - 1:30 p.m.

Location: Meeting Room 109

**Division C Business Meeting**

1:00 p.m. - 2:30 p.m.

Location: Meeting Room 712



**Division M Business Meeting, Lecture and Student Award Presentations**

1:00 p.m. - 2:30 p.m.

Location: Meeting Room 705

**Lecturer:**

Alan Davidson; Univ. of Toronto, Toronto, ON, Canada

**Presentation:****From DNA Injection to Protein Secretion: Conserved Elements of the Myophage Tail and its Bacterial Relatives****POSTER SESSIONS****039 – 062 Poster Sessions see pages 118 – 134**

1:00 p.m. - 2:45 p.m.

Location: Exhibit Hall A

**DIVISION BUSINESS MEETINGS****Division W Business Meeting**

1:45 p.m. - 2:30 p.m.

Location: Mile High Ballroom 1

**Division N Business Meeting**

1:45 p.m. - 2:45 p.m.

Location: Meeting Room 205

**SYMPOSIUM****063 The Bug Stops Here: Cellular Barriers to Infection**

3:00 p.m. - 5:30 p.m.

Location: Meeting Room 203

**Conveners:**

Serge Mostowy; Imperial Coll., London, United Kingdom

Marc Lecuit; Inst. Pasteur, Inserm, Paris Descartes Univ., Paris, France

**Presentations:**

3:00 p.m.

***Neisseria* Crossing Endothelial Cells at the Blood-brain Barrier**

Xavier Nassif; Inserm, Necker-Enfants Malades Univ. Hosp., Paris Descartes Univ., Paris, France

GlaxoSmithKline International Member of the Year Award

3:30 p.m.

**A Glimpse into the Intracellular Bacterial Community of Uropathogenic *E. coli***Matt S. Conover<sup>1</sup>, M. Hadjiifrangiskou<sup>2</sup>, M. E. Hibbing<sup>1</sup>, J. Palermo<sup>1</sup>, S. J. Hultgren<sup>1</sup>; <sup>1</sup>Washington Univ. in St. Louis, St. Louis, MO, <sup>2</sup>Vanderbilt Univ., Nashville, TN

3:45 p.m.

**Microsporidia are Natural Intracellular Pathogens of the Nematode *C. elegans***

Emily R. Troemel; UC San Diego, La Jolla, CA

4:00 p.m.

**Species-specific Impact of the Autophagy Machinery on Chikungunya Virus Infection**

Marc Lecuit; Inst. Pasteur, Inserm, Paris Descartes Univ., Paris, France

4:30 p.m.

**A New Mechanism of Autophagy Evasion by *Shigella flexneri***Leigh A. Baxt<sup>1,2</sup>, M. B. Goldberg<sup>1,2</sup>; <sup>1</sup>Massachusetts Gen. Hosp., Boston, MA, <sup>2</sup>Harvard Med. Sch., Boston, MA

4:45 p.m.

**Temperature-dependent Airway Innate Immune Defense Against the Common Cold Virus**

Ellen F. Foxman, B. R. Wasik, P. E. Turner, A. Iwasaki; Yale Univ., New Haven, CT

5:00 p.m.

**Bacterial Autophagy and the Cytoskeleton**

Serge Mostowy; Imperial Coll., London, United Kingdom

A complete understanding of the molecules and mechanisms restricting microbial dissemination has not been obtained. Understanding how host cells are targeted by microbes, and how host cells respond to control infections is key to unraveling the pathophysiology of infectious diseases. This session, entitled 'Cellular Barriers to Infection', shall highlight recently discovered mechanisms by which pathogens interact with cells and tissues, and how the host-microbe interplay may favor either microbial dissemination or its control. Talks on microbial interactions with endothelial barriers, mucosal barriers, and cell-autonomous responses to infection will be presented. Additional talks will be selected from the submitted abstracts. Completion of this session will provide insights into the mechanisms required for the control of infection by host responses. It should also suggest the development of new strategies aimed at combating infectious diseases, and possibly other human diseases arising from a dysfunctional host immune response.

Upon completion of this session, participants should be able to:

- Describe the latest cellular microbiology techniques and imagine technology applications and innovations for *in vitro* and *in vivo* analysis.
- Discover new ways in which the host cell may control infection.
- Detect novel cellular targets—both host and pathogen—for clinical intervention.

**SYMPOSIUM****064 Challenges to Surveillance of Antimicrobial Resistance in the Global Setting**

3:00 p.m. - 5:30 p.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Jeremy Sobel; CDC, Atlanta, GA

S. Arunmozhi Balajee; CDC, Atlanta, GA

**Presentations:**

3:00 p.m.

**The Challenges of Antimicrobial Resistance Surveillance in the Middle East (273-530a-13)**

Maha M. Talaat; US Naval Med. Res Unit 3, Cairo, Egypt

3:30 p.m.

**Out of Darkness: Establishing a Systematic Approach to Antimicrobial Resistance Surveillance, Antimicrobial Use and Regulation in Central Asia (273-530b-13)**

George Schmid; CDC, Almaty, Kazakhstan

4:00 p.m.

**An Integrated Surveillance System for *Salmonella* Antimicrobial Resistance in Guatemala (273-530c-13)**

Len Peruski; CDC, Atlanta, GA

4:30 p.m.

**Approaches to Surveillance for Antimicrobial Resistance in the United States (273-530d-13)**

Brandi Limbago; CDC, Atlanta, GA

5:00 p.m.

**Surveillance for Antimicrobial Resistance: Why Bother? (273-530e-13)**

Gary V. Doern; Univ. of Iowa Sch. of Med., Iowa City, IA

ABMM/ABMLI Professional Recognition Award

The global threat of emerging antimicrobial resistance is especially acute in developing countries for several well-known reasons, including widespread over-the-counter availability of potent antimicrobials; lack or non-application of guidelines for antimicrobial prescription; routine empirical use of antimicrobials by clinicians; lack of clinical diagnostic laboratories or routine failure to order diagnostic testing; absence of data on antimicrobial resistance patterns to guide therapy; absence of awareness of the risk of antimicrobial resistance among patients, clinicians, and public health officials, and absence of a regulatory structure. Antimicrobial resistance data are essential to guide proper therapy and devise antimicrobial resistance control and prevention policies. Specific challenges arise when attempting to study antimicrobial resistance patterns, prevalence, risk factors and control strategies in the global setting. These include: 1) lack of laboratory infrastructure and capacity for microbial diagnosis and antimicrobial resistance testing; 2) clinical practice norms that do not value culture diagnosis and antimicrobial resistance testing; 3) absence of public health infrastructure to facilitate antimicrobial resistance surveillance and dissemination of findings, and 4) lack of political will or understanding among policy makers to address the problem. This symposium will feature presentations on addressing specific challenges to antimicrobial resistance in the global setting, and data from several successful surveillance systems for antimicrobial resistance in challenging settings globally. Most presentations will be from CDC's Global Disease Detection Centers and represent high-quality work by leading public health researchers residing in the countries of interest and working in partnership with national ministries of health; therefore the projects, data, and recommendations presented represent a combination of rigorous science and real-world applicability to the conduct of public health work aimed at producing measurable impact on health.

Upon completion of this session, participants should be able to:

- Identify the challenges to antimicrobial resistance surveillance in the global setting.
- Discuss the challenge of antimicrobial resistance amplification in the developing world hospital setting and issues of control.
- Describe key concepts in translating antimicrobial resistance surveillance data to public health policy.

**Course Level:** Intermediate/Advanced

**SYMPOSIUM****065 Chemical Microbiology: Opening New Doors in Microbiology using Chemistry**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 401

**Convener:**

Douglas Weibel; Univ. of Wisconsin-Madison, Madison, WI

**Presentations:**

3:00 p.m.

**Elucidating the Mechanism of Mycobacterial Cell Wall Biosynthesis with Chemical Biology**

Laura Kiessling; Univ. of Wisconsin-Madison, Madison, WI

3:30 p.m.

**Divin: A Small Molecule Inhibitor of Bacterial Divisome Assembly**Ye-Jin Eun<sup>1</sup>, D. Kiekebusch<sup>2</sup>, M. Zhou<sup>1</sup>, M. Thanbichler<sup>2</sup>, D. B. Weibel<sup>1</sup>; <sup>1</sup>Univ. of Wisconsin-Madison, Madison, WI, <sup>2</sup>Max Planck Inst. for Terrestrial Microbiol., Marburg, Germany

3:45 p.m.

**A High-Throughput Screen for Small Molecule Inhibitors of Quorum Sensing Signal Synthesis**Quin H. Christensen<sup>1</sup>, T. L. Grove<sup>2</sup>, S. J. Booker<sup>2</sup>, E. Greenberg<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>The Pennsylvania State Univ., University Park, PA

4:00 p.m.

**Mapping the Cell Wall Interactome using Small Molecules**

Suzanne Walker; Harvard Med. Sch., Boston, MA

4:30 p.m.

**A High-Throughput Screen for Small Molecule Inhibitors of Iron Acquisition in Uropathogenic *E. coli* Identifies an Inhibitor of TonB Function**

Alejandra Yep, T. McQuade, H. L. Mobley; Univ. of Michigan, Ann Arbor, MI

4:45 p.m.

**Synthesis of Tri-component Fluorescent Glycopolymers and Use in Lectin-mediated Bacterial Binding Studies**

Wei Wang, D. L. Chance, V. V. Mossine, T. P. Mawhinney; Univ. of Missouri, Columbia, MO

5:00 p.m.

**Selective Penicillin-binding Protein Imaging Probes Reveal Substructure in Bacterial Cell Division**

Erin Carlson; Indiana Univ., Bloomington, IN

Rapid progress in microbiology over the last century has been matched with advances in chemistry. Chemistry laid the foundation for early studies of bacterial cell biology. The discovery and characterization of bioactive compounds provided unique opportunities for regulating proteins *in vivo* and a new experimental approach to decipher aspects of bacterial physiology that include cell wall assembly, replication, and division. The use of small molecules for studying bacteria can be traced back to the introduction of the beta-lactam antibiotics as potent inhibitors of peptidoglycan biosynthesis. As the hundredth anniversary of the discovery of the beta-lactam antibiotics approaches, microbiology is at a unique position to assess the broad capabilities that chemistry brings to the study of microbes—a multidisciplinary area that we refer to as chemical microbiology. Many classes of small molecules and macromolecular polymers are agonists and antagonists of specific biomolecules, are available to microbiologists, and enable the regulation of specific machinery in cells. This session is designed to reinforce the connection between these fields and highlight cutting edge research in microbiology that is facilitated by chemistry.

Upon completion of this session, participants should be able to:

- Describe how chemical techniques impact microbiological research.
- Identify areas in their research that may benefit from the implementation of small molecule inhibitors.
- Report how chemistry has revolutionized our understanding of the bacterial cell wall.

## SYMPOSIUM

**066 Citizen Microbiology: Enhancing Microbiology Education and Research with the Help of the Public**

3:00 p.m. – 5:30 p.m.

Location: Mile High Ballroom 1

**Conveners:**

Jonathan Eisen; Univ. of California-Davis, Davis, CA

David Coil; Univ. of California-Davis, Davis, CA

**Presentations:**

3:00 p.m.

**Authentic Research for Novice Scientists: Phage Discovery and Genomics by Undergraduate Students**

Graham Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

*Carski Foundation Distinguished Undergraduate Teaching Award and Division W Lecturer*

3:30 p.m.

**Understanding Human Influence on Microbial Distribution Patterns in the United States: A Citizen Science Approach**Georgia Barguil Colares<sup>1</sup>, J. Marcell<sup>1</sup>, D. Smith<sup>1,2</sup>, J. A. Eisen<sup>3</sup>, J. Gilbert<sup>1,2</sup>; <sup>1</sup>Argonne Natl. Lab., Lemont, IL, <sup>2</sup>Univ. of Chicago, IL, <sup>3</sup>UC Davis, Davis, CA

3:45 p.m.

**The Home Microbiome Project: Learning the Lessons of Citizen Science and Communication**

Jack A. Gilbert, D. Smith; Argonne Natl. Lab., Lemont, IL

4:00 p.m.

**The New National Lab: How Citizen Science is Transforming American Research**

Darlene Cavalier; Sci. Starter, Sci. Cheerleader, Philadelphia, PA

4:30 p.m.

**Sequencing the Human Microbiome with Citizen Science**Zachary Apte<sup>1</sup>, J. Richman<sup>2</sup>, W. Ludington<sup>3</sup>; <sup>1</sup>uBiome, Inc, San Francisco, CA, <sup>2</sup>Oxford Univ., Oxford, United Kingdom, <sup>3</sup>Univ. of California, Berkeley, Berkeley, CA

4:45 p.m.

**The American Gut Project: Challenges and Opportunities for Crowd Sourcing Microbial Ecology**

Antonio Gonzalez Peña; Univ. Colorado at Boulder, Boulder, CO

5:00 p.m.

**Public Science in Private Places: A Study of the Microbial Ecology of One Thousand Houses in Fifty States and Five Countries**

Rob Dunn; NC State Univ., Raleigh, NC

Citizen Science is a valuable way to both generate scientific data and to engage and educate a broad audience. Some areas of biology such as astronomy and ornithology have conducted multiple successful citizen science projects over the years. Surprisingly, there are not many citizen science projects in microbiology even though microbes are of interest to the majority of the public, as well as being tractable for these kinds of studies. This session will focus on citizen science in microbiology. This session will examine the diversity of Citizen Science projects, outline what makes a successful project, and highlight examples of past, current and future Citizen Microbiology projects. Speakers will also provide details on overcoming challenges in Citizen Science (e.g., visualization, permissions, privacy, standardization, informed consent). Our belief is that more projects, throughout the different domains of microbiology, could benefit from incorporating a citizen science component. This session at the

general meeting will bring together people interested in this topic, as well as fostering collaboration on existing and future citizen science projects.

Upon completion of this session, participants should be able to:

- Describe what "Citizen Science" is and give examples.
- Describe examples of Citizen Microbiology projects.
- Commence their own Citizen Microbiology project.

## SYMPOSIUM

**067 Clinical Relevance of Multiple Pathogens as Accessed by New Technology**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 601

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convenor:**

Benjamin C. Kirkup; Walter Reed Army Inst. of Res., Silver Spring, MD

**Presentations:**

3:00 p.m.

**A Slice of Life: Clinicopathologic and Molecular Tissue-based Approaches to Pathogen Diagnosis (273-531a-13)**

Sherif Zaki; CDC, Atlanta, GA

3:30 p.m.

**A Microbiome-focused Platform for Discovery of Bioactive Products and Companion Diagnostic Development (273-531b-13)**

Todd Desantis; Second Genome, San Francisco, CA

4:00 p.m.

**Multiplexed Automated Digital Microscopy (MADM) for Rapid Microbiological Identification and Major Drug Resistance Phenotyping (273-531c-13)**

Connie S. Price; Denver Hlth. and Hosp., Denver, CO

4:30 p.m.

**Diagnostic and Therapeutic Applications in Microbial Ecology (273-531d-13)**

Scot Dowd; Molecular Res., Shallowater, TX

5:00 p.m.

**Evolving Technologies Elucidating the Clinical Significance of Acinetobacter (273-531e-13)**

Lenie Dijkshoorn; Leiden Univ. Med. Ctr., Leiden, Netherlands

*USFCC/J. Roger Porter Award*

The Human Microbiome Project and related microbiome projects related to hospitals and homes, workplaces and water supplies, have revealed an unexpected diversity of organisms in our environment and bodies. Open platforms, culture-independent methods and high-throughput assays have combined to create powerful engines of detection. However, the clinical relevance of this diversity information has been both boldly prophesied and snidely dismissed. In this session, cutting-edge developers and practitioners will discuss new diagnostic technologies in the context of healthcare with practical examples of how diversity data is changing diagnostics today and uninflated visions of their impact in the coming several years.

Upon completion of this session, participants should be able to:

- Predict the nature of diagnostic data and clinical applications available from select new technologies which can return microbial community data from clinical samples.

- Compare new technologies which are advancing from the research laboratory to the clinical laboratory in support of clinical microbial ecology.
- Estimate the potential of microbial diversity data returned by new technologies to alter the clinical response to a number of typical laboratory sample submissions.

**Course Level:** Advanced

## SYMPOSIUM

### 068 Experimental Evolution

**3:00 p.m. – 5:30 p.m.**

**Location:** Four Seasons Ballroom 4

**Convener:**

Frank Rosenzweig; Univ. of Montana, Missoula, MT

**Presentations:**

**3:00 p.m.**

**Going Backwards: Evidence that Mutation Can Overwhelm Adaptation in Hypermutable *E. coli* Populations**

Paul Sniegowski; Univ. of Pennsylvania, Philadelphia, PA

**3:30 p.m.**

**Adaptation of Experimental *E. coli* Populations to a Citrate-only Medium**

Zachary D. Blount<sup>1,2</sup>, J. E. Barrick<sup>3,2,4</sup>, R. E. Lenski<sup>1,2</sup>; <sup>1</sup>Dept. of Microbiol. and Molecular Genetics, Michigan State Univ., East Lansing, MI, <sup>2</sup>BEACON Ctr. for the Study of Evolution in Action, East Lansing, MI, <sup>3</sup>Dept. of Chemistry and Biochemistry, The Univ. of Texas, Austin, TX, <sup>4</sup>Inst. for Cellular and Molecular Biology, The Univ. of Texas, Austin, TX

**3:45 p.m.**

**Genome-wide Identification and Functional Analysis of Genetic Changes During Adaptation of *Helicobacter pylori* for Mouse Colonization**

Ilana E. Cohen<sup>1,2</sup>, M. S. Dorer<sup>1</sup>, M. P. Fitzgibbon<sup>1</sup>, J. Shendure<sup>2</sup>, N. R. Salama<sup>1</sup>; <sup>1</sup>Fred Hutchinson Cancer Res. Ctr., Seattle, WA, <sup>2</sup>Univ. of Washington, Seattle, WA

**4:00 p.m.**

**Experimental Evolution of Virus-Host Interactions**

Santiago F. Elena; Inst. de Biología Molecular y Celular de Plantas, Valencia, Spain

**4:30 p.m.**

**Clonal Selection in *Salmonella* by Rhs Orphan Toxin Expression**

Sanna Koskiniemi<sup>1</sup>, F. Garza<sup>1</sup>, L. Sandegren<sup>2</sup>, B. A. Braaten<sup>1</sup>, C. S. Hayes<sup>1</sup>, D. I. Andersson<sup>2</sup>, D. A. Low<sup>1</sup>; <sup>1</sup>Univ. of California Santa Barbara, Santa Barbara, CA, <sup>2</sup>Uppsala Univ., Uppsala, Sweden

**4:45 p.m.**

**Following Experimental Evolution through High Resolution Lineage Tracking in Yeast**

S. Levy, J. Blundell, D. Fisher, D. Petrov, Gavin Sherlock; Stanford Univ., Stanford, CA

**5:00 p.m.**

**Pervasive Genetic Hitchhiking and Clonal Interference in 40 Evolving Yeast Populations**

Michael Desai; Harvard Univ., Cambridge, MA

The past quarter century has witnessed a dramatic increase in the use of microorganisms to study evolution experimentally in the lab. Microbes reproduce quickly, exhibit astonishing ecological diversity, and can be easily propagated and cryogenically preserved. Experimental microbial evolution has illuminated molecular structure-

function relationships, sharpened our understanding of constraints governing metabolism, and made it possible to explore the rate, tempo and repeatability of processes leading to adaptation, sex, mutualism, multicellularity, chronic disease and the origin of new species. These studies, now wed to genomics, are providing insight into the evolutionary process at unprecedented resolution. If "Nothing in Biology makes sense except in the light of evolution," experiments using microbes are the best way to make sense of evolution in real time. In this session we will learn how the experimental approach is revolutionizing our understanding of adaptation, recombination and mutation rates, speciation and the transition from unicellular to multicellular life forms.

Upon completion of this session, participants should be able to:

- Explain how microorganisms can be used to address longstanding questions in evolution and population genetics.
- Interpret data gathered from microbial evolution experiments to inform understanding of adaptation at the cellular and protein levels.
- Describe how data derived from microbial evolution experiments can increase our understanding of constraints on gene and organismal function.

## SYMPOSIUM

### 069 Hooking Up in the Ocean

**3:00 p.m. – 5:30 p.m.**

**Location:** Four Seasons Ballroom 3

**Convener:**

Gerhard J. Herndl; Univ. of Vienna, Vienna, Austria

**Presentations:**

**3:00 p.m.**

**Microbial Structuring of Marine Ecosystems: Significance of Microscale Interactions**

Farooq Azam; Scripps Inst. of Oceanography, San Diego, CA  
DC White Research and Mentoring Award

**3:30 p.m.**

**Diverse nifH Sequences Obtained from Hindgut Microbial Communities of Marine Herbivorous Fishes**

Lilly D. Bojarski<sup>1</sup>, E. R. Angert<sup>2</sup>, K. D. Clements<sup>1</sup>; <sup>1</sup>Univ. of Auckland, Auckland, New Zealand, <sup>2</sup>Cornell Univ., Ithaca, NY

**3:45 p.m.**

**Methylophs Dominate Dilution-to-Extinction Cultures Enriched with Marine Dissolved Organic Matter**

Scott M. Gifford<sup>1</sup>, O. Sosa<sup>1</sup>, D. Repeta<sup>2</sup>, E. DeLong<sup>1</sup>; <sup>1</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>2</sup>Woods Hole Oceanographic Inst., Woods Hole, MA

**4:00 p.m.**

**It Takes Two to Tango in a Nitrogen Deplete Ocean: Nano-SIMS Imaging of N and C Assimilation in Planktonic Partnership**

Rachel Foster; Max-Planck Inst. for Marine Microbiol., Bremen, Germany

**4:30 p.m.**

**Species and Phenotypic Diversity of Bacteria Cultivated from Marine and Freshwater Algae in an Estuary**

Keith Bouma-Gregson<sup>1</sup>, A. Pettenato<sup>2</sup>, C. Betts-Ng<sup>1</sup>, P. Safarinia<sup>1</sup>, M. E. Power<sup>1</sup>, R. Chakraborty<sup>2</sup>; <sup>1</sup>Univ. of California Berkeley, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA



4:45 p.m.

**A Microscale Co-cultivation Approach to Induce Cryptic Antimicrobial Compounds from Marine *Streptomyces* sp.**

Emmanuel Vazquez-Rivera, N. Adhoni, T. S. Bugni; Univ. of Wisconsin, Madison, WI

5:00 p.m.

**Learning to Behave: The Role of Motile Behavior in Bacteria-Hotspot Interactions in the Ocean**

Roman Stocker; MIT, Boston, MA

There is a growing body of literature indicating that marine pelagic microbes are interacting with other microbes, eukaryotes and metazoans in the seemingly homogeneous oceanic water column. Microbes are often attached to other organisms (microbes, zooplankton, phytoplankton) and these associations and the interactions that these associations incur may play an important role in pelagic ecology. In this session, examples will be given demonstrating that these synergistic interactions are widespread and influence the biochemical cycling of matter in the ocean.

Upon completion of this session, participants should be able to:

- Recognize the importance of trophic interactions among microbes in the oceanic water column.
- Recognize the role of microbes in their interaction with eukaryotes and metazoan plankton in the oceanic water column.
- Relate the interactions of microbes to the biogeochemical cycles in the oceanic water column.

## SYMPOSIUM

**070 How Knowledge from the Human Microbiome Projects Will Change the Practice of Clinical Microbiology**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Paul C. Schreckenberger; Loyola Univ. Chicago, Maywood, IL  
Alan Wolfe; Loyola Univ. Chicago, Maywood, IL

**Presentations:**

3:00 p.m.

**State-of-the-art Sequencing Approaches to Characterize Urogenital Microorganisms (273-532a-13)**

David Nelson; Indiana Univ. Sch. of Med., Indianapolis, IN

3:30 p.m.

**Urine is Not Sterile: Implication for the Clinical Microbiology Laboratory (273-532b-13)**

Paul C. Schreckenberger; Loyola Univ. Chicago, Maywood, IL

4:00 p.m.

**Does the Female Urinary Microbiome Play a Role in "Idiopathic Urinary Tract Conditions"? (273-532c-13)**

Linda Brubaker; Loyola Univ. Chicago, Maywood, IL

4:30 p.m.

**Men's Urogenital Microbiome and Sexual Health (273-532d-13)**

J. Dennis Fortenberry; Indiana Univ. Sch. of Med., Indianapolis, IN

5:00 p.m.

**Use of Ecological Principles to Guide Management of the Human Microbiome (273-532e-13)**

David Relman; Stanford Univ., Palo Alto, CA

Clinical microbiology laboratories are stuck in the past with methods that detect age-old pathogens that grow on standard culture media in room atmosphere. Studies of the human microbiome show the presence of diverse uncultured bacteria throughout the human body. This paradigm shift mandates reexamination of traditional laboratory culture practices. It is paramount that those working in clinical microbiology begin to learn about the DNA-based techniques being used to characterize bacteria that do not grow in culture by methods commonly employed in the clinical microbiology laboratory. It is the intention of this session to bring a discussion of molecular deep sequencing technology into the center of the clinical microbiology community: to show clinical microbiologists the relevance of human microbiome studies, to demonstrate how these studies will affect future culture-based testing strategies, and to influence the diagnosis of disease in humans.

Upon completion of this session, participants should be able to:

- Describe methods used to identify bacteria without culturing.
- Explain how current diagnostic laboratory techniques, optimized for detection of non-fastidious, rapidly growing pathogens, must change to detect fastidious, anaerobic bacteria that microbiome studies indicate may be pathogens.
- List examples in which molecular deep sequencing has influenced understanding of human health and disease.

Course Level: Beginner

## SYMPOSIUM

**071 Immune Evasion by Persistent and Latent Pathogens**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 205

**Conveners:**

Jyothi Rengarajan; Emory Univ., Atlanta, GA

**Presentations:**

3:00 p.m.

**Evasion of Innate Immune Defenses by Hepatitis C Virus and HIV-1: Common Strategies for Co-infection Allies**

Michael J. Gale Jr.; Univ. of Washington, Seattle, WA

3:30 p.m.

**The Interaction of *Haemophilus influenzae* and Host Phagocytes**

Lauren B. King, B. Pang, W. E. Swords; Wake Forest Sch. of Med., Winston-Salem, NC

3:45 p.m.

***Mycobacterium tuberculosis* Interferes with Dendritic Cell Functions through the Serine Protease Hip1**

Ranjna Madan-Lala, R. King, J. K. Sia, B. Pulendran, J. Rengarajan; Emory Univ., Atlanta, GA

4:00 p.m.

***Salmonella*, Macrophages and Persistence**

Corrie Detweiler; Univ. of Colorado, Boulder, CO



4:30 p.m.

**Parasite Secreted Proteins Mediate Antigen Presentation in *Toxoplasma gondii* Infected Cells**

Leah Rommereim, B. A. Fox, D. J. Bzik; Geisel Sch. of Med., Lebanon, NH

4:45 p.m.

***Borrelia burgdorferi* Induces Host Indoleamine 2,3-dioxygenase as a Potential Immune Evasion Mechanism**

Andrea C. Love, I. Schwartz, M. M. Petzke; New York Med. Coll., Valhalla, NY

5:00 p.m.

**The Role of B Cells Regulating the Immune Response to *Mycobacteria***

John Chan; Albert Einstein Coll. of Med., Bronx, NY

Division U Lecturer

The immune response to microbes does not always result in clearance and several pathogens have evolved complex strategies that allow them to persist in the host and prevent their elimination by the immune system. Infections caused by persistent and latent pathogens are a major global health burden. Understanding the mechanisms employed by these pathogens to evade detection and persist within the host for prolonged periods of time is critical for designing therapeutics and vaccines to effectively control persistent and latent infections. This symposium will bring together microbiologists and immunologists from different fields to discuss the nature of persistent or latent states in bacterial, viral and parasitic pathogens, to identify common themes and pathways of immune evasion to persistent and latent infections. We expect that this session will be of interest to a broad spectrum of researchers interested in host-pathogen interactions. Moreover, the research discussed here will provide a unique opportunity to cross-fertilize findings between diverse fields that have the common goal of understanding how persistent and latent pathogens subvert immunity.

Upon completion of this session, participants should be able to:

- Recognize mechanisms by which bacterial and viral pathogens of global public health importance persist in the human host.
- Discuss the common and unique aspects of bacterial versus viral persistence and/or latency.
- Examine potential interventions to combat persistent and latent pathogens.

**SYMPOSIUM****072 Life Lessons from Biofuels Research and Bioremediation**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 109

**Convener:**

Tyrrell Conway; Univ. of Oklahoma, Norman, OK

**Presentations:**

3:00 p.m.

**From Woody Residues to Renewable Chemicals and Fuels**

Lonnie O. Ingram; Univ. of Florida, Gainesville, FL

Division K Lecturer

3:30 p.m.

**Redundant, Promiscuous Uptake Systems for Lignin-derived Aromatic Substrates in *Rhodospseudomonas palustris***Robert C. Salmon<sup>1</sup>, M. J. Cliffe<sup>2</sup>, J. B. Rafferty<sup>1</sup>, D. J. Kelly<sup>1</sup>; <sup>1</sup>Univ. of Sheffield, Sheffield, United Kingdom, <sup>2</sup>Univ. of Manchester, Manchester, United Kingdom

3:45 p.m.

**Engineering an Autotrophic Strain of *Geobacter sulfurreducens* as a Chassis for Electrosynthesis**Amit Kumar<sup>1</sup>, A. K. Chaurasia<sup>1</sup>, K. P. Nevin<sup>1</sup>, M. Aklujkar<sup>1</sup>, P.-L. Tremblay<sup>1</sup>, J. Zhang<sup>1,2</sup>, T. Woodard<sup>1</sup>, D. R. Lovley<sup>1</sup>; <sup>1</sup>Univ. of Massachusetts Amherst, Amherst, MA, <sup>2</sup>Smith Coll., Northampton, MA

4:00 p.m.

**Microbial Paths to Renewable Hydrogen**

Patrick Hallenbeck; Univ. of Montreal, Montreal, Canada

4:30 p.m.

**Isolation and Characterization of a Symbiotic Dibenzofuran-degrading Consortium**

Timothy A. Johnson, T. Tsoi, S. A. Hashsham, J. M. Tiedje; Michigan State Univ., East Lansing, MI

4:45 p.m.

**Production of 1,3-Propanediol from Glycerol Under Haloalkaline Conditions**Daniel W. Roush<sup>1</sup>, M. R. Mormile<sup>1</sup>, D. A. Elias<sup>2</sup>, O. C. Sittin<sup>1</sup>; <sup>1</sup>Missouri Univ. of Sci. and Technology, Rolla, MO, <sup>2</sup>Oak Ridge Natl. Lab, Oak Ridge, TN

5:00 p.m.

**From Individuals to Community: A Molecular-based Systems Approach to Understanding Bioremediation**

Lisa Alvarez-Cohen; Univ. of California- Berkeley, Berkeley, CA

Significant recent advances in biofuels research and bioremediation, driven by genomics and synthetic biology, are resulting in new ideas and new technologies, fueled by major funding from DOE and venture capital. Amongst the recently developed technologies are genetically engineered microbial production of biofuels from biomass, biomass conversion to hydrogen, and complex mixed microbial communities that interact to catalyze important bioremediation reactions. The potential of these industries for immediate payoff has attracted numerous top scientists and led to establishment of large research consortia. This session will highlight what microbiologists have learned from recent advances in metabolic engineering about the inner workings of microbial biochemistry.

Upon completion of this session, participants should be able to:

- Describe the impact of metabolic engineering on biofuels production and bioremediation.
- Recognize novel approaches to transportation fuel production from biomass.
- Describe the role of complex communities in bio-transformations in the environment.

**SYMPOSIUM****073 Rewiring Bacterial Metabolism**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 403

**Convener:**

Jennifer L. Reed; Univ. of Wisconsin-Madison, Madison, WI

**Presentations:****3:00 p.m.****Kinetic Modeling of Metabolism and Computational Strain Design****Costas D. Maranas**; The Pennsylvania State Univ., University Park, PA**3:30 p.m.****Inactivation of the Pta-AckA Pathway Causes Cell Death in *Staphylococcus aureus*****Marat R. Sadykov**<sup>1</sup>, V. C. Thomas<sup>1</sup>, D. Marshall<sup>2</sup>, C. J. Wenstrom<sup>1</sup>, D. Moormeier<sup>1</sup>, T. J. Widhelm<sup>1</sup>, A. S. Nuxoll<sup>1</sup>, R. Powers<sup>2</sup>, K. W. Bayles<sup>1</sup>; <sup>1</sup>The Univ. of Nebraska Med. Ctr., Omaha, NE, <sup>2</sup>Dept. of Chemistry, Univ. of Nebraska, Lincoln, NE, Omaha, NE**3:45 p.m.****Trophic Conversion of Photoautotrophic Cyanobacteria****Jordan T. McEwen**, S. Atsumi; UC Davis, Davis, CA**4:00 p.m.****Microbial Production of Fatty Acid-derived Fuels and Chemicals****Brian F. Pfleger**; Univ. of Wisconsin-Madison, Madison, WI**4:30 p.m.****Growth, Flux and Cofactor Turnover Variation Modeled for All Single Enzyme Deletion and Overexpression Mutants of *E. coli* Central Metabolism****Joost Groot**, L. A. Arlow, R. T. Gill; Univ. of Colorado Boulder, Boulder, CO**4:45 p.m.****Synthesis of 2,3-butanediol by Metabolic Engineered *Klebsiella pneumoniae*****Soojin Lee**<sup>1</sup>, B. Kim<sup>1</sup>, M. Lu<sup>1</sup>, M. Oh<sup>2</sup>, Y. Kim<sup>3</sup>, K-S. Yang<sup>4</sup>, S. Shin<sup>5</sup>, J. Lee<sup>1</sup>; <sup>1</sup>Sogang Univ., Korea, Republic of, <sup>2</sup>Korea Univ., Korea, Republic of, <sup>3</sup>Kyung Hee Univ., Korea, Republic of, <sup>4</sup>Macrogen, Inc., Korea, Republic of, <sup>5</sup>Macrogen, Inc., Korea, Republic of**5:00 p.m.****Using Synthetic Biology and Tn-seq to Illuminate Metabolism****Jeffrey A. Gralnick**; Univ. of Minnesota, St. Paul, MN

Microbes are capable of producing a wide variety of natural and non-natural products, including biofuels, biopharmaceuticals and specialty chemicals. This session will include talks on recent computational and experimental advances for rewiring microbial metabolism. Some of the technical challenges that need to be overcome to improve microbial production of chemicals involve improving tolerance to products, introducing and balancing metabolic pathways, increasing uptake and conversion of nutrients, lowering production of undesired by-products and increasing product yields. This session will highlight recent work aimed at tackling these challenges for different microbial systems and attendees will learn how to apply cutting-edge computational and experimental approaches to overcome these challenges.

Upon completion of this session, participants should be able to:

- Apply systems and synthetic biology approaches for rewiring cellular metabolism.
- Apply systems biology approaches to understand states of metabolic networks.
- Identify and overcome bottlenecks limiting microbial metabolic processes.

**SYMPOSIUM****074 The Roles of Antibiotics in Nature: A Long-standing Enigma****3:00 p.m. – 5:30 p.m.****Location: Four Seasons Ballroom 1****Convener:****Russell T. Hill**; Univ. of Maryland, Baltimore, MD**Presentations:****3:00 p.m.****Small Molecules Rule the World****Julian E. Davies**; Univ. of British Columbia, Vancouver, BC, Canada  
*ASM Lifetime Achievement Award (Sponsored by AbbVie)***3:30 p.m.****Antibiotics as Weapons and Signals in Natural Habitats****Daniel C. Schlatter**<sup>1</sup>, P. Vaz Jauri<sup>1</sup>, M. G. Bakker<sup>2</sup>, L. K. Otto-Hanson<sup>1</sup>, C. E. Salomon<sup>3</sup>, L. L. Kinkel<sup>1</sup>; <sup>1</sup>Univ. of Minnesota, Saint Paul, MN, <sup>2</sup>Colorado State Univ., Fort Collins, CO, <sup>3</sup>Univ. of Minnesota, Minneapolis, MN**3:45 p.m.****Antibacterial Activity of Wasp Venom Peptide****Yuvon Mobley**, H. Staats, S. Abraham; Duke Univ., Durham, NC**4:00 p.m.****Community Surveillance and Antimicrobial Production in Multi-species Infections****Marvin Whiteley**; Univ. of Texas, Austin, TX**4:30 p.m.****Differential Role of Antibiotics in the Natural Host Environment of the Entomopathogen *Xenorhabdus nematophila*****Swati Singh**, S. Forst; Univ. of Wisconsin- Milwaukee, Milwaukee, WI**4:45 p.m.****It's More Than Just Killing: How Antibiotic Production by *B. cereus* affects *B. subtilis*****Elizabeth A. Shank**<sup>1</sup>, J. D. Watrous<sup>2</sup>, A. A. Bowers<sup>1</sup>, C. T. Walsh<sup>3</sup>, P. C. Dorrestein<sup>2</sup>, R. Kolter<sup>3</sup>; <sup>1</sup>Univ. of North Carolina at Chapel Hill, Chapel Hill, NC, <sup>2</sup>Univ. of California, San Diego, San Diego, CA, <sup>3</sup>Harvard Med. Sch., Boston, MA**5:00 p.m.****Marine Sponges and their Symbionts: Complexity, Signals and Small Molecules****Russell T. Hill**; Univ. of Maryland, Baltimore, MD

The roles of antibiotics in nature remains a mystery more than fifty years after the discovery that bacteria produce antibiotics when grown in rich media to high densities. Production of antibiotics has seldom been detected under natural conditions in the environment. Many antibiotics can result in changes in gene expression at concentrations that are orders of magnitude below those required for antibiosis. One key role for antibiotics in nature is likely to be in cell-cell signaling; this possibility and other potential roles will be discussed.

Upon completion of this session, participants should be able to:

- Recognize that the role of antibiotics in nature is more complex than simply killing competing bacteria.
- Describe a range of possible ecological roles of antibiotics in nature.
- Hypothesize that the primary role of antibiotics in nature is in cell-cell communication.

## SYMPOSIUM



## 075 Toyota Meets Pixar: Digital Microbiology and Automation in the Clinical Microbiology Laboratory

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 605

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

### Conveners:

**Susan M. Novak-Weekley**; Kaiser Permanente, North Hollywood, CA  
**Nathan A. Ledebøer**; Med. Coll. of Wisconsin, Milwaukee, WI

### Presentations:

3:00 p.m.

**Full Laboratory Automation in Microbiology: Experience from the Past and What's New for the Future** (273-533a-13)

**Susan M. Novak-Weekley**; Kaiser Permanente, North Hollywood, CA

3:30 p.m.

**Flexibility, Scalability, and Interchangeability: The Current and Future Tools of Automation** (273-533b-13)

**Nathan A. Ledebøer**; Med. Coll. of Wisconsin, Milwaukee, WI

4:00 p.m.

**Post-analytic Benefits of the Automated Laboratory: Will Patient Care be Improved?** (273-533c-13)

**Richard B. Thomson Jr.**; North Shore Univ. Hlth. Sys., Evanston, IL

4:30 p.m.

**From the Bench Seat to the C-Suite: Coordinating Clinical and Financial Analyses to Justify Capital Purchases for the Laboratory** (273-533d-13)

**Mark T. Larocco**; Erie, PA

5:00 p.m.

**Robots Shmambots: A Counter Point to Full Laboratory Automation** (273-533e-13)

**Steven D. Dallas**; UT Hlth. Sci. Ctr., San Antonio, TX

This session will discuss the latest technology in full laboratory automation and Digital Microbiology for the clinical microbiology laboratory. Due to increasing health care costs and institutional challenges, health care organizations are being asked to do more with less while maintaining excellent quality and turn-around-time. Automation includes plating instruments, track systems to move specimen plates, smart incubators with integrated imagers to facilitate Digital Microbiology, and instruments that will inoculate MALDI-ToF templates. Digital Microbiology introduces technology to the bench where technologists will no longer routinely hold the plates but will access images of the plates to determine which pathogens need further work up on a particular specimen. Full or modular automation can theoretically increase efficiency/productivity, improve ergonomics, quality, and turn-around-time in the laboratory setting. Digital workup/storage of images can perhaps augment the ability of the laboratory to communicate more information to the physician. This session will also discuss how to engage laboratory administration on the topic of microbiology automation, how to build a solid business case, and what to look for in terms of Return on Investment (ROI). Last, the session will explore the differences in laboratories and discuss the challenges some might have integrating automation into their laboratory.

Upon completion of this session, participants should be able to:

- Describe full laboratory automation/digital microbiology and what the impact will be to the laboratory and to the patient.

- Discuss strategies for engaging laboratory administration which includes developing a business case for laboratory automation/digital microbiology and determining Return on Investment.
- Describe the challenges smaller laboratories might have integrating laboratory automation into their operation and how that contrasts with other larger volume laboratories.

Course Level: Intermediate

## SYMPOSIUM

## 076 Transformative Research, and then Some: Mechanisms of Bacterial Lateral Gene Transfer

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 405

### Conveners:

**Brian K. Hammer**; Georgia Inst. of Tech., Atlanta, GA  
**Donald A. Morrison**; Univ. of Illinois at Chicago, Chicago, IL

### Presentations:

3:00 p.m.

**Pick up a CRISPR-Cas System and then What?**

**Sylvain Moineau**; Université Laval, Québec City, QC, Canada

3:30 p.m.

**Bacteriophage Genes that Inactivate the CRISPR/Cas Bacterial Immune System**

**Joe Bondy-Denomy**, A. Pawluk, K. L. Maxwell, A. R. Davidson; Univ. of Toronto, Toronto, ON, Canada

3:45 p.m.

**Quantifying the Role of Horizontal Gene Transfer in Maintaining Microbial Population Biodiversity with Time-series Metagenomics**

C. Luo, D. Tsementzi, **Konstantinos T. Konstantinidis**; Georgia Inst. of Tech., Atlanta, GA

4:00 p.m.

***Bacillus subtilis* Competence is a Matter of Life and Death**

**David Dubnau**; Univ. of Med. and Dentistry of New Jersey, Newark, NJ

4:30 p.m.

**The Interacting Proteins CtsP and CtsX are Required for Natural Transformation in *Campylobacter jejuni***

**Jessica M. Beauchamp**, R. S. Erfurt, V. J. DiRita; Univ. of Michigan, Ann Arbor, MI

4:45 p.m.

**Block and Boost DNA Transfer: Reverse Roles of OmpA in Natural and Artificial Transformation of *Escherichia coli***

**Dongchang Sun**, B. Wang, L. Zhu, M. Chen, L. Zhan; Zhejiang Academy of Agricultural Sci., Hangzhou, China

5:00 p.m.

**Natural Competence: A Mechanism for Nucleotide Acquisition is also a Mechanism of Gene Transfer**

**Rosemary J. Redfield**; The Univ. of British Columbia, Vancouver, BC, Canada

A growing number of both Gram-negative and Gram-positive bacteria can transfer and acquire DNA laterally. Since the pioneering work of Griffith in 1928 that led to defining DNA as the "transforming principle", studies continue to reveal novel regulatory signals and genetic systems that control not only transformation, transduction and conjugation, but also more recently described processes including type IV secretion and CRISPR-mediated immunity. DNA

acquired laterally often provides the recipient with new metabolic capability or virulence factors, may confer resistance to antibiotics or other extracellular threats, and can play a critical role in shaping the genome of a bacterial recipient. This session will highlight recent advances in uncovering common and unique molecular mechanisms governing DNA uptake and transfer, as well as the impact of these processes in an increasingly broad range of bacteria of environmental and pathogenic importance.

Upon completion of this session, participants should be able to:

- Discuss the signals used by bacteria to promote DNA transfer.
- Recognize common and novel mechanisms of lateral gene transfer.
- Relate the contribution of lateral gene transfer to bacterial evolution.

## SYMPOSIUM

### 077 Uncovering the Function of Unknown Proteins

3:00 p.m. – 5:30 p.m.

Location: Mile High Ballroom 4

#### Conveners:

Eduardo A. Groisman; Yale Sch. of Med./HHMI, New Haven, CT

#### Presentations:

3:00 p.m.

#### Evolution and the Proteome: Insights into Protein Function from Deeply Conserved Gene Modules

Edward Marcotte; Univ. of Texas- Austin, Austin, TX

3:30 p.m.

#### Annotating Proteins of Unknown Function in *Mycobacterium tuberculosis* Using Activity Based Protein Profiling and Mass Spectrometry-based Proteomics

Charles Ansong<sup>1</sup>, C. Ortega<sup>2</sup>, S. H. Payne<sup>1</sup>, D. H. Haft<sup>3</sup>, J. N. Adkins<sup>1</sup>, C. Grundner<sup>2</sup>, A. T. Wright<sup>1</sup>; <sup>1</sup>Pacific Northwest Natl. Lab., Richland, WA, <sup>2</sup>Seattle BioMed. Res. Inst., Seattle, WA, <sup>3</sup>J Craig Venter Inst., Rockville, MD

3:45 p.m.

#### A Role for the *Pseudomonas aeruginosa* PA01 Orphan Gene, Pa0142, in Cleansing 8-Oxoguanine from the Cellular Nucleotide Pool

B. McKay Wood<sup>1</sup>, D. S. Hitchcock<sup>2</sup>, F. M. Raushel<sup>2</sup>, J. V. Sweedler<sup>1</sup>, J. E. Cronan<sup>1</sup>; <sup>1</sup>Univ. of Illinois, Urbana-Champaign, Urbana, IL, <sup>2</sup>Texas A&M, College Station, TX

4:00 p.m.

#### From Systems Microbiology to Molecular Mechanism

Anthanasios Typas; EMBL, Heidelberg, Germany

4:30 p.m.

#### Regulation of Phenotypic Antibiotic Tolerance: Structure-function Analysis of an Essential GTPase

Bram Van den Bergh, C. I. Kint, N. Verstraeten, M. Fauvar, J. Michiels; KU Leuven, Heverlee, Belgium

4:45 p.m.

#### The RNA Interactome of Cold Shock Proteins CspA and CspE in *Salmonella typhimurium*

Louise C. McGibbon, J. Tree, S. Granneman, K. Woodall, D. Gally, G. Blakely, D. Tollervey, M. Gallagher; The Univ. of Edinburgh, Edinburgh, United Kingdom

5:00 p.m.

#### Small Proteins Can No Longer Be Ignored

Gisela Storz; NIH, Bethesda, MD

A current challenge of the genomic era is to determine the function of the encoded proteins. This is particularly difficult given that a

significant fraction of the genes specify peptides or proteins bearing no sequence similarity to proteins of known function. This session will discuss a variety of approaches to uncover the role and/or biochemical activity of novel peptides and proteins. It will also examine the use of sophisticated bioinformatic analysis to deduce protein function in higher organisms based on knowledge acquired with experimentally amenable systems.

Upon completion of this session, participants should be able to:

- Discuss approaches to uncover the role and/or biochemical activity of novel peptides and proteins.
- Examine the use of bioinformatic analysis to deduce protein function in higher organisms.

## SYMPOSIUM

### 078 Viruses Shaping their Host Environment

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 207

#### Conveners:

Michael J. Buchmeier; Univ. of California-Irvine, Irvine, CA

Linda van Dyk; Univ. of Colorado Sch. of Med., Denver, CO

#### Presentations:

3:00 p.m.

#### Virus Cell Interactions in the Pathogenesis of Oncogenic EBV

Lindsey Hutt-Fletcher; Louisiana State Univ. Hlth. Sci. Ctr., Shreveport, LA

Division S Lecturer

3:30 p.m.

#### Association Between Living Environment and Human Oral Viral Ecology

R. Robles-Sikisaka<sup>1</sup>, M. Ly<sup>1</sup>, T. Boehm<sup>2</sup>, M. Naidu<sup>1</sup>, J. Salzman<sup>3</sup>, David T. Pride<sup>1</sup>; <sup>1</sup>UCSD, La Jolla, CA, <sup>2</sup>Western Univ. Coll. of Dental Med., Pomona, CA, <sup>3</sup>Stanford Univ. Sch. of Med., Palo Alto, CA

3:45 p.m.

#### Isolation of a Generalist Freshwater Cyanophage and Characterisation of its Growth on Different Hosts

Siobhan C. Watkins, J. E. M. Watts, P. K. Hayes; Univ. of Portsmouth, Portsmouth, United Kingdom

4:00 p.m.

#### Cellular Machinery Hijacked by RNA Viruses for Genome Packaging and Budding

Leslie Parent; Penn State Coll. of Med., Hershey, PA

Division T Lecturer

4:30 p.m.

#### Essential Role of GSK-3 $\alpha$ and GSK-3 $\beta$ Isoforms in Type I Interferon Response

Kashif A. Khan<sup>1</sup>, J-F. Clément<sup>1</sup>, J. R. Woodgett<sup>2</sup>, B. W. Doble<sup>3</sup>, M. J. Servant<sup>1</sup>; <sup>1</sup>Faculty of Pharmacy, Univ. of Montreal, Montreal, QC, Canada, <sup>2</sup>Samuel Lunenfeld Res. Inst., Mount Sinai Hosp., Toronto, ON, Canada, <sup>3</sup>Stem Cell and Cancer Res. Inst., McMaster Univ., Hamilton, ON, Canada

4:45 p.m.

#### Proteomic Analysis of Viral Infection in an Archaeal Model System

Walid S. Maaty, J. D. Steffens, J. Heinemann, B. D. Reeves, E. A. Dratz, P. A. Grieco, M. J. Young, B. Bothner; Montana State Univ., Bozeman, MT

5:00 p.m.

**A Viral-systems View of Human Evolution****Luis Villareal**; Univ. of California-Irvine, Irvine, CA

The traditional views of virus-host interaction have been redefined by recent studies using the tools of cell biology and genetics. This session will focus in the three plenary talks on three different strategies which have been adopted by viruses to subvert the host cell during infections. The presentations will feature a DNA virus, Epstein-Barr virus which alters its entry strategy to suit the specific cell type, B-lymphocyte vs epithelial cell, being attacked. A retroviral model system has been used to dissect molecular mechanisms of virus replication, which in turn led to studies of the intracellular trafficking pathways of retroviral proteins and cellular factors that are recruited to facilitate virus propagation. Finally, at the genetic level, increasing evidence indicates that the human genome has acquired virus derived information. This and other parasitic (retroposon) DNA most differentiates humans from all other species but has historically been dismissed as junk, of little significance to phenotype. More recently, it has become apparent that most of this intragenic junk is transcribed and may be active as non-coding regulatory RNA. The human brain in particular seems to be subjected to such RNA regulation. Since it is the exogenous viruses (retro and other) that can invade genomes and provoke genome rearrangements, it is time to reevaluate the role they might have played in human evolution.

Upon completion of this session, participants should be able to:

- Discuss how viruses act epigenetically and genetically to modify the host.
- Compare the modes of persistence and latency of Herpesviruses and retroviruses.
- Apply the concepts of viral latency with human evolution.

**DIVISION BUSINESS MEETINGS****Division T Business Meeting**

5:30 p.m. - 6:00 p.m.

Location: Meeting Room 207

**Division F Mixer**

5:45 p.m. - 7:30 p.m.

Location: Capitol Ballroom 4 (Hyatt)

**Division Z Mixer**

5:45 p.m. - 7:30 p.m.

Location: Meeting Room 304

**Division G Business Meeting and Mixer**

6:00 p.m. - 9:00 p.m.

Location: Capitol Ballroom 5 (Hyatt)





## Monday, May 20

## Division Lectures

Division	Time	Location	Session #
C	8:15 a.m. – 10:45 a.m.	Meeting Room 605	085
J	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 1	082
B	3:00 p.m. – 5:30 p.m.	Mile High Ballroom 4	146
D	3:00 p.m. – 5:30 p.m.	Meeting Room 205	144
E	3:00 p.m. – 5:30 p.m.	Meeting Room 203	149
L	3:00 p.m. – 5:30 p.m.	Meeting Room 706	142
Q	3:00 p.m. – 5:30 p.m.	Four Seasons Ballroom 3	151

## Business Meetings

Division	Time	Location
Q	11:00 a.m. – 12:00 p.m.	Meeting Room 203
Y	11:00 a.m. – 12:00 p.m.	Meeting Room 205
Z	11:00 a.m. – 12:00 p.m.	Meeting Room 207
U	2:00 p.m. – 2:30 p.m.	Meeting Room 401

## PLENARY

## 079 Bedside to Bench: Microbiology in the Clinics

8:15 am–10:45 a.m.

Location: Four Seasons Ballroom 3

## Conveners:

Michael A. Bachman; Univ. of Michigan, Ann Arbor, MI

Victor Nizet; Univ. of California, San Diego, La Jolla, CA

## Presentations:

8:15 a.m.

## Virulence Factors and Therapeutic Targets in Familial Diagnostic Phenotypes of the Clinical Microbiology Lab

Victor Nizet; Univ. of California, San Diego, La Jolla, CA

8:45 a.m.

Super-Bugs? Strain Based Differences in the Evolution of Drug Resistance in *Mycobacterium tuberculosis*

Sarah M. Fortune; Harvard Sch. of Publ. Health, Boston, MA

9:15 a.m.

## Life-threatening Infections of Childhood: Single-gene Inborn Errors of Immunity?

Jean-Laurent Casanova; The Rockefeller Univ., New York, NY

9:45 a.m.

*Klebsiella pneumoniae* Infection: A Battle for Iron on Multiple Fronts

Michael A. Bachman; Univ. of Michigan, Ann Arbor, MI

10:15 a.m.

## How Studying HIV Entry into Cells Led to the First Cure for AIDS

Robert W. Doms; Univ. of Pennsylvania, Philadelphia, PA

Our understanding of microbial pathogenesis has benefitted greatly from the detailed study of well-characterized strains in cell-culture and animal models of infection. By genetically manipulating the pathogen, microbiologists can determine the microbial factors required to cause disease. However, the wild-type strain in the laboratory may not represent circulating strains causing disease in our communities. Conversely, specific immunodeficiencies in patients may predispose to infections that would not be predicted by studies of a wild-type model host. Careful evaluation of the symptoms, pathology, and response to therapy in human infections can suggest novel and productive research aims. This session will focus on bedside-to-bench research, starting with observations in patients and their microbial isolates and leading to mechanistic insight into pathogenesis. The presentations will describe the virulence characteristics of pathogens of increasing prevalence and antibiotic resistance, mechanisms by which pathogen heterogeneity can lead to antimicrobial resistance, and mutations in human factors that predispose to, or protect against, infection.

Upon completion of this session, participants should be able to:

- Trace insights into microbial pathogenesis back to observations about patients infected with the offending pathogen.
- Classify host factors that can prevent or promote infection with specific microorganisms.
- Contrast mechanisms by which pathogens resist antimicrobial therapies.

## PLENARY

**080 Microbe-Microbe Interactions**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 4

**Convener:**

Matthew R. Parsek; Univ. of Washington, Seattle, WA

8:15 a.m.

**The RSCV phenotype of *Pseudomonas aeruginosa***

Matthew R. Parsek; Univ. of Washington, Seattle, WA

**Presentations:**

8:45 a.m.

**The Mechanisms by which CDI and Rhs Systems Mediate Contact-dependent Growth Inhibition**

David Low; Univ. of California, Santa Barbara, Santa Barbara, CA

9:15 a.m.

**Cell Contact Dependent Outer Membrane Exchange in *Myxobacteria***

Dan Wall; Univ. of Wyoming, Laramie, WY

9:45 a.m.

**Assembly of the Bacterial Type VI Secretion System**

Eric Cascales; LISN- IMM- CNRS, Marseille, France

10:15 a.m.

**Mechanisms and Regulation of Bacterial Surface Attachment and Biofilm Formation**

Yves V. Brun; Indiana Univ., Bloomington, IN

This session will cover new aspects of bacterial close-contacts involved in intra and inter-species communication, competition and exchanges affecting the evolution and ecology of bacterial communities in a variety of environments. The session will also educate the audience on the importance of both physical interactions and proximity in controlling cellular behavior.

Upon completion of this session, participants should be able to:

- Discuss how cell-to-cell contact can influence microbial behavior.
- Examine some of the different molecular mechanisms by which bacteria participate in cellular interactions at a close scale.
- Identify how cell-to-cell contact can influence the local ecology of bacterial populations.

## PLENARY

**081 Microbes in Action! Dynamics of Single Cells to Communities**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 3

*Developed by the Junior Advisory Group***Conveners:**

Elizabeth K. Costello; Stanford Univ. Sch. of Med., Stanford, CA

Ashley L. Shade; Yale Univ., New Haven, CT

**Presentations:**

8:15 a.m.

**Temporal Dynamics of the Human Microbiome: Advances Toward Understanding Our Microbial Selves**

J. Gregory Caporaso; Northern Arizona Univ., Flagstaff, AZ

8:45 a.m.

**Conflict and Death Among the *Pneumococci***

Sarah Cobey; Harvard Univ., Boston, MA

9:15 a.m.

**Methane Cycling by Methanotrophic Bacteria**

Mary E. Lidstrom; Univ. of Washington, Seattle, WA

*Proctor & Gamble Award in Applied and Environmental Microbiology*

9:45 a.m.

**High-resolution Time Series Analysis of Lake Bacterial Metagenomes**

Katherine D. McMahon; Univ. of Wisconsin-Madison, Madison, WI

10:15 a.m.

**Cooperation, Cheating and Collapse in Microbial Populations**

Jeff Gore; MIT, Cambridge, MA

Microorganisms, their communities, their environments, and their interactions change in time. New technologies, such as high-throughput sequencing and high-content screening, allow observation of microbial dynamics at scales previously unattainable. One of the foremost challenges in microbiology is to understand microbial temporal dynamics to the point of prediction, a goal that is within reach. This plenary will explore microbial dynamics across scales from single cells to communities, and will emphasize technologies that provide data-rich context to inform the system's ecology. We plan to spring-board from the topic of ASM 2012 Plenary ("Microbiology in 2012: The Single Cell Perspective"), to discuss these dynamics and their functional implications. We will feature research that use a range of tools for analyzing and synthesizing temporal datasets, and showcase results from an array of environmental habitats and across a breadth of microbial diversity.

Upon completion of this session, participants should be able to:

- Recognize the temporal and genetic scales of microbial dynamics and describe new technologies for observing them.
- Compare patterns of microbial dynamics across a variety of ecosystems.
- Explain various statistical and modeling tools that can be applied to assess microbial dynamics.

## PLENARY

**082 Microbial Nanomachines**

8:15 a.m. – 10:45 a.m.

Location: Mile High Ballroom 1

**Convener:**

Judith Armitage; Univ. of Oxford, Oxford, United Kingdom

**Presentations:**

8:15 a.m.

**Massive Structural Changes Facilitate Bacteriophage Infection**

Jun Liu; Univ. of Texas- Houston Med. Sch., Houston, TX

8:45 a.m.

**AcrAB-TolC, a Broad Specificity Multidrug Efflux System Spanning Two Membranes**

Hiroshi Nikaido; Univ. of California-Berkeley, Berkeley, CA

9:15 a.m.

**RNA Polymerase, the Molecular Machine of Transcription**

Richard Ebright; Rutgers Univ., Piscataway, NJ

9:45 a.m.

***E. coli* Cytokinesis**Piet De Boer; Case Western Reserve Univ. Sch. of Med., Cleveland, OH  
*Division J Lecturer*

10:15 a.m.

**The Bacterial Flagellar Motor: A Dynamic, Labile Rotary Machine****Judith Armitage**; Univ. of Oxford, Oxford, United Kingdom

Bacteria are highly ordered organisms using a range of dynamic protein complexes to drive cellular machinery, ensuring they reach the optimal environment for growth, express and translate the correct proteins in the right copy numbers, and in the right places, replicate and segregate their chromosomes at the right times and ensure each daughter inherits a copy. At the same time bacteria are battling to prevent invasion by phage and to remove toxins, while still importing nutrients. The choreography of these processes and the organization of the macromolecular machines involved is becoming increasingly understood as technologies advance. Advances in *in vivo* single molecule imaging, biophysics and structural approaches mean we can now describe many of the mechanisms driving in great detail and start to develop a vision of the coordinated dynamics of these nano-machines. This session will cover a wide range of cellular processes and highlight the different approaches at the cutting edge of technology taken to understand the ways in which these protein complexes are organized and function. Overall this will provide an overview of bacterial cells as coordinated, ordered organisms.

Upon completion of this session, participants should be able to:

- Discuss different types of molecular machine.
- Recognize novel genetic, biochemical, and structural approaches used to characterize molecular machines.

## SYMPOSIUM

**083 Current Microbiological Perspective from Historical Retrospect**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 601

**Convener:****Colleen S. Kraft**; Emory Univ., Atlanta, GA**Presentations:**

8:15 a.m.

**Eight Decades of Antimicrobial Susceptibility Testing: From Fleming's Ditch to Automation (273-534a-13)****Clyde Thornsberry**; Eurofins Medinet; Nashville, TN

8:45 a.m.

**Anton van Leeuwenhoek and the Birth of Microscopy (273-534b-13)****Robert P. Gaynes**; Emory Univ. Sch. of Med., Atlanta, GA

9:15 a.m.

**Robert Koch's Criteria for Disease Causation: Their Origin and Content (273-534c-13)****Lauren Ross**; Univ. of Pittsburgh, Pittsburgh, PA

9:45 a.m.

**The Founding Members of ASM: Early Bacteriology in an American Medical School Laboratory (273-534d-13)****Powel H. Kazanjian**; Univ. of Michigan Med. Ctr., Ann Arbor, MI

10:15 a.m.

**The History of Blood Cultures Part I: 1659-2013 (273-534e-13)****W. Michael Dunne**; bioMérieux, Inc., Durham, NC

This session is an historical retrospect as it informs our current microbiologic practice. We propose to discuss and propel these "giants on whose shoulders we stand" into our current memory and also give the

audience a perspective on the field of discovery in clinical microbiology. Our speakers have varied backgrounds, including training in clinical microbiology, infectious diseases, and medical history, but have a common thread in regards to their passion for medical history.

Upon completion of this session, participants should be able to:

- Examine the role and perspective that the historical figures had that contributed to our current microbiological knowledge.
- Identify the advances that were made in microbiology in the past that form the basis of our laboratory practices today.

**Course Level:** Beginner

## SYMPOSIUM

**084 Emerging Problems in Diagnosis of Parasitic Disease**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convener:****Julie A. Ribes**; Univ. of Kentucky, Lexington, KY**Presentations:**

8:15 a.m.

**Chagas Disease (*Trypanosoma cruzi*) within the United States (273-535a-13)****Lynne S. Garcia**; LSG & Associates, Santa Monica, CA

8:45 a.m.

**Diagnosis of *Plasmodium knowlesi* Infection (273-535b-13)****John W. Barnwell**; CDC, Atlanta, GA

9:15 a.m.

**Vertical Transmission of *Toxoplasma* (273-535c-13)****Geoff Hide**; Univ. of Salford, Salford, United Kingdom

9:45 a.m.

**Tissue Diagnosis of Parasitic Infections (273-535d-13)****Bobbi S. Pritt**; Mayo Clinic, Rochester, MN

10:15 a.m.

**Detection of Intestinal Helminth and Protozoal Infections in International Adoptees (273-535e-13)****Julie A. Ribes**; Univ. of Kentucky, Lexington, KY

This session will present some of the diagnostic challenges encountered when trying to confirm parasitic infections in at risk patient populations. This session will delve into to how to make the diagnosis of *Trypanosoma cruzi*, *Plasmodium knowlesi*, *Toxoplasma gondii*, and helminth and protozoal infections in specific patient populations. The speakers will address serologic, antigenic, molecular and morphologic testing modalities available to identify patients with parasitic diseases. The speakers will address the epidemiology of each organism covered as well as the populations in which these parasites should be sought.

Upon completion of this session, participants should be able to:

- Delineate the key diagnostic tests required to detect parasitic infections for the organisms presented.
- Discuss the epidemiology of the parasitic diseases presented.
- Determine the patient populations that are at risk for acquiring these infections.

**Course Level:** Intermediate

## SYMPOSIUM



## 085 Impact of Rapid Molecular Diagnostic Tools on Infection Control Practices

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 605

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

### Conveners:

Esther N. Babady; Memorial Sloan-Kettering Cancer Ctr., New York, NY

### Presentations:

8:15 a.m.

#### Rapid Detection and Identification of Blood Stream Pathogens (273-536a-13)

Christine C. Ginocchio; North Shore-LIJ Hlth. System Lab., New Hyde Park, NY

BD Award for Research in Clinical Microbiology and Division C Lecturer

8:45 a.m.

#### Impact of Rapid Detection of Vancomycin Resistant Enterococci (273-536b-13)

Donna Wolk; Geisinger Hlth. System, Danville, PA

9:15 a.m.

#### Impact of Rapid Molecular Respiratory Panels on Infection Control Practices (273-536c-13)

Esther N. Babady; Memorial Sloan-Kettering Cancer Ctr., New York, NY

9:45 a.m.

#### Does Fast Tracking Detection of *M. tuberculosis* Complex Impact Infection Control & Patient Management? (273-536d-13)

Phyllis Della-Latta; Columbia Univ. Med. Ctr., NYP, New York, NY

10:15 a.m.

#### Molecular Assays for Detection of *C. difficile* Infection: Impact on Infection Prevention Programs (273-536e-13)

Raymond H. Widen; Tampa Gen. Hosp., Tampa, FL

The Clinical Microbiology Laboratory plays a crucial role in any hospital Infection Control Program. The type of diagnostic tools used to identify microorganisms with potential for nosocomial outbreak greatly impact infection control practices. New rapid molecular diagnostic assays have not only increased the number of patients identified with various infecting/colonizing agents (i.e. *C. difficile*, Influenza, VRE, MRSA) but also the speed with which these patients are identified. Furthermore, with increased reporting requirement of hospital infection rate from various state agencies, the implementation of these rapid and sensitive molecular assays has even greater reach. The goal of this session will be to provide a discussion on how clinical microbiologists have worked with infection control practitioners to judiciously implement rapid molecular assays. Speakers will be from institutions where these instruments have been in use for at least 6 months so that each talk will include information on how the validation/verification was done, the discussions that took place with Infection Control before implementation (i.e. new testing/reporting algorithm, critical value calls), and the impact once the assay was put in place (i.e. discussion of various outcomes including before and after rates, isolation days, hospital savings, etc).

Upon completion of this session, participants should be able to:

- Describe the various rapid molecular tests available for detection of health-care associated infection.
- Discuss impact of rapid molecular tests on infection control practices such as patient isolation.
- Discuss impact of rapid molecular tests on hospital infection rates.

Course Level: Intermediate

## SYMPOSIUM



## 086 Point-of-Care Infectious Disease Testing: Should the Microbiologist Be Involved?

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

### Conveners:

Barbara Robinson-Dunn; Beaumont Hlth. System, Royal Oak, MI  
Robert L. Sautter; Carolinas Pathology Group, Charlotte, NC

### Presentations:

8:15 a.m.

#### Regulatory and Accrediting Agency Requirements for Waived Testing and Provider-performed Microscopy (273-537a-13)

Brad S. Karon; Mayo Clinic, Rochester, MN

8:45 a.m.

#### Managing a Point-of-Care Program, Dealing with Challenges (273-537b-13)

Robert L. Sautter; Carolinas Pathology Group, Charlotte, NC

9:15 a.m.

#### Point-of-Care Testing for Infectious Diseases: Where Are We in 2013? (273-537c-13)

Sheldon Campbell; Yale Univ. Sch. of Med., West Haven, CT

9:45 a.m.

#### Will there be Waived Molecular Tests in the Future for Microbiology POC Testing? (273-537d-13)

Gerri S. Hall; Cleveland Clinic, Cleveland, OH

10:15 a.m.

#### What is the Future for POC Testing? As Clinical Microbiologists, Will We Be Involved in Decision Making? (273-537e-13)

Barbara Robinson-Dunn; Beaumont Hlth. System, Royal Oak, MI

The Institute of Medicine has shown that laboratory diagnostics affect 60-70% of treatment decisions. Changes in federal regulations have promoted laboratory testing at the site of patient care leading to the rise in Point of Care Test departments. POC tests should be a supplement to central laboratory services-not a replacement for such tests. Much of the POC testing is for infectious agents. These test results often determine the immediate therapeutic interventions that will be undertaken, yet, the tests are usually performed by non-laboratorians with little ability to "trouble-shoot a problem" result or even determine if a specimen is appropriate or sufficient for testing. A multidisciplinary approach to POC testing is necessary for a successful program. This should include clinical laboratory scientists with oversight for each scientific discipline of testing and the ability to limit over-utilization of unnecessary POC testing. As clinical microbiologists, everything possible should be done to ensure that quality results are achieved by POC testing.



Upon completion of this session, participants should be able to:

- List the regulatory requirements for waived and PPM testing.
- Discuss factors necessary for running a POC program for infectious disease testing.
- Develop an awareness for POC tests that are currently available and those that might become available in the future.

**Course Level:** Intermediate

## POSTER SESSIONS

**087 – 111 Poster Sessions see pages 137 – 154**  
**231 Late Breaker Poster Session see page 154**

10:45 a.m. – 12:30 p.m.

**Location:** Exhibit Hall A

## AWARD LECTURE

**112 Maurice Hilleman/Merck Award Lecture**

11:00 a.m. – 12:00 p.m.

**Location:** Four Seasons Ballroom 1

**Perspectives on the Early History of Conjugate Vaccines**

Emil Gotschlich; The Rockefeller Univ., New York, NY

## DIVISION BUSINESS MEETINGS

**Division Q Business Meeting**

11:00 a.m. – 12:00 p.m.

**Location:** Meeting Room 203

**Division Y Business Meeting**

11:00 a.m. – 12:00 p.m.

**Location:** Meeting Room 205

**Division Z Business Meeting**

11:00 a.m. – 12:00 p.m.

**Location:** Meeting Room 207

## STATE OF THE SOCIETY ADDRESS

12:15 p.m. – 1:00 p.m.

**Location:** Mile High Ballroom 3

**Presentation:**

Jeff F. Miller; Univ. of California-Los Angeles, Los Angeles, CA

## PRESIDENT'S FORUM

**113 Curiosity-driven Basic Research: Laying the Foundation for Discoveries and Application of the Future**

1:00 p.m. – 2:00 p.m.

**Location:** Mile High Ballroom 3

**Convener:**

Jeff F. Miller; Univ. of California-Los Angeles, Los Angeles, CA  
 President, American Society for Microbiology

**Presentations:**



**21st Century Biomedical Research and Education**

Keith R. Yamamoto; Univ. of California, San Francisco, San Francisco, CA



**Discovering the Mechanisms Underlying Host-Microbe Interactions: Exploiting Nature's Toolkit**

Margaret McFall-Ngai; Univ. of Wisconsin-Madison, Madison, WI

**114 – 137 Poster Sessions see pages 155 – 172**

1:00 p.m. – 2:45 p.m.

**Location:** Exhibit Hall A

## DIVISION BUSINESS MEETINGS

**Division U Business Meeting**

2:00 p.m. – 2:30 p.m.

**Location:** Meeting Room 401

## SYMPOSIUM



**138 Clinical Microbiology Lab Result Reporting... and I Thought Getting the Right Answer was the Hard Part!**

3:00 p.m. – 5:30 p.m.

**Location:** Meeting Room 705

**Conveners:**

David W. Craft; Penn State Milton Hershey Med. Ctr. & Coll. of Med., Hershey, PA

Susan Sharp; Kaiser Permanente-Northwest, Portland, OR

**Presentations:**

3:00 p.m.

**Effective Reporting in Bacteriology: A Culture of Complexity, Conflict and Compromise (273-538a-13)**

Susan Sharp; Kaiser Permanente-Northwest, Portland, OR

3:30 p.m.

**Impact of Confounding AST Results: Are You Resistant to Susceptibility?** (273-538b-13)

Stephen Jenkins; New York-Presbyterian Hosp./Weill Cornell Med. Ctr., New York, NY

4:00 p.m.

**Peaks and Valleys: Exploring Clinically-relevant MALDI-TOF and Molecular Reporting** (273-538c-13)

Melissa Miller; UNC Sch. of Med., Chapel Hill, NC

4:30 p.m.

**Getting the Right Answer is Hard too: Specimens and Work-ups that Broke the Rules** (273-538d-13)

David W. Craft; Penn State Milton Hershey Med. Ctr. and Coll. of Med., Hershey, PA

5:00 p.m.

**Challenges in Serologic Test Reporting** (273-538e-13)

John L. Schmitz; Univ. of North Carolina, Chapel Hill, NC

The clinical microbiology and immunology laboratory is continually challenged to report clinically relevant data for patient management, infection control and public health purposes. This session is designed to assist the clinical laboratory scientist in developing clinically appropriate test result reporting strategies for complex and potentially conflicting data in the setting of increased complexity of patient populations, emerging infectious and multi-drug resistant disease, and bioinformatics of new technologies yielding data of unknown clinical significance. Examples include cultures that do not match initial smear reports, observation of commensal flora in clinically significant specimens or quantities, confounding susceptibility test data and additional immunology test results. In addition, maturing technologies such as multiplexed nucleic acid amplification, multiplexed serological assays and MALDI-TOF and sequencing data now yield increasing information of unknown clinical significance. Discussion and solutions will consider standards of clinical laboratory practices in bacteriology, antimicrobial susceptibility, virology, molecular and multiplexed microbiology, and immunology, with implications for cost efficient testing and reporting algorithms. This topic is very timely as health care continues to become more integrated, centralized and preventative, increasing the emphasis on integrated team solutions, effective communication and cost efficient testing strategies in support of infectious disease diagnosis.

- Using case-related clinical data, recommend the appropriate laboratory procedures and protocols.
- Review the work-up and data generated from the microbiology laboratory and determine how to best report the results to the clinician.
- Review potentially conflicting laboratory data and respond to a clinician's request for clinical implication or therapeutic interpretation.

Course Level: Intermediate

**SYMPOSIUM****139 Discoveries in Symbiosis in the "omics" Age**

3:00 p.m. – 5:30 p.m.

Location: Four Seasons Ballroom 1

**Convener:**

Ute Hentschel Humeida; Univ. of Würzburg, Würzburg, Germany

**Presentations:**

3:00 p.m.

**Evolution and Function of Eukaryotic-like Proteins in Bacterial Sponge Symbionts**

Torsten Thomas; The Univ. of New South Wales, Sydney, Australia

3:30 p.m.

**Novel Metabolic Pathway for the Massive Assimilation of Host Waste Products into Carbon Storage by the Chemolithoautotrophic Symbiont of a Gutless Marine Worm**Manuel Kleiner<sup>1</sup>, M. Liebeke<sup>2</sup>, C. Wentrup<sup>1</sup>, J. Zarzycki<sup>3</sup>, P. Kiefer<sup>4</sup>, J. Vorholt<sup>1</sup>, N. Dubilier<sup>1</sup>; <sup>1</sup>Max Planck Inst. for Marine Microbiology, Bremen, Germany, <sup>2</sup>Imperial Coll. London, London, United Kingdom, <sup>3</sup>Dept. of Energy Joint Genome Inst., Walnut Creek, CA, <sup>4</sup>ETHZ, Zürich, Switzerland

3:45 p.m.

**Global Discovery of *Vibrio fischeri* Colonization Factors**J. F. Brooks<sup>1</sup>, M. C. Gyllborg<sup>1</sup>, D. C. Cronin, III<sup>1</sup>, A. L. Goodman<sup>2</sup>, Mark J. Mandel<sup>1</sup>; <sup>1</sup>Northwestern Univ., Chicago, IL, <sup>2</sup>Yale Univ., New Haven, CT

4:00 p.m.

**Using omics to Understand Interactions with Beneficial Bacteria in the Model Squid Host *Euprymna scolopes***

Spencer V. Nyholm; Univ. of Connecticut, Storrs, CT

4:30 p.m.

**Proteomic Profiling Of Proteins Associated With Symbiotic Conditions In *Mesorhizobium loti***

Yohei Tatsukami, M. Nambu, K. Matsui, W. Aoki, H. Morisaka, K. Kuroda, M. Ueda; Kyoto Univ., Kyoto, Japan

4:45 p.m.

**A Metagenomic Reference Provides Insights into the Functional Configuration of the Gut Ecosystem of the Malaria Mosquito *Anopheles gambiae***Jiannong Xu<sup>1</sup>, P. Kukutla<sup>1</sup>, H. Jiang<sup>2</sup>, M. Steritz<sup>1</sup>, W. Yu<sup>1</sup>, J. Jiang<sup>1</sup>, C. Alvarez<sup>1</sup>, C. Alvarez<sup>1</sup>, T. M. Gilbreath<sup>3</sup>, G. Yan<sup>3</sup>; <sup>1</sup>New Mexico State University, Las Cruces, NM, <sup>2</sup>Northwestern Univ., Evanston, IL, <sup>3</sup>Univ. of California Irvine, Irvine, CA

5:00 p.m.

**Genomic and Functional Variation among Ant Endosymbionts**

Jennifer Wernegreen; Duke Univ., Durham, NC

Symbiosis research has seen a revolution in recent years that is powered by next generation sequencing technologies as well as an experimental platform collectively referred to as "omics". The term "omics" (referring mainly to genomics, transcriptomics, proteomics, and metabolomics) allowed for many exciting discoveries in symbiosis research, ranging from the recognition to entirely novel metabolic pathways to processes of genome reduction as evolutionary adaptations to a symbiotic lifestyle. Omics technologies have been of huge importance for symbiosis research because they are independent of some unresolved issues in the field, such as the resistance of many symbionts to cultivation, the frequent lack of tractable laboratory assays and the inherent difficulties of studying animals from remote environments. With the application of omics, it has become possible to generate sequence data regardless of the environment and type of animal and it thus allows for truly comparative approach. This symposium will focus on recent and exciting discoveries in animal symbioses that were achieved by implementation of "omics" technologies.

Upon completion of this session, participants should be able to:

- Recognize the wide spectrum of symbiosis models.
- Describe how omics methodologies advance our understanding of microbe-host interactions.
- Discuss the state of the art, cutting-edge symbiosis research.

## SYMPOSIUM

### 140 Eating Right: How Metabolism Steers Infection

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 207

#### Conveners:

Sabine Ehrh; Weill Cornell Med. Coll., New York City, NY

John-Demian Sauer; Univ. of Wisconsin-Madison, Madison, WI

#### Presentations:

3:00 p.m.

#### Cross-regulation of Metabolism and Virulence in *L. monocytogenes*

Anat A. Herskovits; Tel Aviv Univ., Tel Aviv, Israel

3:30 p.m.

#### Probing Cellular Metabolic Enzymes for Their Effect on HSV-1 Identifies Pyrimidine Biosynthesis as a Limiting Step in Viral Replication

Sarah L. Grady, J. G. Purdy, J. D. Rabinowitz, T. E. Shenk; Princeton Univ., Princeton, NJ

3:45 p.m.

#### Antibiotic-mediated Shifts in the Gut Microbiome and Metabolome Leads to Susceptibility to *Clostridium difficile* infection

Casey M. Theriot, G. Hatton, A. Nelson, M. Koenigsnecht, B. Li, J. Li, G. Huffnagle, V. Young; The Univ. of Michigan, Ann Arbor, MI

4:00 p.m.

#### Eating and Breathing Habits of the *Tubercle bacillus*: At Home in the Phagosome

Kyu Rhee; Weill Cornell Med. Coll., New York City, NY

4:30 p.m.

#### Role of the Iron-Sulfur Cluster-Containing Transcription Factor IscR in Control of *Yersinia pseudotuberculosis* Metabolism and Virulence

H. K. Miller, L. Kwuan, P. P. Chan, T. M. Lowe, Victoria Auerbuch; UC Santa Cruz, Santa Cruz, CA

4:45 p.m.

#### Metabolic Flexibility and *E. coli* Adaptation to the Host Microenvironment during UTI

Christopher J. Alteri, S. D. Himpsl, H. L. T. Mobley; Univ. of Michigan Med. Sch., Ann Arbor, MI

5:00 p.m.

#### Hijacking of Host Cell Metabolism by Human Cytomegalovirus

Joshua Rabinowitz; Princeton Univ., Princeton, NJ

As Stanley Falkow often says, “the goal of every bacterium is to become bacteria”. This central tenant of biology, the ability to reproduce oneself, is largely governed by nutrient availability and metabolic adaptation. The competition for limited resources drives the evolution of host pathogen interactions, yet understanding the role of metabolic pathways in both the host and the pathogen has often been an overlooked aspect of infectious disease research. In this session we will learn about the role that metabolism has played in shaping the

evolution of host pathogen interactions. We will discuss how pathogens utilize the resources available in their unique environments, how this utilization of resources separates pathogens and non-pathogens and how metabolism impacts on pathogenesis. We will also learn about new tools and approaches to probe metabolic function during infections.

Upon completion of this session, participants should be able to:

- Discuss novel methods for evaluating metabolic function during infection.
- Describe metabolic adaptations that allow pathogens to establish and maintain infection.
- Propose novel therapeutic targets using an understanding of pathogen and host metabolism.

## SYMPOSIUM

### 141 Eavesdropping on Microbial Conversations: Deciphering New Meaning from Small Molecule Signaling

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 401

#### Conveners:

Joshua Woodward; Univ. of Washington, Seattle, WA

#### Presentations:

3:00 p.m.

#### c-di-AMP Signaling in *Staphylococcus aureus*

Angelika Gründling; Imperial Coll.- London, London, United Kingdom

3:30 p.m.

#### (p)ppGpp-mediated *ctrA* Transcription Integrates Lipid Biosynthesis with Bacterial Cell Cycle Progression

Shannon M. Wood<sup>1</sup>, K. V. Stott<sup>1</sup>, J. A. Blair<sup>2</sup>, B. T. Nguyen<sup>1</sup>, A. Herrera<sup>1</sup>, Y. P. Mora<sup>1</sup>, M. P. Cuajungco<sup>3,4</sup>, S. R. Murray<sup>1</sup>; <sup>1</sup>California State Univ. Northridge, Northridge, CA, <sup>2</sup>Williams Coll., Williamstown, MA, <sup>3</sup>California State Univ. Fullerton, Fullerton, CA, <sup>4</sup>Mental Hlth. Res. Inst., Parkville, Australia

3:45 p.m.

#### Mass Spectral Networking Reveals Broad Reorganization of the *Streptomyces coelicolor* Secreted Metabolome during Interspecies Interactions

Matthew F. Traxler<sup>1</sup>, J. D. Watrous<sup>2</sup>, T. Alexandrov<sup>3</sup>, P. C. Dorrestein<sup>2</sup>, R. Kolter<sup>1</sup>; <sup>1</sup>Harvard Med. Sch., Boston, MA, <sup>2</sup>Univ. of California at San Diego, La Jolla, CA, <sup>3</sup>Ctr. for Industrial Mathematics, Bremen, Germany

4:00 p.m.

#### From Prokaryote to Eukaryote Sessility: Cyclic-di-GMP Triggers Stalk Formation in *Dictyostelia*

Pauline Schaap; Univ. of Dundee, Dundee, United Kingdom

4:30 p.m.

#### Quorum sensing in *B. pseudomallei*, *B. thailandensis*, and *B. mallei*

Charlotte D. Majerczyk<sup>1</sup>, M. Brittnacher<sup>1</sup>, M. Jacobs<sup>1</sup>, C. Armour<sup>2</sup>, M. Radey<sup>1</sup>, S. Phattarasakul<sup>1</sup>, R. Bunt<sup>3</sup>, E. P. Greenberg<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>NuGEN, San Carlos, CA, <sup>3</sup>Middlebury Coll., Middlebury, VT

4:45 p.m.

#### The Vc2 Cyclic di-GMP Binding Riboswitch in *Vibrio cholerae* Controls the Stability of a Small RNA

Christopher M. Waters, B. R. Pursley; Michigan State Univ., East Lansing, MI

5:00 p.m.

**Cooperation, Conflict and the Evolution of Virulence in *Staphylococcus aureus* Populations****Stephen P. Diggle**; Univ. of Nottingham, Nottingham, United Kingdom

Small molecules represent a universal and diverse form of communication among living organisms, with ions, nucleotides, and peptides employed in this functional role. Rapid metabolism and diffusion of this class of molecule makes them particularly well suited as intracellular second messengers and extracellular communication signals. In recent years a surge in the discovery and characterization of small molecules with signaling function has uncovered many new surprises with the identification of novel signaling molecules, the use of old signaling molecules in new organisms, and a new appreciation for the consequences of altered signaling in controlling individual and group behavior. This symposium will introduce attendees to the broad field of small molecule signaling and highlight recent findings in the molecular, cellular, and social functions of these signals.

Upon completion of this session, participants should be able to:

- Define the molecular and physiological roles of intracellular and extracellular small molecule signaling.
- Describe novel mechanisms of small molecule signaling in the control of microbial physiology and coordinated behavior.
- Examine the mechanisms and consequences of altered small molecule signaling on microbial interaction and social evolution.

**SYMPOSIUM****142 Globe Trotting: Laboratory-based Surveillance for Infectious Diseases**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convener:****S. Arunmozhi Balajee**; CDC, Atlanta, GA**Presentations:**

3:00 p.m.

**Point of Care Tests: Hope or Hype?** (273-539a-13)**S. Arunmozhi Balajee**; CDC, Atlanta, GA

3:30 p.m.

**Multiplex PCR Based Methods for Severe Acute Respiratory Illness Surveillance: Interpretations and Challenges for a Global Laboratory Network** (273-539b-13)**Toni Whistler**; Thailand MOPH-U.S. CDC Collaboration, Bangkok, Thailand

4:00 p.m.

**Population Based Surveillance in Kenya** (273-539c-13)**Joel M. Montgomery**; CDC Kenya, Nairobi, Kenya

4:30 p.m.

**The Evolution of Healthcare Associated Pathogens: Is it Local, Global, or Both?** (273-539d-13)**Fred Tenover**; Cepheid, Sunnyvale, CA

Division L Lecturer

5:00 p.m.

**A National Laboratory Enhanced Surveillance that Works: The South African GERMS Experience** (273-539e-13)**Vanessa Quan**; Natl. Inst. for Communicable Dis., Johannesburg, South Africa

This unique session will focus on the significance of laboratory in the surveillance for infectious diseases in global settings. Public health laboratories can often play a pivotal role in surveillance either by ruling in or out infectious diseases. Often times, the role of the laboratories are overlooked and syndromic surveillance may be performed. Outbreaks of infectious diseases in global settings are a serious concern and may not be detected or confirmed in a timely fashion because of the lack of proper diagnostics. Added to this, novel diagnostic methods are available for rapid, multiplex or more accurate detection of several emerging diseases. Yet, there is very limited understanding of the utility of such tools in surveillance settings. This session will present five different but interrelated topics on laboratory enhanced surveillance and outbreak detection. The session will have five speakers who will explore the utility of novel diagnostics and/or laboratories to enhance surveillance and or outbreak detection in global settings.

Upon completion of this session, participants should be able to:

- Recognize surveillance for infectious diseases in global settings.
- Recognize the central role of laboratory in public health surveillance.
- Discuss the role of new and emerging testing platforms for disease detection.

**Course Level:** Intermediate**SYMPOSIUM****143 The Great Wall of Bacterial Peptidoglycan and its Impact on the Bug and the Host**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 405

**Convener:****Miriam Braunstein**; Univ. of North Carolina, Chapel Hill, NC**Presentations:**

3:00 p.m.

**Control of Peptidoglycan Synthesis and Remodeling at the Bacterial Cytokinetic Ring****Thomas Bernhardt**; Harvard Univ. Med. Sch., Boston, MA

3:30 p.m.

***Mycobacterium tuberculosis* Peptidoglycan Crosslinking Analysis by Solution NMR**

**Fabio L. Fontes**<sup>1,2</sup>, R. Hitchings<sup>1</sup>, S. Mahapatra<sup>1</sup>, M. S. Pavelka, Jr.<sup>3</sup>, D. C. Crans<sup>2</sup>, D. C. Crick<sup>1</sup>; <sup>1</sup>Colorado State Univ., Dept. of Microbiol., Immunology and Pathology, Fort Collins, CO, <sup>2</sup>Colorado State Univ., Dept. of Chemistry, Fort Collins, CO, <sup>3</sup>Univ. of Rochester Med. Ctr., Sch. of Med. and Dentistry, Rochester, NY

3:45 p.m.

**Structure-function Analysis of MurJ****Natividad Ruiz**; The Ohio State Univ., Columbus, OH

4:00 p.m.

**Peptidoglycan and Pathogenesis: Novel PG-modifying Enzymes and their Impact on Cell Shape and Virulence-associated Properties****Erin C. Gaynor**; Univ. of British Columbia, Vancouver, BC, Canada

4:30 p.m.

**From Cell Wall Structure to Morphogenesis****Carolina Tropini**, T. Lee, K. C. Huang; Stanford Univ., Stanford, CA

4:45 p.m.

**Peptidoglycan Fragment Release from *Neisseria meningitidis***

Katelynn L. Woodhams, J. Chan, K. T. Hackett, J. P. Dillard; Univ. of Wisconsin-Madison, Madison, WI

5:00 p.m.

**When Virulence Factors are not Virulence Factors: Peptidoglycan Monomer as a Bacterial Signal in Beneficial Symbioses**

Edward Ruby; Univ. of Wisconsin-Madison, Madison, WI

While the structural composition of peptidoglycan has been known for some time, our understanding of peptidoglycan turnover and remodeling remains incomplete. Peptidoglycan is also more than just a structural component of bacteria. Peptidoglycan fragments can act as signaling molecules that trigger bacterial or host events. Peptidoglycan is also the target of several antibiotics and a better understanding of peptidoglycan biology may help to reveal additional therapeutic options for bacterial pathogens. Recent discoveries about peptidoglycan in a diverse collection of bacteria will be discussed.

Upon completion of this session, participants should be able to:

- Describe the composition of peptidoglycan.
- Describe how peptidoglycan is regulated and modified by bacteria.
- Discuss how bacterial peptidoglycan can impact the host.

## SYMPOSIUM

**144 It Starts with a Cough: The Many Paths to Pneumonia**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 205

**Conveners:**

Wyndham W. Lathem; Northwestern Univ., Chicago, IL

Stacey Schultz-Cherry; St. Jude Children's Res. Hosp., Memphis, TN

**Presentations:**

3:00 p.m.

**Role of beta6 Integrin in Modulating Viral and Bacterial Pulmonary Edema and Pathogenesis**

Stacey Schultz-Cherry; St. Jude Children's Res. Hosp., Memphis, TN

3:30 p.m.

**Respiratory Microbiome Associated with Severe Respiratory syncytial virus (RSV) Infection**

Milena Pitashny, E. Hollister, R. Luna, E. Kim, P. Revell, J. Versalovic; Baylor Coll. of Med., Houston, TX

3:45 p.m.

***Bordetella pertussis* Infection but Not Vaccination Induces Th17 and Th1 Memory Cells and Provides Sterilizing Immunity in a Nonhuman Primate Model**

Jason M. Warfel, T. J. Merkel; Food and Drug Admin., CBER, Bethesda, MD

4:00 p.m.

**How Selection in Environmental Reservoirs Drives Virulence in a Lung Pathogen**Ralph R. Isberg; Tufts Univ. Sch. of Med., Boston, MA  
Division D Lecturer

4:30 p.m.

**Proteolytic Disruption of Fas Signaling and Caspase-3 Activation during Pneumonic Plague**

A. J. Caulfield, Wyndham W. Lathem; Northwestern Univ., Chicago, IL

4:45 p.m.

**Transmission of *Streptococcus pneumoniae* during Influenza A Co-infection in Infant Mice is Precipitated by the Innate Immune Response**

Aimee L. Richard, J. N. Weiser; Univ. of Pennsylvania, Philadelphia, PA

5:00 p.m.

**Molecular Mimicry and Histoplasma Pathogenesis**

William E. Goldman; The Univ. of North Carolina, Chapel Hill, NC

This symposium will focus on the conserved and diverse mechanisms by which respiratory pathogens are successful in causing disease in the pulmonary compartment. There exist a wide variety of bacteria, viruses, and fungi that are able to cause debilitating, often fatal infections that result primarily from the onset of pneumonia. Among the more well known pathogens that infect the lungs, influenza (virus), *Histoplasma capsulatum* (fungus), and *Legionella pneumophila* (bacterium) are all major causes of morbidity and mortality in humans, but the mechanisms by which they do so are distinct and diverse. In this session, speakers will discuss recent advances in understanding how these and other infectious agents are able to infect and thrive in an otherwise hostile host environment. Specific topics will include both the virulence determinants that respiratory pathogens employ to cause disease and the inflammatory responses to infection, with a discussion of why the host is often not successful in clearing the infection.

Upon completion of this session, participants should be able to:

- Review the diversity of mechanisms by which respiratory pathogens cause pneumonia.
- Explain the nature and impact of the host response to pulmonary infections.
- Apply new advances in the study of microbiology and the host-pathogen interaction to their own research.

## SYMPOSIUM

**145 Learning to Love Gram Positive Rods (GPRs): An Update on *Corynebacterium*, Coryneforms and other Pathogenic, Gram Positive Bacilli**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Convener:**

Kathryn A. Bernard; Publ. Hlth. Agency of Canada, Winnipeg, Canada

**Presentations:**

3:00 p.m.

**Clinical Relevance, Methods and an Overview of the Genus *Corynebacterium* (273-540a-13)**

Kathryn A. Bernard; Publ. Hlth. Agency of Canada, Winnipeg, Canada

3:30 p.m.

**Diphtheria: Ancient Scourge with Emerging Challenges (273-540b-13)**

Androulla Efstratiou; Hlth. Protection Agency Ctr. for Infections, London, United Kingdom

4:00 p.m.

**Medically Relevant Coryneforms (273-540c-13)**

Guido Funke; Gaertner &amp; Colleagues Labs, Ravensburg, Germany



4:30 p.m.

**Medically Relevant, Anaerobic and Microaerophilic, Gram Positive Rods (273-540d-13)**

Valerie Hall; Univ. Hosp. of Wales, Cardiff, United Kingdom

5:00 p.m.

**The Use of MALDI TOF Technologies for the Identification of Gram Positive Rods (273-540e-13)**

Robin Patel; Mayo Clinic, Rochester, MN

*Corynebacterium* species and a wide variety of other Gram Positive Rods (GPRs) may be encountered as contaminants but also recovered as opportunistic pathogens in the clinical microbiology laboratory. This session will initially review when it is appropriate to provide identification of the bacterium to genus and species and when to perform antimicrobial susceptibility testing (AST), describe usual specimen types and a variety of phenotypic, genetic and AST methods commonly used to characterize otherwise these difficult to identify bacteria. Speakers will provide state of the art overviews of diseases and features for a wide variety of GPRs. These will begin with an overview of medically important *Corynebacterium* species, an in-depth discussion of *Corynebacterium diphtheriae* and emerging diseases attributed to other diphtheria toxin-producing species, followed by reviews of medically-relevant, aerobic, Coryneform-like GPRs and of anaerobic or microaerophilic (Actinomyces type) GPRs. The session will conclude with a review of the usefulness of MALDI TOF identification approaches for all taxa highlighted in this session.

Upon completion of this session, participants should be able to:

- Examine clinical situations where identification of GPRs to genus and species and performing AST for these opportunistic pathogens, is appropriate.
- Describe which genera and species are more frequently encountered in the laboratory, what emerging clinical issues associated with diphtheria toxin producing species have been identified, and status of antimicrobial susceptibility trends.
- Identify the strengths and weaknesses associated with commonly-used identification methods for GPRs.

**Course Level:** Intermediate

**SYMPOSIUM****146 Macromolecular Assemblies in Bacteria**

3:00 p.m. – 5:30 p.m.

Location: Mile High Ballroom 4

**Convener:**

William D. Picking; Oklahoma State Univ., Stillwater, OK

**Presentations:**

3:00 p.m.

**Molecular Snapshots of Pilus Biogenesis and UTI Pathogenesis: Blueprints for Therapeutics**Scott J. Hultgren; Washington Univ. Sch. of Med., St. Louis, MO  
Division B Lecturer

3:30 p.m.

**Functional Characterization of a Predicted Bacterial Microcompartment in the Planctomycetes**Onur Erbilgin<sup>1</sup>, K. L. McDonald<sup>1</sup>, L. R. Comolli<sup>2</sup>, S. Bernstein<sup>3</sup>, C. A. Kerfeld<sup>1,3</sup>; <sup>1</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Joint Genome Inst., Walnut Creek, CA

3:45 p.m.

**Mass Spectrometry Suggests that the Flagellar Hook Proteins of the Spirochetes *Borrelia burgdorferi* and *Treponema denticola* are Covalently Cross-linked**Kelly Ann Miller<sup>1</sup>, M. R. Miller<sup>1</sup>, M. James<sup>1</sup>, J. M. Hettick<sup>2</sup>, M. Motaleb<sup>3</sup>, N. W. Charon<sup>1</sup>; <sup>1</sup>WVU, Morgantown, WV, <sup>2</sup>NIOSH, Morgantown, WV, <sup>3</sup>ECU, Greenville, NC

4:00 p.m.

**Structure and Switching Mechanism of the Bacterial Flagellar Motor Switch Complex**

Lawrence Lee; Victor Chang Cardiac Res. Inst., New South Wales, Australia

4:30 p.m.

**The Structural and Immunological Basis for Using Adhesin-Pilin Fusion Proteins as Enterotoxigenic *E. coli* Subunit Vaccine Components**Yang Liu<sup>1</sup>, M. Maciel, Jr.<sup>1</sup>, S. Poole<sup>1</sup>, D. Xia<sup>2</sup>, S. J. Savarino<sup>1,3</sup>; <sup>1</sup>Naval Med. Res. Ctr., Silver Spring, MD, <sup>2</sup>Natl. Cancer Inst., Bethesda, MD, <sup>3</sup>Dept. of Pediatrics, Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD

4:45 p.m.

**Minor Pilin FimU Controls *Pseudomonas aeruginosa* Type IV Pilus Extension/Retraction Dynamics Independently of Other Minor Components**

Ylan Nguyen, S. Sugiman-Marangos, S. Bell, H. Harvey, C. L. Giltner, M. S. Junop, L. L. Burrows; McMaster Univ., Hamilton, ON, Canada

5:00 p.m.

**Building the Tip of the Type III Secretion System Needle on *Shigella flexneri*: IpaD First**

Esther Bullitt; Boston Univ. Sch. of Med., Boston, MA

Macromolecular assemblies have evolved to carry out critical bacterial functions including motility, responding to the environment, interacting with surfaces/host cells and delivering cargo to other cells. The complexity of these assemblies also have a tremendous range. This scientific session will introduce different bacterial macromolecular assemblies and the methods used to determine their composition, structure and functions. High resolution imaging techniques, molecular genetics and a variety of biophysical and biochemical methods have been used to provide a level of understanding of these structures that has not existed previously. In particular, the investigators presenting in this session will provide updates on what is known about the assembly, structure and function of surface organelles that have important roles in bacterial responses to environmental conditions and pathogenesis. Emphasis will be on bacterial fimbrial, flagellar and secretion systems.

Upon completion of this session, participants should be able to:

- Express the complexities of the macromolecular assemblies used by bacteria to interact with the environment.
- Describe the role of protein structure and protein-protein interactions in the assembly of bacterial macromolecular assemblies.
- Describe the role of protein structural dynamics in the function of bacterial macromolecular assemblies.

## SYMPOSIUM

**147 Metagenomic Approaches in Agriculture and Food Production**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 109

**Conveners:**

Francisco Diez-Gonzalez; Univ. of Minnesota, St. Paul, MN

Ryan C. Fink; Univ. of Minnesota, St. Paul, MN

**Presentations:**

3:00 p.m.

**Applications of High-throughput Microbiota and Metagenome Analyses in the Pre- and Post-harvest Environments**

Andrew Benson; Univ. of Nebraska, Lincoln, NE

3:30 p.m.

**The Merlot Microbiome: A Multi 'Omic Approach**Iratxe Zarraonaindia<sup>1,2</sup>, S. M. Owens<sup>1</sup>, S. M. Gibbons<sup>1,3</sup>, J. T. Hampton-Marcell<sup>1</sup>, K. West<sup>4</sup>, S. Ghimire<sup>5</sup>, G. Martin<sup>6</sup>, S. Taghavi<sup>4</sup>, D. van der Lelie<sup>4</sup>, J. A. Gilbert<sup>1,7</sup>; <sup>1</sup>Argonne Natl. Lab., Lemont, IL, <sup>2</sup>Ikerbasque, Basque Fndn. for Sci., Bilbao, Spain, <sup>3</sup>Graduate Program in Biophysical Sci., University of Chicago, IL, <sup>4</sup>RTI Intl., Res. Triangle Park, NC, <sup>5</sup>RTI Intl., Research Triangle Park, NC, <sup>6</sup>Sparkling Pointe, Southold, NY, <sup>7</sup>Dept. of Ecology and Evolution, Univ. of Chicago, Chicago, IL

3:45 p.m.

**A Simulated Metagenomic Approach for Bacterial Serotyping Using Shotgun Genome Sequences Coupled with O-Antigen Gene Cluster Analysis**Xianghe Yan<sup>1</sup>, C-Y. Chen<sup>1</sup>, J. Hu<sup>2</sup>, P. M. Fratamico<sup>1</sup>; <sup>1</sup>USDA, Wyndmoor, PA, <sup>2</sup>Franklin & Marshall Coll., Lancaster, PA

4:00 p.m.

**Genomic Approaches for Investigating the Evolution of Viral Populations of the Rumen and Implications for Antibiotic Resistance**

Bryan White; Univ. of Illinois at Urbana-Champaign, Urbana-Champaign, IL

4:30 p.m.

**VIROME: Expanded Functionality for Comparative Analysis of Viral Metagenomes**

Shawn W. Polson, D. J. Nasko, J. D. Bhavsar, K. Wommack; Univ. of Delaware, Newark, DE

4:45 p.m.

**Testing the Generalizability of Host Plant-driven Selection on Soil Microbial Communities**Matthew G. Bakker<sup>1</sup>, D. K. Manter<sup>2</sup>, J. M. Vivanco<sup>1</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>United States Dept. of Agriculture, Fort Collins, CO

5:00 p.m.

**Metagenomic Approaches to Food Safety Research at the Center for Food Safety and Applied Nutrition, FDA**

Andrea Ottesen; FDA-(CFSAN), College Park, MD

This session covers some of the most promising applications of metagenomics for the purpose of understanding natural bacterial populations in food production and their role in the pre-harvest ecology and food processing. One initial introductory talk will provide a general overview of metagenomics applications at different stages of the food supply. A second presentation will illustrate the complex viral communities in the gastrointestinal tract of cattle with relevance for antibiotic resistance transmission. A third speaker will present a variety of utilization of metagenomic approaches to address issues from the environment associated with fresh produce production to a better understanding on the population dynamics of bacterial enrichments.

Upon completion of this session, participants should be able to:

- Describe the impact of metagenomics.
- Recognize the diversity of applications of metagenomics in food and agriculture.
- Explain the complex microbial and viral communities in diverse environments.

## SYMPOSIUM

**148 Microbiology's Next Top Model: Predicting the Future with Math and Microbes**

3:00 p.m. – 5:30 p.m.

Location: Four Seasons Ballroom 4

**Conveners:**

Jack Gilbert; Argonne Natl. Lab., Chicago, IL

**Presentations:**

3:00 p.m.

**The Dawn of Virtual Cell Biology**

Saeed Tavazoie; Columbia Univ., New York, NY

3:30 p.m.

**Identification of Functional Differences in Cyanobacterial Metabolic Networks using Constraint-based Models**

Joshua J. Hamilton, J. L. Reed; Univ. of Wisconsin-Madison, Madison, WI

3:45 p.m.

**Growth Rate Optimization as a Unifying And Computable Objective for Understanding Whole-cell Microbial Growth Physiology**Edward J. OBrien<sup>1</sup>, J. A. Lerman<sup>1</sup>, R. L. Chang<sup>2</sup>, D. R. Hyde<sup>1</sup>, B. Ø. Palsson<sup>1</sup>; <sup>1</sup>Univ. of California, San Diego, La Jolla, CA, <sup>2</sup>Harvard Med. Sch., Cambridge, MA

4:00 p.m.

**Modeling the Human Microbiome**

Curtis Huttenhower; Harvard Univ., Cambridge, MA

4:30 p.m.

**Do We Need to Understand Microbial Community Structure to Predict Ecosystem Function?**Emily B. Graham<sup>1,2</sup>, W. R. Wieder<sup>1,3</sup>, J. W. Leff<sup>4</sup>, S. A. Weintraub<sup>1,5</sup>, A. R. Townsend<sup>1,5</sup>, C. C. Cleveland<sup>6</sup>, L. Philippot<sup>7</sup>, D. R. Nemer-gut<sup>1,2</sup>; <sup>1</sup>Inst. of Arctic and Alpine Res., Boulder, CO, <sup>2</sup>Environmental Studies Program, Univ. of Colorado, Boulder, CO, <sup>3</sup>The Natl. Ctr. for Atmospheric Res., Boulder, CO, <sup>4</sup>Cooperative Inst. for Res. in Environmental Sci., Boulder, CO, <sup>5</sup>Dept. of Ecology and Evolutionary Biology, Univ. of Colorado, Boulder, CO, <sup>6</sup>Dept. of Ecosystem & Conservation Sci., Univ. of Montana, Missoula, MT, <sup>7</sup>INRA-Agro-Sup-Université de Bourgogne, Dijon, France

4:45 p.m.

**Vibrio cholerae Seasonality as a Function of Complex Changes within Microbial Communities of the Aquatic Environment in Bangladesh**Nur A. Hasan<sup>1,2</sup>, G. C. de Magny<sup>3</sup>, C. J. Grim<sup>4</sup>, M. Alam<sup>5</sup>, A. Sadique<sup>5</sup>, J. Chun<sup>6</sup>, R. B. Sack<sup>7</sup>, T. A. Cebula<sup>8</sup>, A. Huq<sup>1</sup>, R. R. Colwell<sup>1,2,7,9</sup>; <sup>1</sup>Maryland Pathogen Res. Inst., Univ. of Maryland, College Park, MD, <sup>2</sup>CosmosID Inc, College Park, MD, <sup>3</sup>Ctr. de recherche IRD, Montpellier, France, <sup>4</sup>Food and Drug Admin., Laurel, MD, <sup>5</sup>Intl. Ctr. for Diarrheal Disease Res., Dhaka, Bangladesh, <sup>6</sup>Seoul Natl. Univ., Seoul, Korea, Republic of, <sup>7</sup>John Hopkins Bloomberg Sch. of Publ. Hlth., Baltimore, MD, <sup>8</sup>Johns Hopkins Univ., Dept. of Biology, Baltimore, MD, <sup>9</sup>Ctr. for Bioinformatics and Computational Biology, Univ. of Maryland, College Park, MD

5:00 p.m.

**Predicting Microbial Distributions on a Global Scale using Niche Models****Joshua Ladau**; Univ. of California—San Francisco, San Francisco, CA

Microbiology is entering a new age of information. Sequencing techniques are increasing the resolution of investigation for both the taxonomic and functional structure of microbial communities. This improved clarity about how microbes interact with each other, other organisms, and their environment, provides an unprecedented opportunity to create functional and phylogenetic models that can be used to test hypotheses and explore relationships in space and time. Simply put, models are mathematical descriptions of observed patterns in biological dynamics. However, the way in which these dynamics are described can vary significantly, from single cell systems that model molecular dynamics, to host-microbe interaction models that describes how the host responds to changes in the microbiome, to niche models that describe how an individual taxon responds to its environment, and final community models that describe how microbial communities interact and respond to ecosystem change. The 'holy grail' for microbial modelers is being able to combine these different models to transcend the different spatial and temporal scales. This session focuses on these different models and scales, and the advantages and disadvantages of each, to provide the attendee with a broad knowledge base in cutting edge microbiological modeling.

Upon completion of this session, participants should be able to:

- Describe what a model is, and how it can be used in microbiology.
- Determine how models can be used to generate hypotheses to focus research in microbiology.
- Explain the difference between different models, and determine the most effective model for their research needs.

**SYMPOSIUM****149 On the Front Lines PMNs, Macrophages and Dendritic Cells**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 203

**Convener:****Ian J. Glomski**; Univ. of Virginia Sch. of Med., Charlottesville, VA**Presentations:**

3:00 p.m.

**Apoptosis and Efferocytosis: A Winning Combination against Tuberculosis****Samuel M. Behar**; Brigham and Women's Hosp., Boston, MA

Division E Lecturer

3:30 p.m.

**A CRISPR-CAS System Mediates Bacterial Innate Immune Evasion and Promotes Virulence****Timothy R. Sampson**, D. S. Weiss; Emory Univ., Atlanta, GA

3:45 p.m.

**YbcL, a Uropathogenic *Escherichia coli* Exoprotein that Suppresses Transepithelial PMN Migration, is Liberated from the Periplasm by Bacterial Lysis****Megan E. Lau**, D. A. Hunstad; Washington Univ. in St. Louis, St. Louis, MO

4:00 p.m.

**Playing with Fire: Neutrophils in the Pathogenesis of *Neisseria gonorrhoeae*****Alison Criss**; Univ. of Virginia, Charlottesville, VA

4:30 p.m.

***Yersinia pestis* Requires the Siderophore Yersiniabactin to Evade Innate Immune Responses Mediated by Interferon Regulatory Factor 3****Joshua L. Willix**<sup>1,2</sup>, A. A. Pate<sup>1,2</sup>, D. M. Anderson<sup>1,2</sup>; <sup>1</sup>Dept. of Vet.Pathobiology, Univ. of Missouri, Columbia, MO, <sup>2</sup>Lab. of Infectious Disease Res., Columbia, MO

4:45 p.m.

***B. abortus* Vaccine Strain RB51 Induces ER Stress-Mediated Cell Death By A Caspase-2 Dependent Mechanism****Denise N. Bronner**, Y. He, M. X. D. O'Riordan; Univ. of Michigan-Ann Arbor, Ann Arbor, MI

5:00 p.m.

**Non-canonical Inflammasomes Activating Caspase-11 Protect against Cytosolic Bacteria****Edward Miao**; Univ. of North Carolina, Chapel Hill, NC

The innate immune system is the front line of defense against invading pathogens. Innate immune cells including neutrophils, macrophages, and dendritic cells launch chemical attacks and coordinate reinforcements such that in most cases host defenses prevail. However, given the correct circumstances a subset of microbes subverts or even benefits from these defenses to ultimately cause disease and are thus deemed pathogens. This session will focus on the exploration of the finely tuned molecular interactions between innate immune cells and microbial pathogens and how these interactions influence the eventual outcome of these relations, ranging from the microbe's perspective to the host's.

Upon completion of this session, participants should be able to:

- Recognize and evaluate experimental approaches to understanding neutrophil, macrophage, and dendritic cell-pathogen interactions.
- Identify the challenges a pathogen must overcome in order to avoid neutrophil, macrophage, and dendritic cell-mediated defenses.
- Summarize a variety of mechanisms used by microbial pathogens to avoid being eliminated by neutrophil, macrophage, and dendritic cell-mediated defenses.

**SYMPOSIUM****150 Regulating Gene Expression from the Membrane**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 403

**Convener:****Eduardo A. Groisman**; Yale Sch. of Med./HHMI, New Haven, CT**Presentations:**

3:00 p.m.

**Reciprocal Control between a Regulatory System and the Modification Status of the Bacterium's Lipopolysaccharide****Eduardo A. Groisman**; Yale Sch. of Med./HHMI, New Haven, CT

3:30 p.m.

**Anionic Phospholipids Modulate RecA Activity in *Escherichia coli*****Manohary Rajendram**, H. H. Tuson, V. V. Smeianov, K. Ngo, M. M. Cox, D. B. Weibel; Univ. of Wisconsin-Madison, Madison, WI

3:45 p.m.

**Improved CO<sub>2</sub> Fixation and Enhanced Organic Compounds Production by Cell Surface Display of Carbonic Anhydrase and Inducible Overexpression of Phosphoenolpyruvate Carboxylase in *Rhodobacter sphaeroides***Ju-Yong Park<sup>1</sup>, Y-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Korea, Republic of, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Korea, Republic of

4:00 p.m.

**A Scissor-like Mechanism for Signalling across the Bacterial Cytoplasmic Membrane**

David Bolam; Univ. of Newcastle, Newcastle, United Kingdom

4:30 p.m.

**The Extracellular Domain of SaeS is Critical for Sensing Human Neutrophil Peptides by *Staphylococcus aureus***

Qian Liu, H. Cho, T. Bae; Indiana University Sch. of Med.-Northwest, Gary, IN

4:45 p.m.

**Regulated Intramembrane Proteolysis of Membrane-bound Transcription Activator TcpP by Tail-specific Protease in *Vibrio cholerae***

Wei Ping Teoh, J. Matson, V. DiRita; Univ. of Michigan, Ann Arbor, MI

5:00 p.m.

**Local Chromosome Repositioning from Membrane Protein Expression**

Mark Goulian; Univ. of Pennsylvania, Philadelphia, PA

This session will explore exciting new findings whereby gene expression is modulated in response to envelope signals, the mechanisms by which integral membrane proteins can transduce information from outside the cytoplasm, and the association of particular regions of the chromosome with the bacterial membrane.

Upon completion of this session, participants should be able to:

- Describe how gene expression is modulated in response to envelope signals.
- Explain the mechanisms by which integral membrane proteins can transduce information.
- Describe the association of particular regions of the chromosome with the bacterial membrane.

**SYMPOSIUM****151 Role of Microbes in Environmental Sustainability**

3:00 p.m. – 5:30 p.m.

Locations: Four Seasons Ballroom 3

**Convener:**

Erin K. Lipp; Univ. of Georgia, Athens, GA

**Presentations:**

3:00 p.m.

**Studying the WaterVirome**

Joan B. Rose; Michigan State Univ., East Lansing, MI

3:30 p.m.

**The Fate of Antibiotic Resistance Genes and Class 1 Integrons in Soils Treated with Residual Municipal Wastewater Solids is Influenced by Upstream Treatment Technology**Tucker R. Burch<sup>1</sup>, M. J. Sadowsky<sup>2,3</sup>, T. M. LaPara<sup>1,2</sup>; <sup>1</sup>Dept. of Civil Engineering, Univ. of Minnesota, Minneapolis, MN, <sup>2</sup>BioTechnology Inst., Univ. of Minnesota, St. Paul, MN, <sup>3</sup>Dept. of Soil, Water, and Climate, Univ. of Minnesota, St. Paul, MN

3:45 p.m.

**The Role of Microorganisms in Shale Energy Development: From Field-Scale Observations to Laboratory Biodegradation Experiments**Paula J. Mouser<sup>1</sup>, M. Ansari<sup>1</sup>, S. Liu<sup>1</sup>, D. Kekacs<sup>1</sup>, A. Hartsock<sup>2</sup>, J. MacRae<sup>3</sup>, J. J. Lenhart<sup>1</sup>; <sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>Natl. Energy Technology Lab., Pittsburgh, PA, <sup>3</sup>Univ. of Maine, Orono, ME

4:00 p.m.

**Sustainable Building Design and the Urban Microbiome**

James Meadow; Univ. of Oregon, Eugene, OR

4:30 p.m.

**Metagenomics Insights into the Effects of the Deepwater Horizon Oil Spill on Indigenous Microbial Communities in Beach Sands**Luis M. Rodriguez-R<sup>1</sup>, W. A. Overholt<sup>1</sup>, X. Lin<sup>1</sup>, J. Delgadino<sup>1</sup>, M. Huettel<sup>2</sup>, J. E. Kostka<sup>1</sup>, K. T. Konstantinidis<sup>1</sup>; <sup>1</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>Florida State Univ., Tallahassee, FL

4:45 p.m.

**Metagenomic Survey of an Oil Sands Tailings Pond Microbial Community**

Boonfei Tan, J. Foght; Univ. of Alberta, Edmonton, AB, Canada

5:00 p.m.

**The Impact of Human Activity on the Microbial Metagenome of the Upper Mississippi River**

Michael J. Sadowsky; Univ. of Minnesota, St. Paul, MN

**Division Q Lecturer**

Microorganisms have remained a dominant biological component of our planet for billions of years. As such they have evolved an unmatched metabolic diversity to eke out their existence in nearly any environment. Microbial ecology, therefore, is critical to the understanding of sustainable processes that may provide solution to a number of the world's growing problems, including clean air, water and energy. This session will explore the role of microbes in a sustainable environment and new research on contributions of microbial ecology to a number of ecosystem services.

Upon completion of this session, participants should be able to:

- Evaluate the association between microbial diversity and sustainable environments.
- Compare microbial roles among unique environments.
- Recognize the importance of microbial communities in ecological functions.

**SYMPOSIUM****152 This Week in Microbiology**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 106

**Conveners:**

Vincent Racaniello; Columbia Univ. Coll. of Physicians &amp; Surgeons, New York, NY

Moselio Schaechter; San Diego State Univ., San Diego, CA

**Guests**

Ferric C. Fang; Univ. of Washington, Seattle, WA

Andrew Camilli; Tufts Univ., Boston, MA

Michele Swanson; Univ. of Michigan, Ann Arbor, MI

Join hosts Vincent Racaniello and Elio Schaechter for a live recording of the popular science show 'This Week in Microbiology'.

## SYMPOSIUM



# 153 What About Us? STIs Other than Gonorrhea and Chlamydia: What Public Health, Your Laboratory, Your Clinicians, and Your Patients Need to Know

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 601

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

## Conveners:

Kimberle C. Chapin; Brown Univ. Med. Sch., Providence, RI

Erik Munson; Wheaton Franciscan Lab., Milwaukee, WI

## Presentations:

3:00 p.m.

### The ART of Clinical Microbiology (273-541a-13)

Roberta B. Carey; CDC, Atlanta, GA

bioMérieux Sonnenwirth Award for Leadership in Clinical Microbiology

3:30 p.m.

### Genital Herpes Diagnosis: Progress and Pitfalls (273-541b-13)

Rhoda A. Morrow; Univ. of Washington, Seattle, WA

4:00 p.m.

### Epidemiology and Laboratory Diagnosis of *Mycoplasma genitalium* and *Ureaplasma urealyticum* Infection (273-541c-13)

Patricia A. Totten; Univ. of Washington, Seattle, WA

4:30 p.m.

### Trichy Business: The Epidemiology, Sequelae, Diagnostics and Issues for Public Health Reporting of *T. vaginalis* (273-541d-13)

Kimberle C. Chapin; Brown Univ. Med. Sch., Providence, RI

5:00 p.m.

### *Trichomonas vaginalis* Screening: It's not Just for Women Anymore (273-541e-13)

Erik Munson; Wheaton Franciscan Lab., Milwaukee, WI

Recent American Society for Microbiology General Meeting symposia, in the context of sexually-transmitted infections (STI), have focused upon Chlamydia trachomatis, *Neisseria gonorrhoeae*, *Treponema pallidum*, and human immunodeficiency virus. While these etiologies are indeed important and laboratory paradigms for detection of these agents have changed within recent years, microbiologists may be less cognizant of STI agents such as *Trichomonas vaginalis*, *Ureaplasma urealyticum*, and *Mycoplasma genitalium*. Furthermore, attendees may desire hearing a current status update on herpes simplex virus diagnostics pertaining to genital tract disease. An increased number of options (including those that are off-label, such as extra-genital site sampling) exist for laboratory detection of *T. vaginalis*, *M. genitalium*, and *U. urealyticum* infection. Particularly with respect to *T. vaginalis*, recent large-scale studies have shown that the prevalence of this etiology exceeds that of bacterial etiologies of STI. With recent advancements in molecular diagnostics, the molecular biology and molecular microbiology subdisciplines may become confronted with evolving diagnostic reference standards with respect to these disease etiologies and the need to consider broadening the diagnostic STI menu.

Upon completion of this session, participants should be able to:

- Discuss the current status of herpes simplex virus laboratory diagnostics, with an emphasis on selecting the appropriate assay based on clinical presentation.
- Describe laboratory diagnostics and epidemiology relative to genital tract infection by *Mycoplasma genitalium* and *Ureaplasma urealyticum*.
- Associate epidemiology and clinical significance of *Trichomonas vaginalis* parasitism in both females and males, with an emphasis on optimal laboratory diagnostics.

**Course Level:** Intermediate



# Tuesday, May 21

## Division Lectures

Division	Time	Location	Session #
H	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 4	157
P	8:15 a.m. – 10:45 a.m.	Four Seasons Ballroom 3	155
R	8:15 a.m. – 10:45 a.m.	Mile High Ballroom 1	156
Y	8:15 a.m. – 10:45 a.m.	Meeting Room 605	159
Z	8:15 a.m. – 10:45 a.m.	Four Seasons Ballroom 3	155
G	3:00 p.m. – 5:30 p.m.	Meeting Room 401	225
X	3:00 p.m. – 5:30 p.m.	Meeting Room 203	218

## Business Meetings

Division	Time	Location
P	12:00 p.m. – 1:00 p.m.	Meeting Room 401
B,D,E	2:00 p.m. – 3:30 p.m.	Mile High Ballroom 1
X	2:30 p.m. – 3:00 p.m.	Mile High Ballroom 3

## PLENARY

### 154 Environmental Adaptation, Diversity and Reverse Ecology

8:15 am–10:45 a.m.

Location: Four Seasons Ballroom 1

#### Conveners:

**Scott R. Miller**; Univ. of Montana, Missoula, MT

**Rachel J. Whitaker**; Univ. of Illinois, Urbana, IL

#### Presentations:

8:15 a.m.

#### Ecological, Genetic and Social Structure of Microbial Populations in the Wild

**Martin F. Polz**; Massachusetts Inst. of Tech., Cambridge, MA

*Eli Lilly and Company-Elanco Research Award*

8:45 a.m.

#### Microbial Population Genomics: Reverse Ecology, Complex Traits and Genome Wide Association in *Neurospora crassa*

**John Taylor**; Univ. of California-Berkeley, Berkeley, CA

9:15 a.m.

#### Spatially Varying Selection and the Genomics of Niche Differentiation in a Thermophilic Cyanobacterium

**Scott R. Miller**; Univ. of Montana, Missoula, MT

9:45 a.m.

#### Predicting the Future by Tracking Influenza Virus Emergence and Transmission

**Elodie Ghedin**; Univ. of Pittsburgh, Pittsburgh, PA

10:15 a.m.

#### Evolution and Evolvability of Antigenic Variation

**Dustin Brisson**; Univ. of Pennsylvania, Philadelphia, PA

Elucidating the biotic and abiotic factors that shape the diversity of natural populations is a central goal of microbial ecology and evolution with implications spanning the spectrum from environmental to medical microbiology. In this session, we introduce how population genomics approaches are transforming our understanding of these factors by enabling the identification of the adaptive genetic differences among microorganisms, even without prior information regarding the relevant ecological traits. The session will highlight recent studies which reveal genetic changes that contribute to the functionally important diversity and the evolutionary potential of viruses, bacteria and eukaryotic microorganisms.

Upon completion of this session, participants should be able to:

- Appreciate how high-throughput sequencing has enabled the investigation of microbial population diversity.
- Describe different population genomics approaches for identifying the adaptive genetic differences among microorganisms, even without prior information regarding the relevant ecological traits.
- Discuss how the signatures of natural selection left behind in patterns of genomic variation can reveal the environmental factors which have shaped the diversity of natural populations of nonpathogenic and pathogenic microorganisms.

## PLENARY

**155 The Good, the Bad and the Ugly: Food Microbiology in the Omics Age**

8:15 am–10:45 a.m.

Location: Four Seasons Ballroom 3

**Conveners:**

Gregory R. Siragusa; DuPont, Waukesha, WI

Edward G. Dudley; Pennsylvania State Univ., University Park, PA

8:15 a.m.

**Drugs, Bugs and the Swine Intestinal Microbiome**

Thaddeus Stanton; Natl. Animal Disease Res. Ctr., Ames, IA

Division Z Lecturer

8:45 a.m.

**Food Virology: A Case Study for the Importance of Biotechnology to Food Safety and Public Health**

Lee-ann Jaykus; North Carolina State Univ., Raleigh, NC

Division P Lecturer

9:15 a.m.

**The 100K Genome Project**

Bart C. Weimer; Univ. of California, Davis, CA

9:45 a.m.

**Can Omics Approaches Improve Food Safety? *Listeria monocytogenes* as a Case Study**

Martin Wiedmann; Cornell Univ., Ithaca, NY

10:15 a.m.

***Lactobacillus casei*: A Good Guy with Applications as a Probiotic in Cheese Flavor Development and in Biofuels Production**

James L. Steele; Univ. of Wisconsin-Madison, Madison, WI

Food microbiology and Animal Health microbiology are undergoing revolutionary basic changes due to the advent of pyrosequencing and user-friendly bioinformatic analytical software, i.e., metagenomics. In addition, genomics, proteomics, metagenomics and transcriptomics will begin to open the doors to our understanding the populations of microorganisms we study in food and the gut environs. This session will provide both new knowledge and serve as an update on the core organisms of food production from farm-to-fork. It will include the “good” in dairy organisms and beneficial gut bacteria; and the “bad” and the “ugly” in pathogens including *Listeria* and Noroviruses. Along with this subject matter is an outlaying of perhaps the most ambitious food microbiology and epidemiological study yet undertaken; i.e., the full genome sequencing of 100,000 different foodborne pathogens. Attendees will come away with knowledge in the areas of gut microbial ecology and antibiotic resistance in food animals, foodborne viruses, in-depth genomics of dairy starter cultures and the psychrotrophic foodborne pathogen *Listeria* and finally knowledge of an application of high throughput pyrosequencing and strain comparison across entire genomes!

Upon completion of this session, participants should be able to:

- Identify genomics of viral, dairy starter cultures and the foodborne pathogen *Listeria*.
- Describe the role of and diversity of the gut microbiome as a microbial community and its impact on food animal production.
- Predict how modern high throughput DNA sequencing will revolutionize foodborne disease epidemiology and our understanding of foodborne pathogens.

## PLENARY

**156 Microbial Transmission: Getting from Here to There**

8:15 am–10:45 a.m.

Location: Mile High Ballroom 1

**Conveners:**

Tod J. Merkel; FDA/CBER, Bethesda, MD

Tracy Nicholson; ARS-USDA, Ames, IA

**Presentations:**

8:15 a.m.

**Identifying Transmission at Local and Global Scales**

Julian Parkhill; The Wellcome Trust Sanger Inst., Cambridge, United Kingdom

Division R Lecturer

8:45 a.m.

***Vibrio cholerae* Dissemination and Transmission: No Safe Haven**

Andrew Camilli; Tufts Univ., Boston, MA

9:15 a.m.

**Airborne Transmission of *Bordetella pertussis***

Tod J. Merkel; FDA/CBER, Bethesda, MD

9:45 a.m.

**Surface Proteins of the Lyme Disease Spirochete: How to Dress for Success**

Patricia A. Rosa; NIAID, Hamilton, MT

10:15 a.m.

**The Environmental Lifestyle of *Vibria Cholerae*: How Growing on Chitinous Surfaces Fosters Horizontal Gene Transfer**

Melanie Bloesch; Global Health Inst., Lausanne, Switzerland

The ultimate goal of a successful microbial pathogen is stable transmission to new hosts in order to ensure the propagation of future generations. Understandably, a tremendous amount of resources and attention is spent on understanding the pathogenesis of infectious microbes within the host, however; transmission between hosts is an equally important phase of the infectious life cycle. This session will illustrate different strategies employed by microbes to ensure their survival outside of the host and maximize their transmission to new hosts.

Upon completion of this session, participants should be able to:

- Describe strategies employed by pathogenic microbes to survive outside of the host and maximize their transmission to new hosts.
- Define mechanisms by which microbial pathogens adapt to new environments as they transition between hosts.
- Define the impact of environmental factors on transmission of infectious diseases.

## PLENARY

**157 The Rising Appreciation of Post-transcriptional Regulation of Gene Expression in the Microbial World**

8:15 am–10:45 a.m.

Location: Mile High Ballroom 4

**Convener:**

Jeffrey Wilusz; Colorado State Univ., Fort Collins, CO

**Presentations:**

8:15 a.m.

**Riboswitches and Transcriptional Attenuation**

Tina M. Henkin; The Ohio State Univ., Columbus, OH

8:45 a.m.

**Mechanism of CsrA-mediated Translational Control**

Paul Babitzke; Pennsylvania State Univ., University Park, PA

9:15 a.m.

**Regulation of Functional tRNA by Polyadenylation in *E. coli***

Sidney R. Kushner; Univ. of Georgia, Athens, GA

*Division H Lecturer*

9:45 a.m.

**Eukaryotic mRNA Decay Mechanisms**

Roy Parker; Univ. of Colorado-Boulder, Boulder, CO

10:15 a.m.

**Consequences of RNA Viruses Avoiding the Cellular RNA Decay Machinery**

Jeffrey Wilusz; Colorado State Univ., Fort Collins, CO

Recent advances in RNA biology have demonstrated that there is a lot more to the regulation of gene expression than the simple DNA→RNA→Protein central dogma. The overall goal of this session is to provide attendees with a better understanding of the impact of post-transcriptional processes on microbial and host cell processes. Attendees will gain an appreciation for how RNA molecules can sense metabolites and signal changes in gene expression. They will learn a great deal about the inner workings of the ribosome and the regulation of translation by applications of cutting-edge single molecule technologies. Finally, they will understand how regulated RNA stability impacts gene expression from both prokaryotic and eukaryotic perspectives. Collectively, this session should allow attendees to think more broadly about the regulation of gene expression and influence them to include RNA biology as a possible mechanism that can contribute to a variety of phenomenon in microbiology.

Upon completion of this session, participants should be able to:

- Explain the impact of RNA-based post-transcriptional processes on microbial biology.
- Describe mechanisms of translational, RNA stability and riboswitch-mediated regulation in microbial and host cell processes.
- Explain the applied/translational value of several RNA-based processes as therapeutic targets, etc.

**SYMPOSIUM**

**158 Antibiotic Resistance: Perspectives and Practice**

8:15 a.m. – 10:45 a.m.

**Location: Meeting Room 705**

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Jean Patel; CDC, Atlanta, GA

Janet Hindler; UCLA Med. Sch., Los Angeles, CA

**Presentations:**

8:15 a.m.

**From Tragedy to Triumph to Trepidation: Antibiotics at Age 70 (273-542a-13)**

Stephen M. Brecher; VA Boston Hlthcare System, West Roxbury, MA

8:45 a.m.

**Investigating Novel Antimicrobial Resistance: mecC MRSA: What Would you do Next? (273-542b-13)**

Mark Holmes; Univ. of Cambridge, Cambridge, United Kingdom

9:15 a.m.

**Laboratory Detection of Antibiotic Resistance: What's New? (273-542c-13)**

Janet Hindler; UCLA Med. Sch., Los Angeles, CA

9:45 a.m.

**Laboratory Detection of Antibiotic Resistance: Where are We Going? (273-542d-13)**

Jean Patel; CDC, Atlanta, GA

10:15 a.m.

**Q & A Discussion**

This interactive session starts with a survey of the evolving threat of antibiotic resistance over the past seven decades and what it portends for the future. Then, strategies for investigating emerging antibiotic resistance from various perspectives will be explored during an up close examination of a recently identified resistance mechanism in staphylococci. Next, there will be a discussion of the newest recommendations for the laboratory detection and reporting of antibiotic resistance, the reasons behind these recommendations and ways in which the recommendations can be practically implemented. Finally, insight into novel methods of detecting antibiotic resistance will be provided.

- Describe how past experiences with using antibiotics can provide insight into their future use (or not!)
- Discuss potential clinical and public health impact of an emerging resistance mechanism; divergent mecA in staphylococci.
- List the newest recommendations for the laboratory detection and reporting of emerging antibiotic resistance to include novel methods on the horizon.

**Course Level:** Intermediate

**SYMPOSIUM**

**159 Biothreats and Other Disasters: Is Your Lab Prepared?**

8:15 a.m. – 10:45 a.m.

**Location: Meeting Room 605**

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Jim Snyder; Univ. of Louisville, Louisville, KY

Denise A. Pettit; North Carolina State Lab. of Publ. Health, Raleigh, NC

**Presentations:**

8:15 a.m.

**Vision for the Future of the Laboratory Response Network (273-543a-13)**

Toby L. Merlin; CDC, Atlanta, GA

8:45 a.m.

**Role of Sentinel Clinical Laboratories in the Laboratory Response Network (273-543b-13)**

Jim Snyder; Univ. of Louisville, Louisville, KY

9:15 a.m.

**Leveraging Partnerships to Address the Changing Face of Tularemia in Virginia (273-543c-13)**

Denise A. Pettit; North Carolina State Lab. of Publ. Hlth., Raleigh, NC

9:45 a.m.

**Evaluating New Technologies for Emerging Threat Detection (273-543d-13)**

Mike Farrell; CDC, Atlanta, GA

10:15 a.m.

**Better Tools for Front-Line Laboratories (273-543e-13)**

Judy Isaac-Renton; Provincial Hlth. Svcs. Authority Lab, Vancouver, Canada

*Gen-Probe Joseph Public Health Award and Division Y Lecturer*

Over the past ten years, laboratory response networks have been developed and enhanced to rapidly respond to multiple types of emergency situations including disease outbreaks, biological attacks, and natural disasters. These situations can dramatically impact the laboratories ability to maintain routine testing services, while efficiently providing emergency support to partnering agencies. Through the development and continual enhancement of emergency plans, the nation's laboratories have made significant progress in responding to emergency situations. Both sentinel (clinical diagnostic, veterinary, military, environmental and food testing laboratories) and reference laboratories have worked individually and together within a jurisdiction to enhance preparedness and response efforts, but rarely do they have the opportunity to meet and work together in a National setting. Bringing these critical partners together to share experiences, lessons learned, and best practices can benefit all laboratories in the system.

Upon completion of this session, participants should be able to:

- Discuss the purpose, significant revisions, and applications of the Sentinel Level Laboratory Protocols in responding to the presumptive detection and identification of biothreats and emerging infectious agents.
- Summarize the importance of establishing partnerships at the local, state, national, and international level to adequately address biological emergencies.
- Discuss how new technologies and work practices can enhance laboratory emergency response activities.

Course Level: Beginner/Intermediate

## SYMPOSIUM

**160 The Herpesviruses: Spectrum of Disease and Laboratory Diagnosis**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Mario J. Marcon; Westerville, OH

Rangaraj Selvarangan; Children's Mercy Hosp., Kansas City, MO

**Presentations:**

8:15 a.m.

**Herpes Simplex Viruses Types 1 and 2 (273-544a-13)**

Gregory A. Storch; Washington Univ. Sch. of Med., St. Louis, MO

8:45 a.m.

**Varicella-Zoster Virus (273-544b-13)**

Keith R. Jerome; Univ. of Washington, Seattle, WA

9:15 a.m.

**Cytomegalovirus (273-544c-13)**

Richard L. Hodinka; Children's Hosp. of Philadelphia, Philadelphia, PA

9:45 a.m.

**Epstein-Barr Virus (273-544d-13)**

Christine C. Ginocchio; North Shore-LIJ Hlth. System Lab., New Hyde Park, NY

10:15 a.m.

**Human Herpesviruses Types 6, 7, and 8 (273-544e-13)**

Philip E. Pellett; Wayne State Univ. Sch. of Med., Detroit, MI

This symposium will focus on the herpes group viruses, a genetically related group of ubiquitous viruses responsible for a wide variety of human infections ranging from asymptomatic, subclinical infections to severe life-threatening infections in all age groups but in particular at the extreme age groups of life. They have the common characteristic of establishing latency in various cell types within the body with reactivation and recurrent disease occurring in a subset of individuals often associated with immunosuppression. Appropriate patient management depends on specific laboratory diagnosis of infection. Laboratory methods available for diagnosis include culture, direct antigen detection, serology, and NAATs both qualitative and quantitative. Each of these methods may have application to select viruses and types of infection. Due to the clinical significance of these groups of viruses and frequency with which some cause infections, it is important that clinical microbiology laboratory professionals fully understand the most recent advances in laboratory diagnostic methods

Upon completion of this session, participants should be able to:

- Compare and contrast differences in the epidemiology and clinical presentations of human infections due to the herpesviruses.
- Understand best practice laboratory diagnostic methods for various disease presentations associated with the herpesviruses.
- Delineate clinical situations where viral load monitoring and/or antiviral susceptibility testing is indicated for managing patients with specific herpesvirus infections.

Course Level: Intermediate

## SYMPOSIUM

**161 Recent Advances in Medical Mycology: Global Impact and Implications for Clinical Microbiology Laboratories**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

Thomas Walsh; Cornell Univ., New York, NY

John Perfect; Duke Univ. Med. Ctr., Durham, NC

**Presentations:**

8:15 a.m.

**Major Changes in Nomenclature and Taxonomy of Medically Important Fungi: "What's in a Name?" (273-545a-13)**

June K. Kwon-Chung; NIAID, NIH, Bethesda, MD

8:45 a.m.

**Antifungal Susceptibility: CLSI, EUCAST, Interpretive Breakpoints and Beyond (273-545b-13)**

Mahmoud A. Ghannoum; Case Western Reserve Univ. Med. Ctr., Cleveland, OH

9:15 a.m.

**Advances in Methodology of Fungal Biomarkers: What are the Therapeutic Implications? (273-545c-13)**

Randall T. Hayden; St. Jude Children's Res. Hosp., Memphis, TN

9:45 a.m.

**Ecological and Geographic Changes in Human Fungal Pathogens: Where Have You Been? (273-545d-13)**

Thomas Walsh; Cornell Univ., New York, NY

10:15 a.m.

**Therapeutic Monitoring and the Clinical Microbiology Laboratory: Why is my Patient's Fungal Infection not Responding? (273-545e-13)**

John Perfect; Duke Univ. Med. Ctr., Durham, NC

Course Level: Intermediate

## SYMPOSIUM

**162 A Re-examination of Diagnostic Practices for Enteric Infections in the Clinical Microbiology Laboratory**

8:15 a.m. – 10:45 a.m.

Location: Meeting Room 601

**Conveners:**

Robert Tauxe; CDC, Atlanta, GA

Alexander J. McAdam; Boston Children's Hosp., Boston, MA

**Presentations:**

8:15 a.m.

**Epidemiology of Gastrointestinal Infections in the United States: A Public Health Perspective (273-546a-13)**

Robert Tauxe; CDC, Atlanta, GA

8:45 a.m.

**Laboratory Detection of Shiga toxin-producing *Escherichia coli* (273-546b-13)**

Alexander J. McAdam; Boston Children's Hosp., Boston, MA

9:15 a.m.

***Clostridium difficile* Infections and the Changing Landscape to Laboratory Diagnostics (273-546c-13)**

Karen C. Carroll; Johns Hopkins Univ. Sch. of Med., Baltimore, MD

9:45 a.m.

**Diagnostic Approaches to the Detection of Viral Agents of Gastrointestinal Infection (273-546d-13)**

Karen M. Frank; Clinical Ctr., NIH, Bethesda, MD

10:15 a.m.

**Diagnosis of Campylobacteriosis: Which Method(s) Should You Choose? (273-546e-13)**

Collette Fitzgerald; CDC, Atlanta, GA

This session brings together experts to discuss various aspects of enteric disease diagnosis of importance to laboratorians and clinicians. The goal is to review the epidemiology of these infections from a public health perspective and then discuss specific infections (STEC, Campylobacter, *C. difficile*, viral agents) and suggest screening and diagnostic approaches. As non-culture based diagnostics increase in availability for enteric infections, laboratories have more

diagnostic test options than in the past. The intention of the session is to re-examine what we currently do, whether the current methods are adequate, or take new directions.

Upon completion of this session, participants should be able to:

- Discuss the epidemiology and public health perspective of common enteric infections in the United States.
- Describe the laboratory approaches to the diagnosis of several common bacterial enteric infections including those caused by STEC, *C. difficile* and Campylobacter.
- Describe the laboratory approaches to the diagnosis of common viral agents of gastrointestinal infection.

Course Level: Intermediate

## POSTER SESSIONS

**163 – 186 Poster Sessions see pages 173 – 190**

10:45 a.m. – 12:30 p.m.

Location: Exhibit Hall A

## SPECIAL INTEREST SYMPOSIUM

**187 The Immune Response and Diseases Which Primarily Affect Underrepresented Populations**

11:00 a.m. – 1:00 p.m.

Location: Mile High Ballroom 1

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

*Developed by the Public and Scientific Affairs Board, Committee on Microbiological Issues Impacting Minorities*

**Conveners:**

Bereneice M. Madison; Battelle Mem. Inst., Atlanta, GA

Dwayne Boucaud; Quinnipiac Univ., Hamden, CT

**Presentations:**

11:00 a.m.

**CD72 in Systemic Lupus Erythematosus (273-547a-13)**

Judith A. James; Oklahoma Med. Res. Fndn., Oklahoma City, OK

11:30 a.m.

**T-Cell Response in HIV Infection (273-547b-13)**

Michael R. Betts; Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA

12:00 p.m.

**The *Mycobacterium tuberculosis* CarD Protein and Pathogenesis (273-547c-13)**

Christina L. Stallings; Washington Univ. Sch. of Med., St. Louis, MO

12:30 p.m.

**HIV Screening and Surveillance (273-547d-13)**

Wayne Duffus; CDC, Atlanta, GA

The role of the immune system is to defend the body against foreign invaders. In the absence of a properly functioning immune system, the host is subject to a variety of immunological diseases and dysfunctions. Studies demonstrate that these diseases and dysfunctions disproportionately impact certain groups and in impacting these groups represent one of the health topics included in health disparities. Health disparities refers to differences in the presence and severity of disease, health outcomes and quality of health care that exists in particular racial or ethnic groups, low income and medically underserved populations. There are multiple elements which contribute to these group specific outcomes including, but not limited to, access to quality health care, community-based factors and biology.



Accordingly, a defective immune system can lead to faulty immune responses which, in turn, cause a host of immune response diseases. These include both infectious and non-infectious diseases, such as acquired immune deficiency syndrome (AIDS), tuberculosis, diabetes and systemic lupus erythematosus. In many of these diseases the immune system plays a key role in not just defending against the disease but contributing to the disease process. Understanding the immune response in these and other such diseases is an important step in effectively developing translational tools to effectively address health disparities among racial and ethnic minorities and underserved populations.

Upon completion of this session, participants should be able to:

- Identify immune response diseases that disproportionately impact underserved populations.
- Discuss the relevance of the immune response in controlling the pathology of diseases which affect underrepresented populations.
- Describe new policies and methods for the detection and surveillance of HIV and their impact on public health.

**Course Level:** Advanced

### SPECIAL INTEREST SYMPOSIUM



#### 188 Implementing a Multidisciplinary Team Approach in managing MDROs: Complementary Roles of Microbiology and Infection Control

11:00 a.m. – 1:30 p.m.

**Location:** Mile High Ballroom 4

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

##### Conveners:

**Lance R. Peterson;** NorthShore Univ. HealthSystem, Evanston, IL

**Marc-Oliver Wright;** NorthShore Univ. HealthSystem, Evanston, IL

##### Presentations:

11:00 a.m.

##### **The View of Administration on the Importance of a Successful Infection Control Program (273-548a-13)**

**Brian S. Koll;** Beth Israel Med. Ctr., New York, NY

11:30 a.m.

##### **What Contributions for the Infection Control Program can Originate from the Laboratory: From Special Cultures to Rapid Diagnostics (273-548b-13)**

**Lance R. Peterson;** NorthShore Univ. HealthSystem, Evanston, IL

12:00 p.m.

##### **Infection Control in the Trenches : Daily Use of Microbiology Data for Problem Solving and Risk Reduction (273-548c-13)**

**Kathy Aureden;** Sherman Hosp., Elgin, IL

12:30 p.m.

##### **The Critical Relationship between Microbiology and Infection Control—and the Potential Career Path to Infection Control for Medical Technologists (273-548d-13)**

**Marc-Oliver Wright;** NorthShore Univ. HealthSystem, Evanston, IL

1:00 p.m.

##### **Q/A Discussion**

This symposium highlights the re-awakening role of active integration between the Clinical Microbiology laboratory and Infection Control. Improving healthcare outcomes and reducing patient risk is increasingly important as national priorities and a synergistic partnership between the laboratory and infection control is critical for this success. The importance is recognized at the highest level of leadership in hospitals, and this symposium will highlight that recognition. We will also provide practical examples of how this close relationship can successfully operate as well as demonstrate the potential of infection control as a career path for interested microbiology medical technologists. Microbiology should not be a passive partner in this relationship, but rather provide novel approaches to solving infection control problems, ranging from developing special culture (surveillance) media, to providing ready reports of pathogen trends, to introducing appropriate rapid diagnostic testing for critical diseases and pathogens.

Upon completion of this session, participants should be able to:

- Recognize the key factors in an ongoing Microbiology – IC relationship.
- Discuss the importance of prompt and frequent communication to and engagement of all disciplines in the prevention efforts; and recognize the importance of this enterprise to the entire hospital.
- Implement strategies for success by integrating best practices, using recent examples and/case studies.

**Course Level:** Intermediate

### SPECIAL INTEREST SYMPOSIUM



#### 189 Men, Women, Infection, and Infertility

11:00 a.m. – 1:30 pm

**Location:** Four Seasons Ballroom 1

*Developed by the Public and Scientific Affairs Board, Committee on the Status of Women in Microbiology*

##### Conveners:

**Lorraine A. Findlay;** Nassau County Comm. Coll. and Univ. Med. Ctr., Garden City, NY

**Anne-Marie B. Blancquaert;** Inst. Dow Corning Corp., Carrollton, KY

##### Presentations:

11:00 a.m.

##### **Sexual Dimorphism in Gastrointestinal Diseases: Behavior or Physiology?**

**Norval Strachan;** Univ. of Aberdeen, Scotland, Aberdeen, United Kingdom

11:30 a.m.

##### **Hormonal Concentrations and Gender Differences in Vaccination and Immune Response**

**Sabra L. Klein;** Johns Hopkins Bloomberg Sch. of Publ. Health, Baltimore, MD

12:00 p.m.

##### **Gender Based Susceptibility to HIV Infection**

**Marcus Altfeld;** Ragon Inst. of Massachusetts Gen. Hosp., MIT and Harvard, Charlestown, MA

12:30 p.m.

##### **Infertility in Both Genders**

**Alan H. Decherney;** NIH, Bethesda, MD

1:00 p.m.

**Reproductive Health Implications of Neglected Infections****Marian McDonald**; CDC, Atlanta, GA

This session examines the impact of infectious disease on fertility and infertility in both genders, and discusses the global consequences of these infections in terms of worldwide mental and physical health. The session further explores gender similarities and differences, including the influences of hormones, with respect to infection and immunity. Issues of behavioral responses with respect to infectious disease and the effects of infectious disease on pregnancy are also discussed.

Upon completion of this session, participants should be able to:

- Identify infectious causes of infertility and consequences.
- Identify gender differences in vaccination and immune response.
- Identify gender differences in susceptibility to infection.
- Identify how infection impact pregnancy and fertility.

**SPECIAL INTEREST SYMPOSIUM****190 Strategic Coalitions and Public Policy in Human Health and Disease**

11:00 a.m. – 1:30 p.m.

**Location: Four Seasons Ballroom 3**

When claiming ASCLS P.A.C.E.<sup>®</sup> credits, please refer to the numbers listed after each presentation title.

*Developed by the Public and Scientific Affairs Board, Committee on Professional Affairs*

**Conveners:****Vickie S. Baselski**; Univ. of Tennessee Hlth. Sci. Ctr., Memphis, TN**Alice S. Weissfeld**; Microbiology Specialists, Inc., Houston, TX**Presentations:**

11:00 a.m.

**The ASM PSAB Contributions to Public Policy on Healthcare Issues (273-549a-13)****Vickie S. Baselski**; Univ. of Tennessee Hlth. Sci. Ctr., Memphis, TN

11:30 a.m.

**Activities and Impact of the Clinical Laboratory Coalition on Legislative and Regulatory Issues Affecting Clinical Laboratories (273-549b-13)****Vince Stine**; Amer. Assn. for Clinical Chemistry, Washington, DC

12:00 p.m.

**Addressing Critical Workforce Issues through the Coordinating Council on the Clinical Laboratory (273-549c-13)****Elissa Passiment**; Amer. Assn. for Clinical Lab. Science, Washington, DC

12:30 p.m.

**Strategies to Maintain Critical Public Health Initiatives (273-549d-13)****Robyn M. Atkinson-Dunn**; Unified State Lab., Publ. Hlth., Taylorsville, UT

1:00 p.m.

**Cooperative Development of Laboratory Best Practice Guidelines (273-549e-13)****Melvin P. Weinstein**; Robert Wood Johnson Med. Sch., New Brunswick, NJ

Underlying ASM's dedication to the advancement of the microbiological sciences is a strong commitment that science serves the public interest, including in the important area of healthcare delivery. To meet this objective, ASM works with a number of government agencies and

other scientific organizations to insure delivery of patient-centered services. This session will provide an overview of ongoing projects in which PSAB committees partner with federal agencies such as the FDA, CMS, and CDC, and with coalitions of laboratory organizations to improve human health by facilitating diagnosis and prevention of infectious diseases.

Upon completion of this session, participants should be able to:

- Discuss the contributions of ASM and the PSAB in matters pertaining to public policy issues affecting human health and infectious disease
- Describe interactions with governmental agencies to improve provision of patient centered laboratory services
- Describe key strategic partnerships with other professional organizations to address emerging healthcare issues in infectious diseases

**Course Level:** Intermediate**LATE-BREAKING SESSION****LBS001 Pandemic Threats from Emerging Avian Influenza Viruses (H7N9 and H5N1): Challenges for Public Health, Research, Surveillance and Countermeasures**

11:00 a.m. – 1:30 p.m.

**Location: Mile High Ballroom 3**

*Developed by the Public and Science Affairs Board, Committee on Biodefense*

**Conveners:****Ronald Atlas**; Univ. of Louisville; Louisville, KY**Kenneth I. Berns**; Univ. of Florida, Gainesville, FL**Presentations:**

11:00 a.m.

**The Continuing Influenza Threat: H5N1, H7N9 or More?****Robert Webster**; St. Jude Res. Hosp., Memphis, TN

11:30 a.m.

**H5N1 and H7N9: From Zoonosis to Pandemic?****Albert Osterhaus**; Erasmus MC Dept. of Viroscience; Rotterdam, The Netherlands

12:00 p.m.

**The Challenge of Avian Influenza Viruses: From Basic Research to Practical Public Health Strategies****Carol Heilman**, NIH, NIAID, Bethesda, MD

12:30 p.m.

**Responding to the Emerging Avian Influenza Threat: Preventing a Pandemic****Stephen C. Redd**; CDC/ICU, Atlanta, GA

1:00 p.m.

**Q & A Discussion**

The emergence of human infections with avian influenza viruses (H7N9 and H5N1) have raised concerns about the virus gaining the ability to spread person-to-person, potentially causing a deadly pandemic. So far the number of human cases have been limited but the mortality rates have been high. This session will discuss the molecular biology of these viruses and the likelihood of human to human transmission of these viruses. It will consider surveillance and diagnostics, vaccines and therapeutics, i.e. the tracking, prevention and treatment of these novel influenza viruses. It will specifically examine the basic research needs: from developing public health strategies, the safety

of conducting research on these viruses, how research can be transformed into effective public health practices and what is being done by public health agencies to prepare for outbreaks of human cases of avian influenza and how to prevent a pandemic.

Upon completion of this session, participants should be able to

- Describe the factors affecting the transmission of avian influenza viruses to humans.
- Determine what is needed to carry out surveillance of H7N9 and H5N1 influenza viruses.
- Describe the research needs for the development of diagnostic, prevention and treatment methods for H7N9 and H5N1 influenza viruses.

## POSTER SESSIONS

### 191 – 214 Poster Sessions see pages 190 – 209

1:00 p.m. – 2:45 p.m.

Location: Exhibit Hall A

## NETWORKING BREAK

1:30 p.m. – 3:00 p.m.

Location: Exhibit Hall F

## DIVISION BUSINESS MEETINGS

### Divisions B, D and E Business Meeting and the Richard and Mary Finkelstein Student Award Presentations

2:00 p.m. – 3:30 p.m.

Location: Mile High Ballroom 1

### Division X Business Meeting

2:30 p.m. – 3:00 p.m.

Location: Mile High Ballroom 3

## SYMPOSIUM



### 215 Advances in Anaerobic Microbiology

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 712

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

#### Conveners:

Ellie J. C. Goldstein; UCLA Sch. of Med., Los Angeles, CA

#### Presentations:

3:00 p.m.

**New CLSI Documents on Culturing Anaerobes (273-550a-13)**

Diane M. Citron; R.M. Alden Res. Lab., Culver City, CA

3:30 p.m.

**New Methods of Identification of Anaerobes including MALDI-ToF (273-550b-13)**

Elisabeth Nagy; Inst. of Clinical Microbiol., Szeged, Hungary

4:00 p.m.

**Clostridial Toxin Infections (273-550c-13)**

Dennis L. Stevens; VA Med. Ctr., Boise, ID

4:30 p.m.

**Anaerobes and Late Onset Autism (273-550d-13)**

Sydney M. Finegold; UCLA Sch. of Med., Los Angeles, CA

5:00 p.m.

### Anaerobic Resistance to Commonly Used Antimicrobial Agents (273-550e-13)

Ellie J. C. Goldstein; UCLA Sch. of Med., Los Angeles, CA

Anaerobes are major human pathogens but have been neglected by many clinical microbiology labs. The new culture methods and methods of identification are beginning to improve on turn-around-time that increase clinical relevance. CLSI has recently added new guidelines for culture methods and tables to allow laboratories to track susceptibility patterns. As many labs do not perform anaerobic AST it is important for microbiologists, clinicians and pharmacists to be aware of the changing patterns of anaerobic resistance. In addition, anaerobes are pathogens in both serious infections as clostridial toxin diseases and have a potential role in late-onset autism.

Upon completion of this session, participants should be able to:

- Identify new methods including MALDI-TOF in anaerobic bacteriology.
- Discuss the possible role of anaerobes in late onset autism and clostridial toxins in disease.
- Examine methods for culturing anaerobes and emergence of resistance.

Course Level: Intermediate

## SYMPOSIUM



### 216 Are We there Yet? Has the Limit of the Taxonomic Resolution of Mass Spectrometry-enabled Microbial Profiling Been Reached?

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 706

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

#### Conveners:

Todd R. Sandrin; Arizona State Univ., Phoenix, AZ

Clifton K. Fagerquist; USDA ARS, Albany, CA

#### Presentations:

3:00 p.m.

**Culture Conditions and Sample Preparation Affect Spectrum Quality, Reproducibility, and Characterization of Methicillin Resistance during MALDI-TOF-MS-based Profiling of Methicillin Resistant and Methicillin Sensitive *Staphylococcus aureus* (MRSA and MSSA) (273-551a-13)**

Todd R. Sandrin; Arizona State Univ., Phoenix, AZ

3:30 p.m.

**Developing MS-based Assays for Bacterial Drug Resistance (273-551b-13)**

Plamen Demirev; Johns Hopkins Univ., Laurel, MD

4:00 p.m.

**Outbreak Strain Detection by MALDI-TOF Mass Spectrometry (273-551c-13)**

Martin Christner; Univ. Sklinikum Hamburg-Eppendorf, Hamburg, Germany

4:30 p.m.

**Distinguishing Shiga toxin 2 Variants in Shiga toxin-producing *E. coli* (STEC) strains by MALDI-TOF-MS/MS and Top-Down Proteomics (273-551d-13)**

Clifton K. Fagerquist; USDA, Albany, CA

5:00 p.m.

**MALDI-TOF MS as a Tool for High-Throughput Dereplication in Microbial Diversity Studies (273-551e-13)****Peter Vandamme;** Ghent Univ., Ghent, Belgium

Mass spectrometry-enabled profiling of microorganisms has garnered a remarkable and increasing amount of attention. In the past several years, scores of articles have been written that focus on this application of mass spectrometry to clinical microbiology and diagnostics, counterbioterrorism, food safety, and environmental monitoring and quality. As broad interest has increased in this technology, the pace of discovery and development of new applications has accelerated. The technology has been shown repeatedly to be effective at rapidly discriminating, identifying, and characterizing microorganisms at the species level and above; however, some of the most promising yet challenging applications of this technology lie at the subspecies and strain levels. This session will represent a forum for dissemination and discussion of the latest developments regarding the state of the science of mass spectrometry-enabled profiling of microorganisms at the strain and subspecies level with focus on applications to MRSA, detection of bacterial drug resistance, Shiga toxin-producing strains of *E. coli*, food microbiology, and soil science.

Upon completion of this session, participants should be able to:

- Articulate challenges that limit the taxonomic resolution of MALDI-enabled profiling of microorganisms.
- Describe novel approaches to increase the taxonomic resolution of MALDI-enabled profiling of microorganisms.
- Demonstrate a high level of knowledge regarding recent innovative applications of MALDI-enabled profiling of microorganisms to MRSA, detection of bacterial drug resistance, Shiga toxin-producing strains of *E. coli*, food microbiology, and soil science.

**Course Level:** Intermediate

**SYMPOSIUM****217 Beyond the Basics: Modern Metrics for Clinical Microbiology**

3:00 p.m. – 5:30 p.m.

**Location:** Meeting Room 601

When claiming ASCLS P.A.C.E.® credits, please refer to the numbers listed after each presentation title.

**Conveners:**

**Amanda T. Harrington;** VA Puget Sound Hlth. Care System, Seattle, WA

**Susan Butler-Wu;** Univ. of Washington Med. Ctr., Seattle, WA

**Presentations:**

3:00 p.m.

**Stay on Target: What Metrics Can Tell You about Culture Complications and Your Laboratory (273-552a-13)**

**Linoj P. Samuel;** Henry Ford Hlth. System, Detroit, MI

3:30 p.m.

**Go the Distance: The Clinical Impact of Corrected Microbiology Reports (273-552b-13)**

**Joan-Miquel Balada-Llasat;** The Ohio State Univ., Columbus, OH

4:00 p.m.

**An Offer You Can't Refuse: Putting IT to Work for Evidence-based *C. difficile* Repeat Testing (273-552c-13)**

**Niaz Banaei;** Stanford Univ. Med. Ctr., Palo Alto, CA

4:30 p.m.

**Just Keep Swimming: Creative Solutions for Getting it Done without IT (273-552d-13)**

**Amanda T. Harrington;** VA Puget Sound Hlth. Care System, Seattle, WA

5:00 p.m.

**You Can't Handle the Truth! When and When Not to Trust Automated Identification Systems (273-552e-13)**

**Susan Butler-Wu;** Univ. of Washington, Seattle, WA

Quality assurance (QA) rarely makes the list of “flashy” discussion topics, but it is a cornerstone of good laboratory practice. Effective QA should involve an associated feedback loop that allows users to utilize the data in a timely manner and to positively affect the ultimate outcome. However, little guidance exists on the details of how a QA program for microbiology should be designed or implemented and such programs are often limited to specific criteria addressed in regulatory requirements (e.g. blood culture contamination rates). This session will highlight examples of the metrics tracked by several laboratories and will focus on the methods by which these metrics are obtained, the data/rationale behind them, and the actionable outcomes that have been put into place as a result. These will include experiences both from labs that have the ability to utilize electronic tools as well as from labs whose programs are entirely “manual”. Topics will include: real-time monitoring and clinical impact of result reporting in bacteriology; the data behind monitoring *C. difficile* testing; how to track data without IT support; when to trust the identification from an automated identification system.

Upon completion of this session, participants should be able to:

- Discuss several methods for monitoring culture evaluation and reporting in the microbiology lab.
- Describe evidence-based approaches and practical methods for monitoring *C. difficile* testing requests.
- Discuss approaches for verifying accuracy of identification by automated identification systems.

**Course Level:** Intermediate

**SYMPOSIUM****218 Biofilms**

3:00 p.m. – 5:30 p.m.

**Location:** Meeting Room 203

**Conveners:**

**Fitnat Yildiz;** Univ. of California-Santa Cruz, Santa Cruz, CA

**Presentations:**

3:00 p.m.

**Candida Gene Regulation during Infection**

**Aaron P. Mitchell;** Carnegie Mellon Univ., Pittsburgh, PA

*Division X Lecturer*

3:30 p.m.

**Positively Selected FimH Residues Enhance Acute and Chronic Virulence During Urinary Tract Infection**

**Drew Joel Schwartz<sup>1</sup>, S. L. Chen<sup>2</sup>, C. N. Spaulding<sup>1</sup>, S. J. Hultgren<sup>1</sup>;**  
<sup>1</sup>Washington Univ. Sch. of Med., Saint Louis, MO, <sup>2</sup>Genome Inst. of Singapore, Singapore, Singapore

3:45 p.m.

**The Extracellular Matrix Component Psl Provides Fast-acting Antibiotic Defense in *Pseudomonas aeruginosa* Biofilms**

**N. Billings, M. R. Millan, M. Caldara, R. Rusconi, Y. Tarasova, R. Stocker, Katharina Ribbeck;** MIT, Cambridge, MA



4:00 p.m.

***Vibrio cholerae* Biofilm Matrix**

Fitnat Yildiz; Univ. of California Santa Cruz, Santa Cruz, CA

4:30 p.m.

**SypK Links Biofilm Production to Quorum Signaling by Regulating the sRNA Qrr1 in *Vibrio fischeri***Tim Miyashiro<sup>1,2</sup>, V. A. Ray<sup>3</sup>, K. L. Visick<sup>3</sup>, D. Oehlert<sup>2</sup>, E. G. Ruby<sup>2</sup>; <sup>1</sup>Pennsylvania State Univ., University Park, PA, <sup>2</sup>Univ. of Wisconsin Sch. of Med. and Publ. Hlth., Madison, WI, <sup>3</sup>Loyola Univ. Med. Ctr., Maywood, IL

4:45 p.m.

**Membrane-bound Diguanylate Cyclase CrdA Is Essential For Dispersion In *Pseudomonas aeruginosa***

Yi Li, K. Sauer; Binghamton Univ., Binghamton, NY

5:00 p.m.

**Spatio-Temporal Dynamics of Biofilm Formation**

Gurol Suel; Univ. of California San Diego, San Diego, CA

The study of microbial biofilm now pervades and impacts many scientific disciplines and constitutes an exciting multidisciplinary research field. This session will focus on molecular and biophysical aspects of biofilm-associated processes in bacteria and fungi; ranging from formation and regulation to physiology and pathogenesis.

Upon completion of this session, participants should be able to:

- Discuss the production of diverse biofilm matrix components.
- Identify the regulatory circuits controlling biofilm formation.
- Assess the role of biofilm formation in pathogenesis.

**SYMPOSIUM****219 The Ecology of *Clostridium difficile* Infections**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 205

**Conveners:**

Rita Tamayo; Univ. of North Carolina- Chapel Hill, Chapel Hill, NC

Vincent B. Young; Univ. of Michigan Med. Sch., Ann Arbor, MI

**Presentations:**

3:00 p.m.

**Microbiome/Pathogen Interactions in *C. difficile* Infection**

Vincent B. Young; Univ. of Michigan Med. Sch., Ann Arbor, MI

3:30 p.m.

**Antibiotic-induced Alterations to the Microbiome and Subsequent Effects on Colonization Resistance against *Clostridium difficile***

Alyxandria M. Schubert, P. D. Schloss; Univ. of Michigan, Ann Arbor, MI

3:45 p.m.

**Photodynamic targeting of *Clostridium difficile* infections**

Luisa De Sordi<sup>1,2</sup>, M. A. Butt<sup>2,3</sup>, G. Yahioğlu<sup>4,5</sup>, C. A. Mosse<sup>2</sup>, S. Battah<sup>6,7</sup>, I. Stamati<sup>4,5</sup>, M. Deonaraín<sup>4,5</sup>, L. B. Lovat<sup>2,3</sup>, E. Allan<sup>1</sup>, P. Mullany<sup>1</sup>; <sup>1</sup>Microbial Diseases, UCL-Eastman Dental Inst., London, United Kingdom, <sup>2</sup>Natl. Med. Laser Ctr., Univ. Coll. London, London, United Kingdom, <sup>3</sup>Gastroenterology, Univ. Coll. Hosp., London, United Kingdom, <sup>4</sup>PhotoBiotics Ltd, Imperial Coll. London, London, United Kingdom, <sup>5</sup>Div. of Cell & Molecular Biology, Imperial Coll. London, London, United Kingdom, <sup>6</sup>Organix Ltd, Univ. of Essex, Colchester, United Kingdom, <sup>7</sup>Dept. of Biological Sci., Univ. of Essex, Colchester, United Kingdom

4:00 p.m.

***C. difficile* vs. the Microbiota: The Enemy of My Enemy is My Friend**

Shonna M. McBride; Emory Univ., Atlanta, GA

4:30 p.m.

**Nutrient Regulation of c-di-GMP signaling in *C. difficile***

Erin B. Purcell, R. Tamayo; UNC Chapel Hill, Chapel Hill, NC

4:45 p.m.

**Does Binary Toxin Contribute to *Clostridium difficile* Infection?**

Sarah A. Kuehne<sup>1</sup>, M. M. Collery<sup>1</sup>, I. Kansau<sup>2</sup>, M. L. Kelly<sup>1</sup>, S. T. Cartman<sup>1</sup>, A. Cockayne<sup>1</sup>, A. Collignon<sup>2</sup>, N. P. Minton<sup>1</sup>; <sup>1</sup>Univ. of Nottingham, Nottingham, United Kingdom, <sup>2</sup>Université Paris-Sud, Paris, France

5:00 p.m.

***C. difficile* Toxins: Sensing a Target in a Hostile Gut Environment**

Tor Savidge; Baylor Coll. of Med., Houston, TX

*Clostridium difficile* infection (CDI) is one of the most prevalent nosocomial infections resulting in over \$4B in excess healthcare costs annually. The pathogenesis of CDI reflects complex interactions between the pathogen, the indigenous gut microbiota and the host. During colonization of the gastrointestinal tract, *C. difficile* must overcome the host innate immune system and the indigenous intestinal microbiota, which mediate colonization resistance against *C. difficile*. Once colonization is established, the development of clinical disease symptoms is mediated through the activities of toxins produced by the bacterium. This symposium highlights recent research that reveals some of the ways *C. difficile*, the host, and the microbiota interact with each other and how these interactions influence the outcome of the infection.

Upon completion of this session, participants should be able to:

- Discuss how the intestinal microbiota influences the ability of *C. difficile* to establish an infection.
- Describe host innate immune responses to *C. difficile* and its toxins.
- Describe the mechanisms that *C. difficile* uses to respond to antimicrobial factors produced by the host and microbiota.

**SYMPOSIUM****220 Evolution of Bioenergetic Systems**

3:00 p.m. – 5:30 p.m.

Location: Four Seasons Ballroom 3

**Conveners:**

Martin G. Klotz; Univ. of North Carolina at Charlotte, Charlotte, NC

Donald A. Bryant; The Pennsylvania State Univ., University Park, PA

**Presentations:**

3:00 p.m.

**Photosynthesis: Modular Design of Light Reactions Driving Dark Reactions that Shaped Earth's Evolution**

Donald A. Bryant; The Pennsylvania State Univ., University Park, PA

3:30 p.m.

**Alternative Electron Pathways for Sulfate Respiration in *Desulfovibrio* Strains**

Kimberly Keller; William Woods Univ., Fulton, MO



3:45 p.m.

**Understanding the Physiological Roles of Prokaryotic Complex I**

Melanie A. Spero, F. O. Aylward, T. J. Donohue; Univ. of Wisconsin-Madison, Madison, WI

4:00 p.m.

**The Microbial Redox Tower: From 3.5 Billion Years Ago to...Yesterday**

Marc Strous; Max Planck Inst. for Marine Microbiol., Bremen, Germany

4:30 p.m.

**Phylogenetic Evidence for H<sub>2</sub>-based Electron Bifurcation in Early Life**

Eric Boyd; Montana State Univ., Bozeman, MT

4:45 p.m.

**Evolution and Diversity of the Heme-Copper Oxidoreductase Superfamily**

James Hemp; Univ. of Illinois, Champaign, IL

5:00 p.m.

**Diversity, Evolution and Interaction of Chemolithotrophic Bioenergetic Systems: From C to S to N**

Martin G. Klotz; Univ. of North Carolina at Charlotte, Charlotte, NC

Recent significant technological developments have provided for the discovery of new metabolic modules and thus opportunities for synthesis and insight. In particular, recently obtained information on catabolic modules (providing for energy transformation and conservation) and their function and evolution, revealed that most of their components belong to a limited collection of protein super families and that their function in extant microorganisms is the outcome of "mix and match" across boundaries that we usually define by the elemental nature of electron donors and acceptors that participate in global biogeochemical redox cycles (i.e., the S, N, C, Fe cycles). New technological developments are also challenging current views on these cycles and show unexpected levels of competition and cross feeding in microbial communities. Changing environmental conditions over evolutionary times have contributed to outcomes that are strikingly suboptimal regarding the overall metabolism, at least from a bioenergetic perspective, which are hidden under a neutral blanket of complexity. The session is designed to provide synthesis of basic principles for both chemo- and phototrophic catabolism.

Upon completion of this session, participants should be able to:

- Provide synthesis based on the thermodynamic basis of bioenergetic systems.
- Introduce/reinforce the modular concept of metabolism and high-light new discovers.
- Provide a molecular evolutionary perspective to the diversity of bioenergetic systems.

**SYMPOSIUM****221 Extraordinary and Extreme Microbial Lifestyles**

3:00 p.m. – 5:30 p.m.

Location: Four Seasons Ballroom 1

**Convener:**

Amy C. Vollmer; Swarthmore Coll., Swarthmore, PA

**Presentations:**

3:00 p.m.

**Characterizing Archaeal Gene Regulatory Networks in Response to Environmental Extremes**

Amy Schmid; Duke Univ., Durham, NC

3:30 p.m.

**High-Resolution Community Succession in Acidophilic Sulfide-Oxidizing Biofilms Associated with Microbially Induced Concrete Corrosion in a Working Sanitary Manhole**

Alison Ling, N. R. Pace, M. T. Hernandez; Univ. of Colorado, Boulder, CO

3:45 p.m.

**The Metagenome of Microbial Communities in the Upper Troposphere: Implications for Cloud Formation**

Natasha De Leon-Rodriguez<sup>1</sup>, T. L. Latham<sup>2</sup>, B. E. Anderson<sup>3</sup>, A. J. Beyersdorf<sup>3</sup>, L. D. Ziemba<sup>3</sup>, M. Bergin<sup>4,2</sup>, A. Nenes<sup>2</sup>, K. T. Konstantinidis<sup>1</sup>, <sup>1</sup>Sch. of Biology, Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>Earth and Atmospheric Sci., Georgia Inst. of Technology, Atlanta, GA, <sup>3</sup>Chemistry and Dynamics Branch/Sci. Directorate, NASA LaRC, Hampton, VA, <sup>4</sup>Civil and Environmental Engineering, Georgia Inst. of Technology, Atlanta, GA

4:00 p.m.

**Recent Insights into Electron Flow and Energy Conservation in Methanogenesis**

John Leigh; Univ. of Washington, Seattle, WA

4:30 p.m.

**Benzene and Beyond: Gene Regulation of Novel Anaerobic Aromatic Degradation Pathways in *Geobacter daltonii***

Alison Kanak, K-J. Chin; Georgia State Univ., Atlanta, GA

4:45 p.m.

**Interrogating Phototroph-Heterotroph Interactions within a Benthic Phototrophic Mat Community of Epsomitic Hot Lake, Washington**

Stephen R. Lindemann<sup>1</sup>, W. C. Nelson<sup>1</sup>, Y-M. Kim<sup>1</sup>, J. C. Stegen<sup>1</sup>, J. R. Hutchison<sup>1</sup>, R. S. Renslow<sup>1</sup>, J. J. Moran<sup>1</sup>, A. C. Dohnalkova<sup>1</sup>, A. E. Konopka<sup>1</sup>, H. Beyenal<sup>2</sup>, M. F. Romine<sup>1</sup>, J. K. Fredrickson<sup>1</sup>, <sup>1</sup>Pacific Northwest Natl. Lab., Richland, WA, <sup>2</sup>Washington State Univ., Pullman, WA

5:00 p.m.

**On the Cold Side of Life: Explorations into the Dark, Salty and Icy Interior of Lake Vida**

Alison E. Murray; Desert Res. Inst., Reno, NV

When studying such specialized and unusual organisms, investigators must think 'outside of the box' in designing their experiments as well as in the methods they employ in their work. Such findings give the audience a better idea of the diversity of conditions on the planet and stimulate thought about how life arose and other planets where it might be found. Since most students become acquainted with microbiology through courses that introduce more 'typical' bacteria, this session should expand their horizons. More experienced investigators tend to specialize in one or a few niches; presentations at this session will likely increase their understanding of various and diverse environments.

Upon completion of this session, participants should be able to:

- Describe the diversity of environments in which bacteria and archaea thrive.
- Describe the methods used by investigators to study such organisms.
- Develop a sense of the special physical and chemical adaptations made by bacteria and archaea in extreme environments.

## SYMPOSIUM

**222 Fermented Foods and Beverages: A Flavorful Blend of Culinary Tradition and Microbial Terroir**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 605

**Convener:**

David Mills; Univ. of California-Davis, Davis, CA

**Presentations:**

3:00 p.m.

**New Insights into Traditional Cocoa Bean Fermentation for Chocolate Production**

Luc De Vuyst; Vrije Universiteit Brussels, Brussels, Belgium

3:30 p.m.

**MALDI-TOF MS of Microbial Mixtures: Impressions of its Applicability for Monitoring the Microbial Diversity and Dynamics in Food Ecosystems**Koenraad Van Hoorde<sup>1,2</sup>, P. Vandamme<sup>2</sup>, A. Van Landschoot<sup>1</sup>; <sup>1</sup>Univ. Coll. Ghent, Ghent, Belgium, <sup>2</sup>Ghent Univ., Ghent, Belgium

3:45 p.m.

**Characterization of Microflora in Latin-style Cheeses by Next-generation Sequencing Technology**Tina S. Lusk<sup>1</sup>, A. R. Ottesen<sup>2</sup>, J. R. White<sup>3</sup>, M. W. Allard<sup>2</sup>, E. W. Brown<sup>2</sup>, J. A. Kase<sup>2</sup>; <sup>1</sup>Oak Ridge Inst. for Sci. and Ed., Oak Ridge, TN, <sup>2</sup>Div. of Microbiol., Ctr. for Food Safety and Applied Nutrition, US Food and Drug Admin., College Park, MD, <sup>3</sup>Inst. for Genome Sci., Univ. of Maryland Sch. of Med., Baltimore, MD

4:00 p.m.

**Molecular Screening of the Health Potential of the Microbiota of African Cereal-based Fermented Foods**

Jean-Pierre Guyot; Inst. de Recherche pour le Développement, Montpellier, France

4:30 p.m.

**Investigation of the Antimicrobial Effect of Slurries Obtained from Composite Grains of *Zea mays* and *Sorghum vulgare* on *Escherichia coli* and *Salmonella typhi***Olofin T. Anike<sup>1</sup>, O. V. Olusegun<sup>2</sup>; <sup>1</sup>Ekiti State Univ., Ado Ekiti, Nigeria, <sup>2</sup>Federal Univ. of Technology, Akure, Akure, Nigeria

4:45 p.m.

**Biocontrol of *Staphylococcus aureus* in Milk Products**Lynn El Haddad<sup>1</sup>, S. Labrie<sup>2</sup>, D. St-Gelais<sup>3,2</sup>, C. P. Champagne<sup>3,2</sup>, S. Moineau<sup>1</sup>; <sup>1</sup>Groupe de recherche en écologie buccale, Univ. Laval, Quebec, QC, Canada, <sup>2</sup>Ctr. STELA/INAF, Univ. Laval, Quebec, QC, Canada, <sup>3</sup>Agriculture et Agroalimentaire Canada, Saint-Hyacinthe, QC, Canada

5:00 p.m.

**The Microbial Terroir of Wine: High Throughput Mapping of Microbes Associated with Wine Production**

David Mills; Univ. of California-Davis, Davis, CA

Culinary traditions around the world have produced in a diverse array of fermented foods and beverages that represent a significant portion of the human diet. The new tools of modern biology have rapidly advanced our understanding of these complex food fermentations. New microbial ecology approaches are providing insight into the biogeography and complex microbial interactions of a diverse array of fermented products such as chocolate, cheese, coffee, wine, beer and kimchi. This symposium will seek to provide a “new look” at age-old fermentations and provide a real world examples of how fermentation can convert otherwise inedible (and sometimes toxic) foodstuffs into valuable components of diets around the world.

Upon completion of this session, participants should be able to:

- Explain how different fermented foods and beverages are generated.
- Describe how the microbial ecology inherent to various fermentations influences product flavor and nutrition.
- Describe how microbial biogeography influences regional character of different foods.

## SYMPOSIUM

**223 A Light Guide to Microbial Photobiology: From Physiology to Synthetic Biology**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 403

**Convener:**

Mark Gomelsky; Univ. of Wyoming, Laramie, WY

**Presentations**

3:00 p.m.

**The Horn of Plenty: Cyanobacterial Photoreceptors of the Phytochrome Superfamily**

Nathan C. Rockwell; Univ. of California-Davis, Davis, CA

3:30 p.m.

**Seeing the Light: Understanding How Bacteriophytochromes Function under Anaerobic Conditions**Kathryn Fixen<sup>1</sup>, A. Baker<sup>1</sup>, E. Stojkovic<sup>2</sup>, J. Beatty<sup>3</sup>, C. Harwood<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Northeastern Illinois Univ., Chicago, IL, <sup>3</sup>Univ. of British Columbia, Vancouver, BC, Canada

3:45 p.m.

**Synthetic Light-activated Modules for Gene Expression Control in Bacterial Pathogens *in vivo***

Min-Hyung Ryu, M. Gomelsky; Univ. of Wyoming, Laramie, WY

4:00 p.m.

**Using Light for Predictive Control of *E. coli* Gene Expression Dynamics**

Jeffrey J. Tabor; Rice Univ., Houston, TX

4:30 p.m.

**Control of *Caulobacter* General Stress Signaling and Cell Adhesion by a Photosensory Two-component System**

Aretha Fiebig, J. Herrou, S. Crosson; Univ. of Chicago, Chicago, IL

4:45 p.m.

**Engineering Microbial Efflux Pumps for Bioremediation of Surface Waters**

Vikram Kapoor, R. Ravi, D. Wendell; Univ. of Cincinnati, Cincinnati, OH

5:00 p.m.

**Environmental Sensing: Fungal Photobiology**

Jennifer Loros; The Audrey and Theodor Geisel Sch. of Med. at Dartmouth, Hanover, NH

Can microbes see light and why would they need to “see”? Why do we need to know about microbial responses to light? Until recently, responses to light environment were believed to be limited to the photosynthetic microbes. This view was overturned by the realization that > 25% of all sequenced bacterial, archaeal and lower eukaryotic genomes encode photoreceptor proteins. In addition to regulating photosynthesis and production of photoprotective pigments, light has been shown to regulate circadian rhythms and phototaxis, as well as transition between the motile, single-cellular state and the surface-attached multicellular state, biofilm formation and virulence. This session will expose diverse biological responses triggered by photoreceptors of bacteria, archaea and lower eukaryotes and

discuss molecular mechanisms involved in light sensing and signal transduction. It will emphasize unique properties of light as a trigger of biological responses that can be used to control various processes with high spatiotemporal resolution, unachievable by chemical or genetic manipulations. The optogenetic and synthetic biology approaches involving microbial photoreceptors opened unprecedented opportunities for biomedical and biotechnological applications.

Upon completion of this session, participants should be able to:

- Evaluate the scope and importance of light-dependent physiology and behavior in diverse microbes.
- Discuss the basic principles of photosensing and signal transduction involving major classes of photoreceptors.
- Examine approaches utilizing microbial photoreceptors in optogenetic and synthetic biology applications.

## SYMPOSIUM

### 224 Microbial Ecosystems: From Networks to Models

3:00 p.m. – 5:30 p.m.

Location: Four Seasons Ballroom 4

Convener:

Jeroen Raes; VIB, Brussels, Belgium

**Presentations:**

3:00 p.m.

#### Inferring Species Interaction Networks from Meta-Omics Data

Jeroen Raes; VIB, Brussels, Belgium

3:30 p.m.

#### Microbial Network Analysis Of Microbial Community Succession During Uranium Bioremediation

Ye Deng<sup>1</sup>, Z. He<sup>1</sup>, P. Zhang<sup>1</sup>, W-M. Wu<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Stanford Univ., Stanford, CA

3:45 p.m.

#### The Impact of Social Network Linkages and Environmental Exposure on the Human Microbiome

Iliana Brito, E. Alm; Massachusetts Inst. of Technology, Cambridge, MA

4:00 p.m.

#### Species Interactions Alter Evolutionary Responses to a Novel Environment

Tim Barraclough; Imperial Coll. London, London, United Kingdom

4:30 p.m.

#### Species Matter: The Role of Inter-specific Competition in the Assembly of Bacterial Communities

A. Koeppel, Martin Wu; Univ. of Virginia, Charlottesville, VA

4:45 p.m.

#### Daily-to-decadal Community And Co-variation Patterns Of Marine Microbial Communities

David M. Needham<sup>1</sup>, C-E. T. Chow<sup>2</sup>, J. A. Cram<sup>1</sup>, R. Sachdeva<sup>1</sup>, A. Parada<sup>1</sup>, J. A. Fuhrman<sup>1</sup>; <sup>1</sup>Univ. of Southern California, Los Angeles, CA, <sup>2</sup>Univ. of British Columbia, Vancouver, BC, Canada

5:00 p.m.

#### Microbial Interactions: From Networks to Models

Elhanan Borenstein; Univ. of Washington, Seattle, WA

Microbial ecosystems are structured by a wide range of competitive and cooperative interactions between its inhabitants. Co-occurrence and correlation patterns extracted from metagenomics and 16S pyrosequencing datasets are increasingly used for the prediction of species interactions in environments ranging from the oceans to the

human microbiome. In addition, parallelized co-culture assays and combinatorial labelling experiments allow high-throughput discovery of ecological relationships between species. These techniques are opening the way towards global ecosystem network prediction and the development of ecosystem-wide dynamic models. In this session, we will explore various approaches to species interaction inference and prediction, discuss their strengths and weaknesses, and show their applications in a wide range of ecosystems. In addition, we will cover examples of systems biology and modelling approaches that can help understanding the metabolic basis of collaborative and competitive relationships (e.g. in the human gut) and investigate the role of species interactions in the evolution of adaptive traits.

Upon completion of this session, participants should be able to:

- Discuss different approaches for the inference of species interactions in ecosystems, their strengths and weaknesses.
- Determine how these techniques, together with ecosystem-wide metabolic modeling allows understanding the functioning of ecosystems such as the human microbiome.
- Identify the interplay between ecological interaction and the evolution of adaptive traits.

## SYMPOSIUM

### 225 New Frontiers in Synthetic Biology: Challenges and Opportunities

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 401

Convener:

Robert Egbert; Univ. of WA, Seattle, WA

**Presentations:**

3:00 p.m.

#### Synthetic Genomics to Create a Minimal Bacterial Cell and Some Other Neat Stuff

John I. Glass; J. Craig Venter Inst., Rockville, MD

Division G Lecturer

3:30 p.m.

#### BarCoder: a Bioinformatic Algorithm for Design of Organism-specific PCR Tracking Tags

M. Lux<sup>1,2</sup>, T. Goralski<sup>1,3</sup>, S. Katoski<sup>1,4</sup>, P. Buckley<sup>1</sup>, Henry S. Gibbons<sup>1</sup>; <sup>1</sup>US Army Edgewood Chemical Biological Ctr., Aberdeen Proving Ground, MD, <sup>2</sup>Virginia Polytechnic Inst. and State Univ., Blacksburg, VA, <sup>3</sup>Battelle, Inc., Aberdeen Proving Ground, MD, <sup>4</sup>Sci. Applications Intl. Corp., Aberdeen Proving Ground, MD

3:45 p.m.

#### ATP Sequestration by a Synthetic ATP-Binding Protein Leads to Novel Phenotypic Changes in *Escherichia coli*

Shaleen B. Korch<sup>1</sup>, J. M. Stomei<sup>2</sup>, M. A. Leon<sup>2</sup>, M. A. Hamada<sup>1</sup>, C. R. Stevenson<sup>2</sup>, B. W. Simpson<sup>2</sup>, J. C. Chaput<sup>2</sup>; <sup>1</sup>Midwestern Univ., Glendale, AZ, <sup>2</sup>Arizona State Univ., Tempe, AZ

4:00 p.m.

#### Bottom-up Engineering of Multicellular Behavior: A Synthetic Division of Labor in *E. coli* for Complex Feedstock Utilization

Robert Egbert; Univ. of WA, Seattle, WA

4:30 p.m.

#### A Study on Antimicrobial Activity of Lysosomes Based on Surface Modification of Lysosomal Membrane

Seung Hyuck Bang<sup>1</sup>, Y-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Korea, Republic of, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Korea, Republic of

4:45 p.m.

**Reconstruction of Integrated Metabolic and Transcriptional Regulatory Network Models as a Platform for Microbial Systems Engineering**

Joonhoon Kim, J. L. Reed; Univ. of Wisconsin-Madison, Madison, WI

5:00 p.m.

**Scalable Technologies for Synthetic Biology: From Parts to Modules to Systems**

Ron Weiss; MIT, Cambridge, MA

Recent advances in sequencing technologies, molecular biology methods, and computational analyses are now paving the road to a myriad of exciting new developments in synthetic biology. Specifically, our enhanced ability to model, measure, and manipulate complex biological systems is giving rise to novel approaches for designing, constructing, validating and refining synthetic biological devices on a scale never before imagined. Engineering efforts can now target multiple organizational levels, from simple molecules to whole communities. This session will focus on new frontiers in synthetic biology enabled by such new technologies, as well as on the potential applications and opportunities embodied by these novel approaches and the challenges lying ahead.

**SYMPOSIUM****226 New Insights into the Regulation of Translation**

3:00 p.m. – 5:30 p.m.

Location: Mile High Ballroom 4

**Conveners:**

Peter J. Myler; Seattle Biomedical Res. Inst., Seattle, WA

Paul Babitzke; The Pennsylvania State Univ., University Park, PA

**Presentations:**

3:00 p.m.

**Coupling of Transcription and Translation via RfaH**

Irina Artsimovitch; The Ohio State Univ., Columbus, OH

3:30 p.m.

**Novel Regulatory Roles for Bacterial DEAD-box RNA Helicases**Christopher A. Vakulskas<sup>1</sup>, A. Pannuri<sup>1</sup>, P. Babitzke<sup>2</sup>, T. Romeo<sup>1</sup>; <sup>1</sup>Univ. of Florida, Gainesville, FL, <sup>2</sup>Penn State Univ., University Park, PA

3:45 p.m.

**Elucidation of the Elongation Factor P-dependent Proteome**Steven J. Hersch<sup>1</sup>, M. Wang<sup>2</sup>, K-M. Moon<sup>3</sup>, L. J. Foster<sup>3</sup>, M. Ibba<sup>2</sup>, W. W. Navarre<sup>1</sup>; <sup>1</sup>Dept. of Molecular Genetics, Univ. of Toronto, Toronto, ON, Canada, <sup>2</sup>Dept. of Microbiol., The Ohio State Univ., Columbus, OH, <sup>3</sup>Ctr. for High-Throughput Biology and Dept. of Biochemistry and Molecular Biology, Univ. of British Columbia, Vancouver, BC, Canada

4:00 p.m.

**The Role of sRNAs in Controlling Translation in *E. coli***

Eric Masse; Université de Sherbrooke, Sherbrooke, Canada

4:30 p.m.

**Dynamic Reprogramming of tRNA Modifications in the Intra-erythrocytic Developmental Cycle of Human Malaria Parasite *P. falciparum* Implies Translational Control of Gene Expression**Chee Sheng Ng<sup>1,2</sup>, K. Lim<sup>3</sup>, P. Preiser<sup>1,2</sup>, P. Dedon<sup>3,2</sup>; <sup>1</sup>Nanyang Technological Univ., Sch. of Biological Sci., Singapore, <sup>2</sup>Singapore-MIT Alliance in Res. and Technology, Infectious Disease IRG, Singapore, <sup>3</sup>Massachusetts Inst. of Technology, Dept. of Biological Engineering & Ctr. for Environmental Hlth.Sci., Cambridge, MA

4:45 p.m.

**Ribosome Profiling of the *Caulobacter* Cell-Cycle**Jared M. Schrader<sup>1</sup>, G-W. Li<sup>2,3</sup>, B. Zhou<sup>1</sup>, K. Lasker<sup>1</sup>, J. Weissman<sup>2,3</sup>, L. Shapiro<sup>1</sup>; <sup>1</sup>Stanford Univ., Stanford, CA, <sup>2</sup>Univ. of California, San Francisco, San Francisco, CA, <sup>3</sup>HHMI, CA

5:00 p.m.

**Ribosome Profiling Reveals Extensive Translational Regulation in Trypanosomatids**

Peter J. Myler; Seattle Biomedical Res. Inst., Seattle, WA

Translational control is rapidly gaining recognition as being critical in the pathogenesis of bacterial, protozoal, fungal, and viral pathogens, as well as controlling gene expression in other microbes. Recent advances in technology and our understanding of the processes involved in translation suggest that diverse organisms share a variety of molecular mechanisms that regulate the rate at which mRNAs are translated over time and in response to different environmental conditions. By bringing together experts in translational control from a variety of different fields, this session will provide an overview of approaches available for elucidating the plethora of mechanisms microbes employ to regulate gene expression at the post-transcriptional level.

Upon completion of this session, participants should be able to:

- Describe the important link between transcription and translation.
- Explain the important role translational control plays in microbial pathogenesis.
- Identify the new approaches/methodologies for identifying translationally regulated mRNAs.

**SYMPOSIUM****227 Organizing, Replicating and Segregating the Genome**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 405

**Conveners:**

Stephen D. Bell; Indiana Univ., Bloomington, IN

**Presentations:**

3:00 p.m.

**DNA Replication in the Archaea**

Stephen D. Bell; Indiana Univ., Bloomington, IN

3:30 p.m.

**Centromeric Regulation of Actin-like Filament Nucleation, Bundling, And Comet-tail Formation in the Plasmid-segregating Alf System**Jessica K. Polka<sup>1</sup>, R. D. Mullins<sup>2</sup>; <sup>1</sup>HMS, Boston, MA, <sup>2</sup>UCSF, San Francisco, CA

3:45 p.m.

**Surfing the Bacterial Nucleoid on a Protein Wave: A Key role for Spatial Confinement in Partition and Transport in Bacteria**

Vecchiarelli G. Vecchiarelli, K. C. Neuman, K. Mizuuchi; NIH/NIDDK, Bethesda, MD

4:00 p.m.

**Stability and Turnover in the Replisome of *Escherichia coli***

Rodrigo Reyes Lamothe; McGill Univ., Montreal, QC, Canada



4:30 p.m.

***E. coli* ORC Mutants Require DNA Bending Proteins to Assemble Pre-RC**Gulpreet Kaur, M. Vora, K. Dyson, J. Grimwade, A. C. Leonard;  
Florida Inst. of Technology, Melbourne, FL

4:45 p.m.

**Remodeling the *E. coli* Nucleoid by RNA Polymerase**Cedric Cagliero, Y. N. Zhou, D. J. Jin; Frederick Natl. Lab. (NCI),  
Frederick, MD

5:00 p.m.

**Bacterial Chromosomal Macrodomain Selective Proteins and their Roles in Chromosome Organization and Segregation**

Maria Schumacher; Duke Univ., Durham, NC

The last few years have seen dramatic advances in our understanding of both the mechanisms and the organisation of DNA replication in prokaryotic cells. In particular, structural biology has revealed the architecture of replication protein assemblies and advances in prokaryotic cell biology have led to much greater appreciation of the organization of the nucleoid and the interface between functional organization and the spatial control of replication. This session will bring together experts in biochemistry, structural biology and cell biology to illustrate the dramatic pace of research in this field.

Upon completion of this session, participants should be able to:

- Discuss the differences between the machineries that replicate bacterial and archaeal genomes.
- Identify how the structure of the nucleoid interfaces with its replication.
- Assess the mechanisms of DNA replication.

**SYMPOSIUM****228 Phylogenomics and Microbial Species Concepts**

3:00 p.m. – 5:30 p.m.

Location: Meeting Room 109

**Conveners:**Holly Bik; Univ. of California, Davis, CA  
Meghan A. May; Towson Univ., Towson, MD**Presentations:**

3:00 p.m.

**Bacterial Species Exist, Metagenomics Reveal**

Konstantinos T. Konstantinidis; Georgia Inst. of Tech., Atlanta, GA

3:30 p.m.

**Psychrotolerant Acidophiles in a Subsurface Metal Sulphide Mine: From (Meta)Genomes to Biomining**Carolina Gonzalez<sup>1</sup>, F. Ossandon<sup>2</sup>, M. Liljeqvist<sup>3</sup>, A. Adam<sup>4</sup>, D. S. Holmes<sup>2</sup>, M. Dopson<sup>4</sup>, J. Valdes<sup>1</sup>; <sup>1</sup>Bio-Computing Div., Ctr. for Systems Biotechnology, Fraunhofer Chile Res., Santiago, Chile, <sup>2</sup>Ctr. for Bioinformatics and Genome Biology, Fundacion Ciencia & Vida, Santiago, Chile, <sup>3</sup>Dept. of Molecular Biology, Umeå Univ., Umeå, Umeå, Sweden, <sup>4</sup>Ctr. for Ecology and Evolution in Microbial Model Systems, Linnaeus Univ., Kalmar, Sweden

3:45 p.m.

**Combined Single-cell Genomic and Metagenomic Analyses Reveal a Deep Water SAR11 Bathotype**J. Cameron Thrash<sup>1</sup>, B. Temperton<sup>1</sup>, B. K. Swan<sup>2</sup>, Z. C. Landry<sup>1</sup>, E. F. DeLong<sup>3</sup>, R. Stepanauskas<sup>2</sup>, S. J. Giovannoni<sup>1</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Bigelow Lab. for Ocean Sci., West Boothbay Harbor, ME, <sup>3</sup>Massachusetts Inst. of Technology, Cambridge, MA

4:00 p.m.

**Species Concept for Prokaryotes (provisional title)**

Ramon Rosselló-Móra; Mediterranean Inst. for Adv. Studies- IME-DEA (CSIC-UIB), Esporles, Spain

4:30 p.m.

**Distribution-based Clustering: Using Ecology to Refine the Operational Taxonomic Unit**

Sarah P. Preheim, A. R. Perrotta, A. M. Martin-Platero, A. Gupta, E. J. Alm; Massachusetts Inst. of Technology, Cambridge, MA

4:45 p.m.

**Evolutionary dynamics of *Vibrio cholerae* O1 following a Single Source Introduction to Haiti**Lee S. Katz<sup>1</sup>, A. Petkau<sup>2</sup>, J. Beaulaurier<sup>3</sup>, S. Tyler<sup>2</sup>, M. Turnsek<sup>1</sup>, Y. Guo<sup>4</sup>, S. Wang<sup>4</sup>, E. Paxinos<sup>4</sup>, E. S. Antonova<sup>5</sup>, L. Gladney<sup>1</sup>, S. Stroika<sup>1</sup>, J. Folster<sup>1</sup>, L. Rowe<sup>1</sup>, M. Freeman<sup>1</sup>, N. Knox<sup>2</sup>, M. Grace<sup>1</sup>, J. Boncy<sup>6</sup>, B. K. Hammer<sup>5</sup>, Y. Boucher<sup>7</sup>, A. Bashir<sup>3</sup>, W. P. Hanage<sup>8</sup>, G. Van Domselaar<sup>2</sup>, C. L. Tarr<sup>1</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>Publ. Hlth. Agency of Canada, Winnipeg, MB, Canada, <sup>3</sup>Mount Sinai Sch. of Med., New York City, NY, <sup>4</sup>Pacific BioSci.s, San Francisco, CA, <sup>5</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>6</sup>LNSP, HAITI, <sup>7</sup>Univ. of Alberta, Edmonton, AB, Canada, <sup>8</sup>Harvard Univ., Cambridge, MA

5:00 p.m.

**Comparative Analysis of Metagenomes from a Phylogenetic Perspective**

Frederick A. Matsen IV; Fred Hutchinson Cancer Res. Ctr., Seattle, WA

Phylogenomic studies merge phylogenetic and genomic approaches in order to investigate ecological and evolutionary patterns. In addition to phylogeny-driven computational tools, phylogenomic research foci may encompass themes such as functional profiling and the evolution of function, microbial community ecology and evolution, co-evolution and host/parasite relationships, or comparative genomics and genomic variation (e.g. 'core genome' and 'pan-genome' concepts). How do we make sense of such large, disparate datasets, and merge this knowledge to further our understanding of microbial species concepts? This session will bring together a diverse set of speakers harnessing phylogenomic approaches, from computational biology to community ecology.

Upon completion of this session, participants should be able to:

- Discuss cutting-edge methods and recent biological insights in phylogenomic research.
- Discuss the challenges and future research directions for defining microbial species.
- Present a breadth of interdisciplinary viewpoints, from computer science to community ecology.

**SYMPOSIUM****229 QUIZ BUSTERS: So You THINK You Know Microbiology (273-553-13)**

For this session, PACE is only offered at the overall session level.

3:00 pm- 5:30 pm

Location: Meeting Room 705

**Conveners:**Peter H. Gilligan; Univ. of North Carolina Hosp., Chapel Hill, NC  
Roberta B. Carey; CDC, Atlanta, GA**TEAM 1: The Resistance (EPA-ASM)**Olarae Giger; Main Line Hlth. System, Philadelphia, PA  
Karen Sawyer; Christiana Med. Ctr., Wilmington, DE  
Sharon Strauss; The Reading Hosp. & Med. Ctr., Reading, PA



**TEAM 2: Southwest Bug Busters**

**Karissa D. Culbreath**; Tricore Reference Lab., Albuquerque, NM

**Antonio Gallegos**; Tricore Reference Lab., Albuquerque, NM

**Michael Santa Cruz**; Banner Health, Phoenix, AZ

**TEAM 3: Swarm (SWACM)**

**Steven D. Dallas**; UTHSC San Antonio, San Antonio, TX

**Denise Robinson**; HCA Healthcare, NEED, IA

**Joslyn Pribble**; Methodist Hlth. System, Dallas, TX

**TEAM 4: Baywatchers (SCASM)**

**Romney M. Humphries**; UCLA, Los Angeles, CA

**Claudia J. Hinnebusch**; Univ. of California Clinical Labs, Los Angeles, CA

**Mickey Amos**; Kaiser Permanente, North Hollywood, CA

This is the ultimate test of knowledge for the clinical microbiologist. Four teams representing regional microbiology societies will vie for the title of "Expert" as they answer questions on current infectious disease problems, outbreaks, taxonomy, and identification methods. The quiz will cover case studies and diagnostic puzzles that supervisors and lab directors should be able to solve. This question and answer format will allow the audience to test their knowledge of what's new in clinical microbiology. Quiz questions are intended to present real-life problems and reflect current clinical and public health infectious disease issues. Lessons learned from teaching points and discussion can be applied to their laboratory testing.

- Determine the optimal methods for identifying emerging pathogens.
- Describe new strategies for the detection of antimicrobial resistance.
- Identify guidelines that will improve their practice of clinical microbiology.

**Course Level:** Intermediate

**SYMPOSIUM****230 When Microbes Target the Nucleus**

3:00 p.m.- 5:30 p.m.

**Location:** Meeting Room 207

**Convener:**

**Hélène Bierre**; INRA-Pasteur Inst., Paris, France

**Presentations:**

3:00 p.m.

**Bacterial Targeting of Host Chromatin:  
The *Listeria* Paradigm**

**Hélène Bierre**; INRA-Pasteur Inst., Paris, France

3:30 p.m.

**CYBB Promoter Down-regulation by *Anaplasma phagocytophilum* AnkA: A Role For Recruited HDAC1?**

**Kristen E. Rennoll-Bankert**, S. H. Gilmore, J. S. Dumler; The Johns Hopkins Univ. Sch. of Med., Baltimore, MD

3:45 p.m.

**Going Retro: Bacterial Genotoxins Selectively Exploit Host Cell Transport Pathways to the Nucleus**

**Amandeep Gargi**<sup>1</sup>, T. Batcha<sup>1</sup>, B. Kim<sup>1</sup>, A. Eshraghi<sup>2</sup>, K. A. Bradley<sup>2</sup>, S. R. Blanke<sup>1</sup>; <sup>1</sup>Univ. of Illinois, Urbana, IL, <sup>2</sup>Univ. of California, Los Angeles, CA

4:00 p.m.

**Bacterial TAL Effectors: Mimics of Eukaryotic Transcription Factors**

**Ulla Bonas**; Martin-Luther-Univ. Halle-Wittenberg, Halle, Germany

4:30 p.m.

**An *Escherichia coli* Effector Protein Induces Host Mutation via Disruption of DNA Mismatch Repair**

**Karen M. Scanlon**, O. D. K. Maddocks, M. S. Donnenberg; Univ. of Maryland, Baltimore, Baltimore, MD

4:45 p.m.

**An Intriguing Bacterial Symbiont in the Nucleus of Amoebae**

**Federik Schulz**<sup>1</sup>, T. Weinmaier<sup>1</sup>, I. Lagkouvardos<sup>1</sup>, R. Kostanjšek<sup>2</sup>, T. Rattei<sup>1</sup>, M. Horn<sup>1</sup>; <sup>1</sup>Univ. of Vienna, Vienna, Austria, <sup>2</sup>Univ. of Ljubljana, Ljubljana, Slovenia

5:00 p.m.

**Endonuclear Symbiotic Bacteria**

**Masahiro Fujishima**; Yamaguchi Univ., Yamaguchi, Japan

The eukaryotic nucleus was long considered to be 'safe' from attack by pathogenic bacteria. This session will highlight recent research on pathogenic or symbiotic bacteria that can deliver molecules called 'nucleomodulins' to the nucleus of plants and animals, or in some cases even invade the nucleus. Attendees will learn about intranuclear bacteria, and bacterial effectors that hijack host nuclear processes by interfering with transcription, chromatin-remodeling, RNA splicing or DNA replication and repair. The research presented in this session will show how the study of nucleomodulins and endonuclear bacteria can generate new insights into long-term impacts of infectious diseases and create novel tools for biotechnological applications and for deciphering the regulation of nuclear dynamics. We encourage provocative discussions on how bacteria can mediate imprints on host cells and have long-term genetic and epigenetic effects.

Upon completion of this session, participants should be able to:

- Identify bacteria and bacterial molecules that manipulate eukaryotic nuclear processes.
- Discuss the effect of nucleomodulins and intranuclear bacteria on plant and animal health.
- Hypothesize on the long-term imprints that bacteria that target the nucleus might have.

## Presentation times in Exhibit Hall A:

**Sessions 011 – 034.** Sunday, May 19 at 10:45 a.m. – 12:30 p.m.

**Sessions 039 – 062.** Sunday, May 19 at 1:00 p.m. – 2:45 p.m.

**Sessions 087 – 111.** Monday, May 20 at 10:45 a.m. – 12:30 p.m.

**Sessions 114 – 137.** Monday, May 20 at 1:00 p.m. – 2:45 p.m.

**Sessions 163 – 186.** Tuesday, May 21 at 10:45 a.m. – 12:30 p.m.

**Sessions 191 – 214.** Tuesday, May 21 at 1:00 p.m. – 2:45 p.m.

**Late Breaker Diagnostic Microbiology and Epidemiology Posters** will be showcased in a specially designated area in Exhibit Hall A and available for viewing throughout all Poster Sessions. The Late Breaker DM&E presentation time in Exhibit Hall A:

**Session 231.** Monday, May 20 at 10:45 a.m. – 12:30 p.m.

**This year, Outstanding Student Posters will be showcased in a specially designated area in Exhibit Hall A. The recipients of the asm2013 Outstanding Student Posters are:**

### Sabrina ALI

**Crystal Structure of Hha in Complex with the N-Terminal Dimerization Domain of H-NS Provides New Insight into the Regulation of Foreign Genes in *Salmonella***

S. S. Ali<sup>1</sup>, J. C. Whitney<sup>2,3</sup>, J. Stevenson<sup>1</sup>, H. Robinson<sup>4</sup>, P. L. Howell<sup>2,3</sup>, W. W. Navarre<sup>1</sup>; <sup>1</sup>Dept. of Molecular Genetics, Univ. of Toronto, Toronto, ON, Canada, <sup>2</sup>Dept. of Biochemistry, Univ. of Toronto, Toronto, ON, Canada, <sup>3</sup>The Hosp. for Sick Children, Toronto, ON, Canada, <sup>4</sup>Brookhaven Natl. Lab., Upton, NY

### Brent ANDERSON

**The Impacts of a Poultry Processing Plant on the Diversity and Transferability of Tetracycline Resistance Genes in a Headwater Stream in Greenville, South Carolina**

B. Anderson, S. McCauley, G. Lewis, M-K. Liao; Furman Univ., Greenville, SC

### Marinus BARNARD

**Evaluation of the Sensititre MycoTB Plate Assay and the HAIN Line Probe Assays for Drug Susceptibility Testing in *Mycobacterium tuberculosis* against the First- and Second-Line Drugs**

M. Barnard<sup>1,2</sup>, R. Warren<sup>2</sup>, P. Van Helden<sup>2</sup>, N. Parrish<sup>3</sup>, C. McArthur<sup>4</sup>; <sup>1</sup>Natl. Hlth. Lab. Service (NHLS), Cape Town, South Africa, <sup>2</sup>Dept. of Sci. and Technology/Natl. Res. Fndn. Ctr. of Excellence in BioMed. Tuberculosis Res., Univ. of Stellenbosch/MRC Ctr. for Molecular and Cellular Biology, Dept. of BioMed. Sci., Cape Town, South Africa, <sup>3</sup>Dept. of Pathology, Johns Hopkins Med. Inst., Baltimore, MD, <sup>4</sup>Univ. of Missouri, Kansas City, MO

### Glenn CAPODAGLI

**Variability of Nairoviruses' vOTUs' Specificity for Ub and ISG15**

G. Capodagli, M. Deaton, E. Baker, R. Lumpkin, S. Pegan; Univ. of Denver, Denver, CO

### Heliodoro CARDENAS

**A Rapid Method for Detecting Shigella and EHEC**

H. Cardenas; UC Merced, Merced, CA

### Charlotte COLLINGWOOD

**Pathogenomic Characterisation of a Novel, Layer-Associated Avian Pathogenic *Escherichia coli***

C. R. Collingwood, C. Winstanley, P. Wigley; Univ. of Liverpool, Liverpool, United Kingdom

### Deanna COLTON

**Contributions of Different Players to cAMP-CRP-mediated Regulation in *Vibrio fischeri***

D. M. Colton, E. V. Stabb; Univ. of Georgia, Athens, GA

### Jacob CRAM

**Inter-depth Associations Between Marine Bacterial Communities in a Ten Year Time Series**

J. A. Cram<sup>1</sup>, L. Xia<sup>1</sup>, D. Needham<sup>1</sup>, R. Sachdeva<sup>1</sup>, C-E. Chow<sup>2</sup>, A. E. Parada<sup>1</sup>, J. Steele<sup>3</sup>, J. A. Fuhrman<sup>1</sup>; <sup>1</sup>Univ. of Southern California, Los Angeles, CA, <sup>2</sup>Univ. of British Columbia, Vancouver, BC, Canada, <sup>3</sup>California Inst. of Technology, Pasadena, CA

### Robert DAVIS

**cAMP Receptor Protein (CRP) Regulates Metabolic Enzyme Acetylation in *E. coli***

R. Davis<sup>1</sup>, A. J. Walker-Peddakotla<sup>1</sup>, M. L. Kuhn<sup>2</sup>, B. K. Chi<sup>3</sup>, D. Becher<sup>3</sup>, K. Gronau<sup>3</sup>, H. Antelmann<sup>3</sup>, W. F. Anderson<sup>2</sup>, A. J. Wolfe<sup>1</sup>; <sup>1</sup>Loyola Univ. Chicago, Maywood, IL, <sup>2</sup>Northwestern Univ. Feinberg Sch. of Med., Chicago, IL, <sup>3</sup>Ernst-Moritz-Arndt-Universität of Greifswald, Greifswald, Germany

### Juwen DUBOIS

**Transcriptional Response to Hypoxia in the Dimorphic Fungus *Histoplasma capsulatum***

J. C. DuBois<sup>1,2</sup>, A. G. Smulian<sup>1,2</sup>; <sup>1</sup>Univ. of Cincinnati Coll. of Med., Cincinnati, OH, <sup>2</sup>Cincinnati VA Med. Ctr., Cincinnati, OH

### Ryan FERGUSON

**Hindered Polarization of Th17 Cells and Inhibition of Trafficking Receptors on Plasmacytoid Dendritic Cells and Effector Memory T-Cells during *B. pertussis* Infection**

R. J. Ferguson, T. M. Nguyen, V. Wu, C. S. Sequeira, S. Niknam, J. Wan, M. Taylor, T. Abramson; San Jose State Univ., San Jose, CA

### Caleb FISCHER

**Maintenance Of Drosophila Microbiota Abundance Depends On Frequent Ingestion Of Bacteria**

C. Fischer, J. Miles, J. Blum, J. Handelsman; Yale Univ., New Haven, CT

### Beniam GHEBREMEDHIN

**ST101 Subclones as Major Clonal Group of CTX-M-producing *K. pneumoniae* Isolates from Nigeria and the Spread of *bla*<sub>OXA-10</sub> and *bla*<sub>CMV-2</sub> ESBL**

B. Ghebremedhin<sup>1</sup>, I. Aibinu<sup>2</sup>, T. Odugbemi<sup>3</sup>, W. Koenig<sup>1</sup>; <sup>1</sup>Clinical Microbiol., Magdeburg, Germany, <sup>2</sup>Med. Microbiol. & Parasitology, Lagos, Nigeria, <sup>3</sup>Med. Microbiol. & Parasitology, Lagos, Nigeria

### Ana GUIMARAES

**Comparative Genomics and Phylogenomics of Hemotrophic Mycoplasmas**

A. M. S. Guimaraes, A. P. Santos, N. C. do Nascimento, J. B. Messick; Purdue Univ., Coll. of Vet. Med., West Lafayette, IN

### Fengguang GUO

**Three Long-chain Acyl-CoA Synthetases (ACSS) in Zoonotic Pathogen *Cryptosporidium parvum***

F. Guo<sup>1</sup>, H. Zhang<sup>1</sup>, G. Zhu<sup>1</sup>; <sup>1</sup>Coll. of Vet. Med. & BioMed. Sci., Texas A&M Univ., College Station, TX

### Jocelyn HAUSER

**Modulation of Capsule Production in *Streptococcus pneumoniae* by SpxB and Hydrogen Peroxide**

J. R. Hauser, J. Yother; Univ. of Alabama at Birmingham, Birmingham, AL

### Amanda HENSON

**Detection of *Streptococcus pyogenes* Using illumigene® Group A Streptococcus Assay**

A. M. Henson<sup>1,2</sup>, D. Carter<sup>1</sup>, K. Todd<sup>1</sup>, S. Shulman<sup>1,3</sup>, X. Zheng<sup>1,3</sup>; <sup>1</sup>Ann & Robert H. Lurie Children's Hosp. of Chicago, Chicago, IL, <sup>2</sup>Rush Univ. Coll. of Hlth. Sci., Chicago, IL, <sup>3</sup>Northwestern Univ. Feinberg Sch. of Med., Chicago, IL

## Outstanding Student Posters *Continued*

### Jordan JENSON

#### Isolation and Characterization of Three Novel Bacteriophages of *Bacillus cereus*

J. Jensen, J. Fisher, J. Grose, S. Burnett, D. Breakwell; Brigham Young Univ., Provo, UT

### Kristen JOHNSON

#### Reliability of Vitek-2 for Detection of Methicillin Resistant Coagulase-negative Staphylococci

K. N. Johnson<sup>1</sup>, K. Andreacchio<sup>2</sup>, P. H. Edelstein<sup>3</sup>; <sup>1</sup>Sch. of Arts and Sci., Univ. of Pennsylvania, Philadelphia, PA, <sup>2</sup>Hosp. of the Univ. of Pennsylvania, Philadelphia, PA, <sup>3</sup>Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA

### Jisun KIM

#### Inhibition of Quorum Sensing Signal Transmission by Indole in *Acinetobacter oleivorans* DR1

J. Kim, W. Park; Dept. of Environmental Sci. and Ecological Engineering, Korea Univ., Seoul, Korea Republic of

### Nicholas LEIBY

#### Non-Parallelism, Mutators, and Protein Destabilization: Metabolic Tradeoffs in *Escherichia coli* Long-Term Evolution

N. Leiby; Harvard Univ., Cambridge, MA

### Rita LUU

#### Energy Tax to Phenylacetic Acid in *Pseudomonas putida* F1

R. A. Luu<sup>1</sup>, B. J. Schneider<sup>2</sup>, C. C. Ho<sup>1</sup>, V. Nesteryuk<sup>1</sup>, S. E. Ngwese<sup>2</sup>, X. Liu<sup>1</sup>, J. V. Parales<sup>1</sup>, J. L. Ditty<sup>2</sup>, R. E. Parales<sup>1</sup>; <sup>1</sup>Univ. of California, Davis, Davis, CA, <sup>2</sup>Univ. of St. Thomas, St. Paul, MN

### Ankit MALIK

#### Contrasting Immune Responses Mediate *Campylobacter jejuni* Induced Colitis and Autoimmunity

A. Malik, L. Mansfield; MSU, East Lansing, MI

### David MERRIAM

#### Gammaherpesvirus Regulation of The 3' Untranslated Region of The Immediate Early Transactivator, Rta

D. P. Merriam, D. Hawman, K. W. Diebel, L. van Dyk; Univ. of Colorado, Denver, Aurora, CO

### Dipu MOHAN KUMAR

#### DNaseX, a GPI-anchored Nucleotidase, Is a Mammalian Receptor for Entry for the Novel *Ehrlichia chaffeensis* Invasin ECH1038

D. Mohan Kumar<sup>1</sup>, M. Yamaguchi<sup>1</sup>, K. Miura<sup>1</sup>, M. Los<sup>2</sup>, J. Coy<sup>3</sup>, Y. Rikihisa<sup>1</sup>; <sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>Integrative Regenerative Med. Ctr. Linköping Univ., Linköping, Sweden, <sup>3</sup>Vorstand, CSO TAVARLIN® AG, Darmstadt, Germany

### Hesham NAWAR

#### Analysis of The Effect of Antigenic Diversity of The *Neisseria meningitidis* Outer Membrane Porin B Protein (PorB) on Strain Fitness

H. F. Nawar, K. F. Smith, L. Amer, W. F. Vann, M. C. Bash; Lab. of Bacterial Polysaccharides, Div. of Bacterial, Parasitic and Allergenic Products, Ctr. for Biologics Evaluation and Res., FDA, Bethesda, MD

### Shuping NIE

#### *Fusobacterium nucleatum* Subspecies Identification by Matrix-Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry

S. Nie<sup>1,2</sup>, X. Wang<sup>3</sup>, D. Pincus<sup>4</sup>, Y. Huang<sup>3</sup>, X. Lu<sup>1</sup>, Y. Han<sup>3</sup>, Y-W. Tang<sup>2</sup>; <sup>1</sup>Dept. of Lab. Med., Futian Hosp., Guangdong Med. Coll., Shenzhen, China, <sup>2</sup>Dept. of Lab. Med., Mem. Sloan-Kettering Cancer Ctr., New York, NY, <sup>3</sup>Dept. of Periodontics, Case Western Reserve Univ., Cleveland, OH, <sup>4</sup>bioMérieux Inc., Hazelwood, MO

### Solomon OPOKU

#### Ampc Beta-Lactamase Production among *Pseudomonas aeruginosa* and *Proteus mirabilis* at the Komfo Anokye Teaching Hospital in Kumasi Ghana

S. Opoku; Kwame Nkrumah Univ. of Sci. and Technology, Kumasi, Ghana

### Cameron PARSONS

#### Characterization of a Novel Cadmium Resistance Gene in *Listeria monocytogenes*

C. Parsons, S. Lee, S. Kathariou; North Carolina State Univ., Raleigh, NC

### V. Ryan PERRY

#### Seasonal Variation in Metabolic Activity of Anaerobic Microbial Communities in Salt Marsh Sediments Impacted by the Deepwater Horizon Oil Spill

V. R. Perry<sup>1</sup>, M. A. Sanderson<sup>1</sup>, N. A. Sutton<sup>1</sup>, N. J. Patel<sup>1</sup>, D. M. Deocampo<sup>2</sup>, K-J. Chin<sup>1</sup>; <sup>1</sup>Dept. of Biology, Georgia State Univ., Atlanta, GA, <sup>2</sup>Dept. of GeoSci., Georgia State Univ., Atlanta, GA

### Marijo ROIKO

#### A pH Switch Regulates Cytolytic Activity of *Toxoplasma gondii*'s Lytic Egress Factor

M. S. Roiko, V. B. Carruthers; Univ. of Michigan, Ann Arbor, MI

### Amanda SEATON

#### Defining the Requirements for Bacteriophage HK639 Early Gene Expression

A. L. Seaton, R. A. King; Western Kentucky Univ., Bowling Green, KY

### Viplendra SHAKYA

#### Sex Determination as a Direct Control of Mitochondrial Inheritance In *Phycomyces*

V. P. S. Shakya, A. Idnurm; Sch. of Biological Sci., Univ. of Missouri Kansas City, Kansas City, MO

### Rana SINGLETON

#### Evolutionary RNA Coliphage Q $\beta$ Display Functional Peptides: Advantages and Limits

R. Singleton<sup>1</sup>, V. Dennis<sup>1</sup>, S. Shree<sup>1</sup>, C. Skamel<sup>2</sup>, A. Bopda Waffo<sup>1</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Campus of Technology Freiburg (CTF), Freiburg, Germany

### Tiffany TSE

#### Virulence Gene Expression of *Vibrio parahaemolyticus*: Effects of Viable-but-nonculturable State, Temperature and Nutrient

T. Tse, M. Yeung; California Polytechnic State Univ., San Luis Obispo, San Luis Obispo, CA

### Jessica TYSON

#### Multiple *Legionella pneumophila* Type II Secretion Substrates, Including an Entirely Novel Protein, Contribute to Differential Infection of *Amoebae*

J. Y. Tyson, M. M. Pearce, P. Vargas, N. P. Cianciotto; Northwestern Univ., Chicago, IL

### Seth WENNER

#### *Pseudomonas aeruginosa* Osmoregulated Periplasmic Glucans Modulate Envelope Stress Response under Water-limiting Conditions

S. J. Wenner, L. J. Halverson; Dept. of Plant Pathology and Microbiol. Iowa State Univ., Ames, IA

### Rebecca WHITNEY

#### Building Better Cellulases: Exploring the Reaction Mechanism of Cel 6A form *Cellulomonas fimi*

R. C. Whitney, A. Clarke; Univ. of Guelph, Guelph, ON, Canada

### Nana WILSON

#### Anti-malarial and Statin Combination Therapy Eliminates Mortality Associated with Experimental Cerebral Malaria

N. O. Wilson, W. Solomon, L. Anderson, J. Patrickson, S. Pitts, V. Bond, M. Liu, J. Stiles; Morehouse Sch. of Med., Atlanta, GA

### Yaqi YOU

#### A Persistent and Mobile Resistome in Poultry-litter-impacted Farm Soil

Y. You<sup>1</sup>, M. J. Ward<sup>2</sup>, M. Hilpert<sup>1</sup>; <sup>1</sup>Johns Hopkins Univ., Baltimore, MD, <sup>2</sup>Univ. of South California, Los Angeles, CA

Sunday, May 19

10:45 a.m. – 12:30 p.m.

**011 Microbial Susceptibility Issues (Division A)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1 Third-generation Cephalosporin-resistant *V. cholerae* O1 Strains Isolated from Clinical and Aquatic Environment Samples in Bangladesh**  
D. Ceccarelli<sup>1</sup>, S. Yahyai<sup>1</sup>, A. Iqbal<sup>2</sup>, M. Alam<sup>2</sup>, B. Sack<sup>3</sup>, A. Huq<sup>1</sup>, R. R. Colwell<sup>1,3,4</sup>; <sup>1</sup>Maryland Pathogen Res. Inst., Dept. of Cell Biol. and Molecular Genetics, Univ. of Maryland, College Park, MD, <sup>2</sup>Intl. Ctr. For Diarrhoeal Disease Res., Bangladesh, Dhaka, Bangladesh, <sup>3</sup>Johns Hopkins Bloomberg Sch. of Publ. Hlth., Johns Hopkins Univ., Baltimore, MD, <sup>4</sup>Ctr. of Bioinformatics and Computational Biol., Univ. of Maryland Inst. of Advanced Computer Studies, Univ. of Maryland, College Park, MD
- 2 Sulfamethoxazole-dependent *Pseudomonas aeruginosa* Isolated from the Sputum of a Patient with Cystic Fibrosis**  
D. J. Wolter<sup>1</sup>, S. McNamara<sup>2</sup>, A. M. Buccat<sup>2</sup>, X. Qin<sup>2</sup>, C. E. Pope<sup>1</sup>, J. L. Burns<sup>1,2</sup>, L. R. Hoffman<sup>1,2</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Seattle Children's Hosp., Seattle, WA
- 3 Broad-Spectrum Antibacterial Properties of Metal Ion Doped Borate Glasses for Medical Applications**  
M. Ottomeyer, A. Mohamadhah, D. Day, D. Westenberg; Missouri Univ. of Sci. and Technology, Rolla, MO
- 4 Adaptive Landscapes: A Second Chance for Antibiotics**  
C. P. Goulart, M. Mahmudi, K. A. Crona, M. Kallmann, B. G. Hall, D. C. Greene, M. Barlow; Univ. of California, Merced, CA
- 5 Microbial Regrowth in Soils under Selective Pressure of Various Levels of Erythromycin**  
T. Wang<sup>1</sup>, T. Lim<sup>2</sup>, X. Yi<sup>1</sup>, Z. Zhou<sup>1</sup>; <sup>1</sup>Natl. Univ. of Singapore, Singapore, Singapore, <sup>2</sup>Ngee Ann Polytechnic, Singapore, Singapore
- 6 Occurrence and Diversity of Erythromycin Resistance Genes (*erm*) in Urban Soils**  
Q. Wei<sup>1</sup>, X. Yi<sup>2</sup>, W. Cheng<sup>2</sup>, Z. Zhou<sup>1</sup>; <sup>1</sup>Xiamen Univ., Xiamen, China, <sup>2</sup>Natl. Univ. of Singapore, Singapore, Singapore
- 7 Correlation of Antibiotic-Resistance and Heavy Metals in Urban Environmental Soil Samples**  
W. Cheng<sup>1</sup>, X. Yi<sup>1</sup>, Q. Wei<sup>2</sup>, Z. Zhou<sup>1</sup>; <sup>1</sup>Natl. Univ. of Singapore, Singapore, Singapore, <sup>2</sup>Xiamen Univ., Xiamen, China
- 8 Development of a Realistic ex situ Surface Test for Determining the Efficacy of Antimicrobial Surfaces**  
M. Ojeil<sup>1</sup>, J. Holah<sup>2</sup>, C. Jermann<sup>2</sup>, S. Denyer<sup>1</sup>, J.-Y. Maillard<sup>1</sup>; <sup>1</sup>Cardiff Univ., United Kingdom, <sup>2</sup>Campden BRI, United Kingdom
- 9 Inhibition of Multidrug-Resistant Pathogens by Lactobacilli Biosurfactants**  
R. Patel, S. M. Noble, X. Feng, K. Sambanthanmoorthy, C. M. Paravinitana; WRAIR, Silver Spring, MD
- 10 The Susceptibility of a PVL-negative *Staphylococcus aureus* isolate to Antibiotics and Essential Oils**  
E. C. Adukwu, S. Allen, C. A. Phillips; Univ. of Northampton, Northampton, United Kingdom
- 11 Antimicrobial Activity of Silver Nanoparticles against Foodborne Pathogenic Bacteria**  
K. Vig<sup>1</sup>, C. Bell<sup>1</sup>, M. Miller<sup>2</sup>, S. R. Singh<sup>1</sup>, S. Pillai<sup>1</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Auburn Univ., Auburn, AL
- 12 Biosynthesis of Silver Nanoparticles using Marine Algae and Evaluation of its Antibacterial Activity**  
K. Umamaheswari<sup>1</sup>, S. Gupta<sup>1</sup>, S. Aruna Sharmil<sup>2</sup>; <sup>1</sup>Univ. of Madras, Chennai, India, <sup>2</sup>Stella Maris Coll., Chennai, India
- 13 Chemically Induced Persister-Like Cell Formation by Arrested Protein Synthesis**  
B. W. Kwan<sup>1</sup>, J. A. Valenta<sup>2</sup>, M. J. Benedik<sup>2</sup>, T. K. Wood<sup>1</sup>; <sup>1</sup>Pennsylvania State Univ., University Park, PA, <sup>2</sup>Texas A & M Univ., College Station, TX
- 14 Determining Antibiotic-Resistance by Selected Reaction Monitoring**  
A. M. Haag, D. W. Niesel, A. M. Medina, A. E. Royall, N. K. Herzog; Univ. of Texas Med. Branch, Galveston, TX
- 15 Longitudinal Concentrations of Antibiotic-Resistant *Escherichia coli* in Feces Do Not Correspond to the Patterns of Antibiotic Use at a Cattle Feedlot**  
J. W. Schmidt; U.S. Meat Animal Res. Ctr., USDA, Agricultural Res. Service, Clay Center, NE
- 16 Comparison of *In vitro* Colistin Activity With and Without Polysorbate 80**  
M. Neudorf, M. Hackel, M. McCarthy, M. Bailey-Person, C. Gaylord, S. Johnson, D. Dressel, J. Rohrsen, J. Moerke; Intl. Hlth. Management, Assoc. Schaumburg, IL
- 17 Diversity and Antibiotic-Resistance of Streptomyces in Tropical Tropical Soils**  
H. Jing, X. Kong, Z. Zhou; Natl. Univ. of Singapore, Singapore, Singapore
- 18 Evaluation of Most Probable Number Quantitation of Fungal Growth in Conjunction with the Textiles Testing Method ISO 13629-2**  
M. S. Price, J. D. Turmenne, G. P. Sloan; Microban Products Company, Huntersville, NC
- 19 Current Antibiotic Administration Practice May Be a Significant Contributor to Antibiotic-Resistance Development in Microbial Ecosystem**  
L. Zhang, H. H. Wang; The Ohio State Univ., Columbus, OH
- 20 Correlation of Metal Concentrations and *erm* Genes in Urban Soils**  
X. Yi<sup>1</sup>, W. Cheng<sup>1</sup>, Q. Wei<sup>2</sup>, Z. Zhou<sup>1</sup>; <sup>1</sup>Natl. Univ. of Singapore, Singapore, Singapore, <sup>2</sup>Xiamen Univ., Xiamen, China
- 21 Effect of Ozone on Bacteria, Fungi and *Acanthamoeba***  
D. J. Hardy<sup>1</sup>, D. J. Vicino<sup>1</sup>, J. M. Prinsen<sup>2</sup>, W. A. Burris<sup>2</sup>; <sup>1</sup>Univ. of Rochester Med. Ctr., Rochester, NY, <sup>2</sup>Alab, LLC, Rush, NY
- 22 Genome-Scale Identification of Drug-Resistance Functions using Tn-Seq**  
L. Gallagher, C. Manoil; Univ. of Washington, Seattle, WA
- 23 Comparative *In vitro* Efficacy of Commercial Generic and Branded Products of Amoxicillin Distributed in the Philippines**  
B. A. Bolo<sup>1,2</sup>, E. C. Cabrera<sup>2</sup>, R. G. Arcilla<sup>3</sup>; <sup>1</sup>Far Eastern University, NCR, Philippines, <sup>2</sup>De La Salle Univ., Manila, Philippines, <sup>3</sup>De La Salle Univ., NCR, Philippines
- 24 Virulence-marker Distribution and Antibiotic-Resistance in *Enterococcus* species Isolated in a Tertiary Health Care Facility in Ekiti State, Nigeria**  
O. M. David, O. Famurewa; Dept. of Microbiol., Ekiti State Univ., Ado-Ekiti, Nigeria
- 25 Prevalence and Localization of Gentamicin Resistance Genes in the Multidrug-Resistance *Escherichia coli* Isolated From Beef Cattle**  
S. Yamamoto, M. Nakano, M. Tanaka, W. Kitagawa, T. Sone, K. Asano; Hokkaido Univ., Sapporo, Japan



**012 Genetics and Genomics of Pathogens – I (Division B)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 26 Automated, Non-Hybrid *De Novo* Genome Assemblies and Epigenomes of Bacterial Pathogens**  
J. Korfach; Pacific BioSci., Menlo Park, CA
- 27 Whole Genome Analysis of Epidemiologically Closely Related *Staphylococcus aureus* Isolates**  
M. Schijffelen<sup>1</sup>, S. R. Konstantinov<sup>1</sup>, G. Lina<sup>2</sup>, I. Spiliopoulou<sup>3</sup>, E. van Duijkeren<sup>4</sup>, E. C. Brouwer<sup>1</sup>, A. C. Fluit<sup>1</sup>; <sup>1</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>2</sup>Univ. Claude Bernard Lyon <sup>1</sup>, Lyon, France, <sup>3</sup>Sch. of Med. Univ. of Patras, Patras, Greece, <sup>4</sup>Univ. Utrecht, Utrecht, Netherlands
- 28 Genome Sequencing, Annotation and Identification of Genetic Determinants of High Virulence in *Salmonella* Typhimurium Clinical Isolates from Hong Kong**  
H. Kwan<sup>1</sup>, C. Cheng<sup>1</sup>, P. T. W. Law<sup>1</sup>, J. M. L. Ling<sup>1</sup>, K. Kam<sup>2</sup>, W. M. W. Cheung<sup>1</sup>; <sup>1</sup>The Chinese Univ. of Hong Kong, Shatin, Hong Kong, <sup>2</sup>Ctr. for Hlth. Protection, Hong Kong, Hong Kong
- 29 Characterization of 17 Chaperone-Usher Fimbriae Encoded by *Proteus mirabilis***  
L. Kuan, C. Zouzas, M. Pearson; NYU Langone Med. Ctr., New York, NY
- 30 Phage-mediated DNA Exchange in *Borrelia burgdorferi*, the Lyme Disease Agent**  
C. M. Gray, M. Y. Alshahrani, A. B. Shepley, L. E. Tosti, J. T. Moeller, C. H. Eggers; Quinnipiac Univ., Hamden, CT
- 31 One Disease, Several Patients and Many *Staphylococcus aureus* Types: High Genetic Diversity of Nasal Isolates from Granulomatosis with Polyangiitis Patients**  
C. Glasner<sup>1</sup>, M. M. van Timmeren<sup>1</sup>, T. Stobernack<sup>1</sup>, T. F. Omsen<sup>1</sup>, E. C. Raangs<sup>1</sup>, J. W. Rossen<sup>1</sup>, J. P. Arends<sup>1</sup>, G. A. Kampinga<sup>1</sup>, W. van Wamel<sup>2</sup>, A. Rutgers<sup>1</sup>, C. A. Stegeman<sup>1</sup>, C. G. M. Kallenberg<sup>1</sup>, P. Heeringa<sup>1</sup>, J. M. van Dijk<sup>1</sup>; <sup>1</sup>Univ. Med. Ctr. Groningen, Groningen, Netherlands, <sup>2</sup>Erasmus MC, Rotterdam, Netherlands
- 32 The Dynamic Pan-Genome Structure of the Diverse Human Pathogen, *Acinetobacter baumannii***  
J. W. Sahl<sup>1</sup>, J. Schupp<sup>1</sup>, E. Driebe<sup>1</sup>, D. Engelthaler<sup>1</sup>, P. Keim<sup>1,2</sup>; <sup>1</sup>Translational Genomics Res. Inst., Flagstaff, AZ, <sup>2</sup>Northern Arizona Univ., Flagstaff, AZ
- 33 Genetic Diversity of *Campylobacter jejuni* Isolated from Patients in Michigan**  
S. Wengert<sup>1</sup>, R. Mosci<sup>1</sup>, J. St. Charles<sup>1</sup>, W. Cha<sup>1</sup>, D. Newton<sup>2</sup>, H. Salimnia<sup>3,4</sup>, P. Lephart<sup>4</sup>, D. Sundin<sup>5</sup>, W. Khalife<sup>6</sup>, J. Bell<sup>1</sup>, L. S. Mansfield<sup>1</sup>, J. T. Rudrik<sup>1</sup>, S. D. Manning<sup>1</sup>; <sup>1</sup>Michigan State Univ., East Lansing, MI, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI, <sup>3</sup>Wayne State Univ., Detroit, MI, <sup>4</sup>Detroit Med. Ctr., Detroit, MI, <sup>5</sup>Spectrum Hlth., Grand Rapids, MI, <sup>6</sup>Sparrow Hosp., Lansing, MI
- 34 The *Vibrio cholerae* TetR-family Regulator VexR Functions as a Positive Regulator of the *vexRAB* Operon**  
D. L. Taylor, X. R. Bina, J. E. Bina; Univ. of Pittsburgh Sch. of Med., Pittsburgh, PA
- 35 Distribution and Functional Analysis of tRNAs associated with the *Escherichia coli* O157:H7 Shiga Toxin Genes**  
C. Chen, S. Yin, E. G. Dudley; Pennsylvania State Univ., University Park, PA
- 36 Mobilome Analysis using Comparative Genomics Identifies Hot Spots for the Small Chromosome of *Vibrio cholerae***  
S. Y. Choi<sup>1,2</sup>, N. A. Hasan<sup>1,2</sup>, J. Chun<sup>3</sup>, A. Huq<sup>1</sup>, T. A. Cebula<sup>1,2,4</sup>, R. R. Colwell<sup>1,2,5,6</sup>; <sup>1</sup>Maryland Pathogen Res. Inst., Univ. of Maryland, College Park, MD, <sup>2</sup>CosmosID Inc., College Park, MD, <sup>3</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>4</sup>Johns Hopkins Univ., Baltimore, MD, <sup>5</sup>Inst. for Advanced Computer Studies, Univ. of Maryland, College Park, MD, <sup>6</sup>Johns Hopkins Bloomberg Sch. of Publ. Hlth., Baltimore, MD

- 37 Draft Genome Sequences of Two *Bordetella holmesii* Strains**  
K. M. Tatti, V. N. Loparev, S. Ranganathan, Ganakammal, S. Changayil, M. Frace, M. R. Weil, S. Sammons, D. MacCannell, L. W. Mayer, M. L. Tondella; CDC, Atlanta, GA
- 38 Human Passage of *Campylobacter jejuni* Reveals Specific Frequencies on Homopolymeric Tracts**  
M. Hanninen<sup>1,2</sup>, J. Revez<sup>1</sup>, T. Schott<sup>1</sup>, A-K. Llaena<sup>1</sup>, M. Rossi<sup>1</sup>; <sup>1</sup>Helsinki Univ., Helsinki, Finland, <sup>2</sup>Helsinki Univ., Finland
- 39 All Recent Atypical El Tor O1 *Vibrio cholerae* have an rtxA Null Mutation**  
J. A. Dolores, K. J. F. Satchell; Northwestern Univ., Feinberg Sch. of Med., Chicago, IL
- 40 Role and Regulation of Putative Iron Transport System in *Vibrio vulnificus* In vivo**  
M. N. Duong<sup>1</sup>, K. Jeong<sup>2</sup>, S. Y. Kim<sup>1</sup>, S-H. Hong<sup>1</sup>, J. H. Rhee<sup>1,2</sup>, S. E. Lee<sup>1,3</sup>; <sup>1</sup>Clinical Vaccine R&D Ctr., Hwasun, Republic of Korea, <sup>2</sup>Chonnam Natl. Univ. Med. Sch., Gwangju, Republic of Korea, <sup>3</sup>Chonnam Natl. Univ. Sch. of Dentistry, Gwangju, Republic of Korea
- 41 Distribution of *Porphyromonas gingivalis* fimA Genotypes in Children's Plaques**  
Y. Shimoyama<sup>1</sup>, Y. Ohara-Nemoto<sup>2</sup>, M. Kimura<sup>3</sup>, M. Sasaki<sup>1</sup>, Y. Kodama<sup>1</sup>, M. Tanaka<sup>3</sup>, S. Kimura<sup>1</sup>; <sup>1</sup>Iwate Med. Univ., Yahaba-cho, Japan, <sup>2</sup>Nagasaki Univ., Nagasaki, Japan, <sup>3</sup>Iwate Med. Univ., Morioka, Japan
- 42 Global Effects of Norepinephrine on Gene Expression of *Campylobacter jejuni***  
F. Xu<sup>1</sup>, X. Zeng<sup>2</sup>, C. Wu<sup>1</sup>, B. Yang<sup>1</sup>, A. Shi<sup>1</sup>, J. Lin<sup>2</sup>; <sup>1</sup>Inst. of Animal Sci. and Vet. Med., Beijing Academy of Agriculture and Forestry Sci., Beijing, China, <sup>2</sup>Dept. of Animal Sci., The Univ. of Tennessee, Knoxville, TN
- 43 *Escherichia coli* Harboring Cytolethal Distending Toxin-II Gene Is Actually *E. albertii***  
N. Yasuda<sup>1</sup>, A. Hinenoya<sup>1</sup>, N. Akira<sup>2</sup>, T. Hibino<sup>1</sup>, N. Mukaizawa<sup>1</sup>, Y. Niwa<sup>1</sup>, T. Tsukamoto<sup>1</sup>, M. Asakura<sup>1</sup>, S. Yamasaki<sup>1</sup>; <sup>1</sup>Osaka Prefecture Univ., Izumisano City, Japan, <sup>2</sup>Dept. of Pediatrics, Mizushima Gen. Hosp., Kurashiki City, Japan
- 44 Regulation of the *Pseudomonas aeruginosa* PrrF Small RNAs during Anaerobiosis**  
A. Reinhart, A. Oglesby-Sherrouse; Univ. of Maryland, Baltimore, Baltimore, MD
- 45 Epidemic Clones of *Listeria monocytogenes* and USA300 MRSA Possess Unique Mobile Genetic Elements And Virulence Gene Sequences That Explain Their Ability To Transmit And Cause Global Disease**  
S. J. Knabel; The Pennsylvania State Univ., University Park, PA
- 46 Genome-Scale Identification of Virulence Determinants of *Acinetobacter baumannii* Using Tn-seq**  
L. V. Bentancor, A. Routray, G. B. Pier, T. Maira-Litran; Harvard Med. Sch., Boston, MA
- 47 Molecular Characterization of Isolates of Spotted Fever Group *Rickettsiae* from Pakistan**  
G. A. Dasch, M. L. Tang, M. L. Zambrano; CDC, Atlanta, GA
- 48 Prevalence of *esp* and *hyl* Virulence Genes Associated to Antibiotic-Resistance in Vancomycin-Resistant *Enterococcus faecium* Isolates in a Tertiary Care Center in Mexico City**  
M. Antonsen-Crespi<sup>1</sup>, L. B. Dávila<sup>1</sup>, S. A. Ochoa<sup>1</sup>, G. Escalona<sup>1</sup>, A. Cruz-Córdova<sup>1</sup>, C. A. Eslava<sup>2</sup>, R. Hernández-Castro<sup>3</sup>, J. Xicohtencatl-Cortés<sup>1</sup>; <sup>1</sup>Hosp. Infantil de México Federico Gómez, México D.F., Mexico, <sup>2</sup>Univ. Natl. Autónoma de México, México D.F., Mexico, <sup>3</sup>Hosp. Gen., México D.F., Mexico



- 49 Closing Genomes using Pacbio Continuous Long Reads**  
T. Muruvanda<sup>1</sup>, C. Wang<sup>1</sup>, M. Hoffman<sup>2</sup>, E. Strain<sup>3</sup>, R. Timme<sup>1</sup>, Y. Luo<sup>3</sup>, C. Keys<sup>1</sup>, J. Payne<sup>1</sup>, T. Cooper<sup>4</sup>, K. Luong<sup>4</sup>, Y. Song<sup>4</sup>, C-S. Chin<sup>4</sup>, J. Korlach<sup>4</sup>, R. J. Roberts<sup>5</sup>, M. Allard<sup>1</sup>, P. Evans<sup>1</sup>, E. W. Brown<sup>1</sup>, S. M. Musser<sup>1</sup>; <sup>1</sup>FDA-CFSAN-ORS, College Park, MD, <sup>2</sup>FDA-CVM UMD-JIFSAN, Laurel, MD, <sup>3</sup>FDA-CFSAN-OFDCER, College Park, MD, <sup>4</sup>Pacific BioSci., Menlo Park, CA, <sup>5</sup>New England Biolabs Inc., Ipswich, MA
- 50 Comprehensive Methyloyme Analysis of the Human Gastric Pathogen, *Helicobacter pylori***  
J. Krebes<sup>1</sup>, B. Bunk<sup>2</sup>, C. Spröer<sup>2</sup>, K. Luong<sup>3</sup>, R. D. Morgan<sup>4</sup>, R. Parusel<sup>1</sup>, C. König<sup>3</sup>, C. Josenhans<sup>1</sup>, J. Overmann<sup>2</sup>, R. J. Roberts<sup>4</sup>, J. Korlach<sup>3</sup>, S. Suerbaum<sup>1</sup>; <sup>1</sup>Hannover Med. Sch., Inst. for Med. Microbiol. and Hosp. Epidemiol., Hannover, Germany, <sup>2</sup>Leibniz Inst. DSMZ-German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany, <sup>3</sup>Pacific BioSci., Menlo Park, CA, <sup>4</sup>New England Biolabs, Ipswich, MA
- 51 Metagenomic and Metatranscriptomic Approaches For Analysis of Cystic Fibrosis-associated Viral And Microbial Communities**  
Y. Lin<sup>1</sup>, R. Schmieder<sup>1</sup>, M. Haynes<sup>1</sup>, D. Willner<sup>2</sup>, M. Furlan<sup>1</sup>, M. Youle<sup>3</sup>, K. Abbott<sup>1</sup>, R. Edwards<sup>1,4</sup>, J. Evangelista<sup>5</sup>, D. Conrad<sup>6</sup>, F. Rohwer<sup>1</sup>, F. W. Hyde<sup>6</sup>; <sup>1</sup>San Diego State Univ., San Diego, CA, <sup>2</sup>Univ. of Queensland, Brisbane, Australia, <sup>3</sup>Rainbow Rock, Ocean View, HI, <sup>4</sup>Argonne Natl. Lab., Argonne, IL, <sup>5</sup>Univ. of San Diego, La Jolla, CA, <sup>6</sup>Epicentre Biotechnologies, Madison, WI
- 52 Characterization of the Dominant Fecal *Enterococci* Population in Healthy Humans: Normal or Transitory Flora?**  
G. Negron-Talavera, L. A. Rios-Hernández; Univ. of Puerto Rico, Mayaguez, Puerto Rico
- 013 Pathogen Physiology and Metabolism – I (Division B)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 53 Examining Differential Growth Rates among Uropathogenic, Asymptomatic, and Commensal *Escherichia coli* during Colonization of the Mouse Urinary Tract**  
A. C. Springman, M. S. Walters, G. R. Nielubowicz, S. N. Smith, H. L. Mobley; Univ. of Michigan, Ann Arbor, MI
- 54 Construction and Characterization of an Isogenic Mutant of the Universal Stress Protein A (UspA) in the Emerging Pathogen *Acinetobacter baumannii***  
N. M. Elhosseiny, M. A. Amin, A. S. Yassin, A. S. Attia; Dept. of Microbiol. & Immunology, Faculty of Pharmacy, Cairo Univ., Cairo, Egypt
- 55 GC MS-Based Metabolomic Approach to Understand the Utilization of Mucin by *Vibrio vulnificus***  
J. Lim, S. Jang, S. Choi; Seoul Natl. Univ., Seoul, Republic of Korea
- 56 Potassium Transport in *Staphylococcus aureus* and its Role in Pathogenesis**  
C. M. Gries, J. L. Bose, A. S. Nuxoll, P. D. Fey, K. W. Bayles; UNMC, Omaha, NE
- 57 Physical Interactions of Non-Cognate Antitoxins with Protein Toxins from Nontypeable *Haemophilus influenzae***  
A. L. Maness, A. A. Kordis, D. A. Daines; Old Dominion Univ., Norfolk, VA
- 58 Characterization of a Growth Enhancer for Improved Cultivation of *Francisella tularensis***  
E. A. Lamont, S. Enomoto, P. Wang, R. E. Isaacson, S. Sreevatsan; Univ. of Minnesota, Saint Paul, MN
- 59 A viuB Homologue is Required for Desferoxamine or Ferrichrome to Stimulate Growth of *Corynebacterium diphtheriae* C7(β) under Iron-Limiting Conditions**  
S. L. W. Zajdowicz<sup>1,2</sup>, J. C. Haller<sup>2</sup>, R. K. Holmes<sup>2</sup>; <sup>1</sup>Metropolitan State Univ. of Denver, Denver, CO, <sup>2</sup>Univ. of Colorado Sch. of Med., Aurora, CO

- 60 Molecular Biological Characterization of Mannose-6-Phosphate Isomerase ManA in *Vibrio vulnificus***  
M. J. Park<sup>1</sup>, K. Jeong<sup>2</sup>, S. Y. Kim<sup>1</sup>, S. E. Lee<sup>1,3</sup>, J. H. Rhee<sup>1,2</sup>; <sup>1</sup>Clinical Vaccine R&D Ctr., Hwasun, Republic of Korea, <sup>2</sup>Chonnam Natl. Univ. Med. Sch., Republic of Korea, <sup>3</sup>Chonnam Natl. Univ. Sch. of Dentistry, Republic of Korea
- 61 Characterization of Horizontally Acquired Genes, *y3550-y3555* of *Yersinia pestis* during Flea Infection**  
L. C. Martinez, V. Vadyvaloo; Washington State Univ., Pullman, WA
- 62 The Stickland Enzyme Proline Racemase is not Essential in *Clostridium difficile***  
X. Wu, J. G. Hurdle; Dept. of Biol., Univ. of Texas at Arlington, Arlington, TX
- 63 Carbonic Anhydrases in *Pseudomonas aeruginosa*, Potential Targets for New Antimicrobials**  
S. R. Lotlikar<sup>1</sup>, S. B. Hnatusk<sup>1</sup>, N. E. Dickenson<sup>1</sup>, S. P. Choudhari<sup>1</sup>, W. L. Picking<sup>1</sup>, M. J. Franklin<sup>1</sup>, M. A. Patrauchan<sup>1</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Montana State Univ., Bozeman, MT
- 64 Modulation of Capsule Production in *Streptococcus pneumoniae* by SpxB and Hydrogen Peroxide**  
J. R. Hauser, J. Yother; Univ. of Alabama at Birmingham, Birmingham, AL
- 65 pH-Responsive *Bordetella ftrABCD* Ferrous Iron Transport System Gene Expression**  
T. J. Brickman, S. K. Armstrong; Univ. of Minnesota, Minneapolis, MN
- 66 The Contribution of Glutathione to the Survival of Group B *Streptococcus***  
B. E. Janowiak, M. Hur, S. Lin, K. Singh, A. Chacko, R. Kulkarni; Saint Louis Univ., St. Louis, MO
- 67 The Role of *Burkholderia pseudomallei* Yellow Colony Variants In Gastric Colonization**  
C. R. Austin, M. I. Voskuil; Univ. of Colorado Denver, Sch. of Med., Aurora, CO
- 68 L-2,3-diaminopropionic Acid Biosynthesis Revealed In *Staphylococcus aureus***  
M. J. Kobylarz<sup>1</sup>, J. C. Grigg<sup>1</sup>, M. Lee<sup>1</sup>, D. Rai<sup>1</sup>, D. E. Heinrichs<sup>2</sup>, M. E. P. Murphy<sup>1</sup>; <sup>1</sup>Univ. of British Columbia, Vancouver, BC, Canada, <sup>2</sup>Univ. of Western Ontario, London, ON, Canada
- 69 IsdR Is an Electron Donor for Heme Degradation by *Staphylococcus aureus* Heme Oxygenases, IsdG and IsdI**  
S. A. Loutet, M. J. Kobylarz, M. E. P. Murphy; The Univ. of British Columbia, Vancouver, BC, Canada
- 70 The Role Of RND Transport Systems in Calcium-induced Antibiotic-Resistance and Virulence in *Pseudomonas aeruginosa***  
S. S. Khanam, D. L. Lenaburg, R. C. Kubat, M. A. Patrauchan; Oklahoma State Univ., Stillwater, OK
- 71 Characterization of a Zinc Transporter as a Potential Nutritional Virulence Factor in *Moraxella catarrhalis***  
A. L. Brauer<sup>1</sup>, A. Johnson<sup>1</sup>, C. Kirkham<sup>1</sup>, M. E. Rosenblum<sup>2</sup>, M. G. Malkowski<sup>2</sup>, T. F. Murphy<sup>1</sup>; <sup>1</sup>Univ. at Buffalo, the State Univ. of New York, Buffalo, NY, <sup>2</sup>Hauptman Woodward Res. Inst., Buffalo, NY
- 72 Functional Genomic Analysis of Fitness Genes in *Escherichia coli* During Bacteremia**  
S. N. Smith, S. Subashchandrabose, M. Kole, D. Reiss, H. L. T. Mobley; Univ. of Michigan, Ann Arbor, MI

## 014 Regulation of Virulence I (Division B)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 73 An RpiR-family Transcriptional Regulator Modulates PQS Production in *Pseudomonas aeruginosa***  
K. A. Tipton, E. C. Pesci; East Carolina Univ., Greenville, NC

- 74 **A Novel Method to Detect CdiGMP G-octaplex Formation and Interactions with Proteins *In vitro***  
O. J. Lieberman<sup>1,2</sup>, J. J. DeStefano<sup>1,2</sup>, V. T. Lee<sup>1,2</sup>; <sup>1</sup>Univ of Maryland, College Park, MD, <sup>2</sup>Maryland Pathogen Res. Inst., College Park, MD
  - 75 **A c-di-GMP Sensing Riboswitch Regulates Expression of a Colonization Factor in *Vibrio cholerae***  
A. T. Kariisa, R. McKee, R. Tamayo; Univ. of Chapel Hill, Chapel Hill, NC
  - 76 **Uncovering Novel Virulence Factors in *Acinetobacter baumannii* Using INSeq**  
N. Wang, A. Hauser; Northwestern Univ., Chicago, IL
  - 77 ***Pseudomonas aeruginosa* Detection of Host-derived Sphingosine Impacts Survival During Lung Infection**  
A. E. LaBauve, J. A. Meadows, M. J. Wargo; Univ. of Vermont, Burlington, VT
  - 78 **Transcription Factors Rsp and CrgA Control Expression of the Serum-Resistance Factor  $\alpha$ -2,3-Sialyltransferase in *Neisseria gonorrhoeae***  
K. A. Matthias<sup>1</sup>, W. M. Shafer<sup>2</sup>, R. F. Rest<sup>1</sup>; <sup>1</sup>Drexel Univ. Coll. of Med., Philadelphia, PA, <sup>2</sup>Emory Univ. Sch. of Med., Atlanta, GA
  - 79 **Phenotypic Conversion of Mucoid to Hypermucoid in Group A *Streptococcus***  
C. Chiang-Ni<sup>1</sup>, P.-X. Zheng<sup>2</sup>, S.-Y. Wang<sup>2</sup>, P.-J. Tsai<sup>2</sup>, C.-F. Kuo<sup>3</sup>, W.-J. Chuang<sup>2</sup>, Y.-S. Lin<sup>2</sup>, C.-C. Liu<sup>2</sup>, J. J. Wu<sup>2</sup>; <sup>1</sup>Chang Gung Univ. Med. Coll., Taoyuan, Taiwan, <sup>2</sup>Natl. Cheng Kung Univ. Med. Coll., Tainan, Taiwan, <sup>3</sup>I-Shou Univ. Dept. Nursing, Kaohsiung, Taiwan
  - 80 **Iron Control of the Rhamnolipid-Independent Swarming Phenotype in *Pseudomonas aeruginosa***  
N. Morales-Soto<sup>1,2</sup>, N. G. Kamatkar<sup>1</sup>, M. Sarna<sup>1</sup>, J. L. DuBois<sup>3</sup>, J. Shrout<sup>1,2</sup>; <sup>1</sup>Univ. of Notre Dame, Notre Dame, IN, <sup>2</sup>Eck Inst. for Global Hlth., Notre Dame, IN, <sup>3</sup>SRI Intl., Harrisonburg, VA
  - 81 **Effects of Zinc on Streptococcal Cysteine Protease (SpeB) and Its Biological Implications**  
K. Chella Krishnan, S. Mukundan, S. Nookala, J. Landero, J. A. Caruso, M. Kotb; Univ. of Cincinnati, Cincinnati, OH
  - 82 **Regulation of Siderophore-mediated Iron Uptake in the Plant Pathogen, *Pantoea stewartii* subsp. *stewartii***  
L. Burbank, M. Mohammadi, M. C. Roper; Univ. of California-Riverside, Riverside, CA
  - 83 **Regulation of TonB-dependent Transporters, TdfG And TdfH, And Their Role in Heme Acquisition in *Neisseria gonorrhoeae***  
S. Jean, C. N. Cornelissen; Virginia Commonwealth Univ., Richmond, VA
  - 84 **The Plasmid-Encoded Regulator PerC stimulates Central Metabolism in Enteropathogenic *E. coli***  
J. Mellies<sup>1</sup>, R. Pine<sup>1</sup>, M. Gilbert<sup>2</sup>, R. Strominger<sup>1</sup>; <sup>1</sup>Reed Coll., Portland, OR, <sup>2</sup>Oregon State Univ., Corvallis, OR
  - 85 **Multiple Fimbrial-encoded Transcription Factors Cooperatively Control Motility in Uropathogenic *Escherichia coli***  
C. Luterbach, H. Mobley; Univ. of Michigan, Ann Arbor, MI
  - 86 **Reexamining the DNA Binding Properties of LcrF from *Yersinia pestis***  
J. King<sup>1</sup>, S. Schesser Bartra<sup>2</sup>, G. Plano<sup>2</sup>, T. Yahr<sup>1</sup>; <sup>1</sup>The Univ. of Iowa, Iowa City, IA, <sup>2</sup>The Univ. of Miami, Miami, FL
  - 87 **The Mechanism of Bile and Unsaturated Fatty Acid Inhibition of *Vibrio cholerae* Virulence Gene Expression**  
S. Plecha; Wayne State Univ., Sch. of Med., Detroit, MI
  - 88 **A Putative Membrane Transporter Increases *rsmA* Expression in *Pseudomonas aeruginosa***  
S. D. Stacey, C. Pritchett; East Tennessee State Univ., Johnson City, TN
  - 89 **Hfq is Required for the Virulence of *Cronobacter sakazakii***  
S. Kim, S. Ryu; Seoul Natl. Univ., Seoul, Republic of Korea
  - 90 **Phase Variation of Uropathogenic *Escherichia coli* Strain CFT073 and its Contribution to Macrophage Uptake and Reactive Nitrogen Resistance**  
E. J. Battaglioli, J.-D. Sauer, R. A. Welch; Univ. of Wisconsin-Madison, Madison, WI
  - 91 **Identification of VfrB, a New Regulator of *S. aureus* Virulence Factors**  
J. L. Bose, K. W. Bayles; Univ. of Nebraska Med. Ctr., Omaha, NE
  - 92 **Discordant Roles of the Alternative Sigma Factors RpoS, RpoE, and RpoN in *Vibrio parahaemolyticus* Intestinal Colonization**  
W. Whitaker, B. Haines-Menges, E. Boyd; Univ. of Delaware, Newark, DE
  - 93 **Regulation of Immune Evasion by *msa* in *Staphylococcus aureus* Clinical Isolates**  
M. D. S. Basco<sup>1</sup>, L. N. Shaw<sup>2</sup>, M. O. Elarisi<sup>1</sup>; <sup>1</sup>Univ. of Southern Mississippi, Hattiesburg, MS, <sup>2</sup>Univ. of South Florida, Tampa, FL
  - 94 **Horizontal Transmission of Integrative and Conjugative Element ICE-tra in *Legionella pneumophila***  
K. E. Gyan<sup>1</sup>, K. J. Flynn<sup>2</sup>, M. S. Swanson<sup>2</sup>; <sup>1</sup>Univ. of Ottawa, Ottawa, ON, Canada, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI
  - 95 **TosR, a PapB Homolog, Regulates Expression of the *Escherichia coli* CFT073 RTX Adhesin TosA**  
M. D. Engstrom, H. L. T. Mobley; Univ. of Michigan, Ann Arbor, MI
- 015 Bacterial Detection and Identification – General (Division C)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 96 **Proteomic Characterization And Immunogenic Antigen Discovery of *Rickettsiae* Using Biotyper MALDI-ToF Mass Spectrometry and nano-LC-MS/MS**  
S. L. Lydy, O. Stuchlik, P. Svoboda, M. Reed, K. Tang, A. Moncayo, J. Pohl; CDC, Atlanta, GA
  - 97 **Clinical Benefits of an In-house Validation Method For Direct Identification of Pathogens In Positive Blood Cultures By Matrix-assisted Laser Desorption/Ionization Time-of-flight Mass Spectrometry (MALDI-ToF)**  
P. Peloso, C. Leite, H. Torres, R. David, J. Nunes, C. Pinto, C. Ribeiro; Lab. Richet, Rio de Janeiro, Brazil
  - 98 **Expanding MALDI-ToF MS Microbial Identification through Random Forest Analysis**  
H. Moura, A. R. Woolfitt, Y. M. Williamson, C. L. Pierce, J. R. Barr; CDC, Atlanta, GA
  - 99 **Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry Systems: Evaluation of the Bruker Biotyper and Vitek MS for Identification of Brazilian Clinical Strains**  
F. Nunes, T. Fornabaio, A. Santos, I. Siqueira, J. Pasternak, M. D. Martino; Hosp. Albert Einstein, São Paulo, Brazil
  - 100 **Rapid Organism Identification via MALDI-ToF Combined with Antimicrobial Stewardship Team (AST) Intervention Decreases Mortality and Improves Time to Clinical Cure in Adult Patients with Bacteremia and Candidemia**  
A. Huang, D. Newton, A. Kunapuli, T. Gandhi, L. Washer, J. Isip, C. Collins, J. Nagel; Univ. of Michigan Hlth. System, Ann Arbor, MI
  - 101 **Multi-Center Evaluation of the VITEK MS for the Mass Spectrometric Identification of Anaerobic Bacteria in the Clinical Microbiology Laboratory**  
O. B. Garner<sup>1</sup>, A. B. Mochon<sup>1</sup>, J. A. Branda<sup>2</sup>, C.-A. D. Burnham<sup>3</sup>, M. Bythrow<sup>4</sup>, M. Ferraro<sup>2</sup>, C. C. Ginocchio<sup>4</sup>, R. Jennemann<sup>3</sup>, R. Manji<sup>4</sup>, G. W. Procop<sup>5</sup>, S. S. Richter<sup>6</sup>, J. A. Rychert<sup>2</sup>, L. Sercia<sup>5</sup>, L. F. Westblade<sup>3</sup>, M. A. Lewinski<sup>1</sup>; <sup>1</sup>UCLA, Los Angeles, CA, <sup>2</sup>Mass Gen. Hosp., Boston, MA, <sup>3</sup>Washington Univ. Sch. of Med., St. Louis, MO, <sup>4</sup>North Shore LIJ, Lake Success, NY, <sup>5</sup>Cleveland Clinic, Cleveland, OH

- 102 Direct Identification of Organisms by MALDI-ToF MS from Blood Culture Bottles Containing Charcoal: Utility of the Sepsityper® Kit**  
K. M. Riederer, K. I. Cruz, S. P. Shemes, J. T. Fishbain; St. John Hosp. and Med. Ctr., Detroit, MI
- 103 Evaluation of Vitek MS and Biotyper MALDI-ToF MS Systems for Identification of Unusual and/or Difficult to Identify Microorganisms Isolated from Clinical Cultures**  
E. McElvania TeKippe, C-A. D. Burnham; Washington Univ. in St. Louis, St Louis, MO
- 104 Validation of the Bactec FX System for Culture of Normally Sterile Body Fluids**  
B. Robinson-Dunn, J. Makin, E. Darnell, B. Boyanton, Jr.; Beaumont Hlth. System, Royal Oak, MI
- 105 Verification of Vitek MS for Identification of Bacteria and *Candida* spp. by MALDI-ToF Mass Spectrometry**  
N. N. Whitfield<sup>1</sup>, B. Blodgett<sup>2</sup>, L. Stickell<sup>2</sup>, W. Petty<sup>2</sup>, D. M. Wolk<sup>1</sup>; <sup>1</sup>Univ. of Arizona, Tucson, AZ, <sup>2</sup>Univ. of Arizona Med. Ctr., Tucson, AZ
- 106 Evaluation of a New Protocol for Rapid Identification of Positive Blood Culture Isolates with MALDI-ToF Mass Spectrometry**  
A. Verroken<sup>1</sup>, L. Defourny<sup>1</sup>, L. Lechgar<sup>1</sup>, A. Magnette<sup>1</sup>, M. Delmée<sup>1</sup>, Y. Glupczynski<sup>2</sup>; <sup>1</sup>UCL St. Luc, Brussels, Belgium, <sup>2</sup>CHU Mont-Godinne, Yvoir, Belgium
- 107 Of Matrix Assisted Laser Desorption Ionization-Time of Flight (MALDI-ToF) Mass Spectrometry (MS) for the Identification of Clinical Bacterial Isolates**  
D. A. Wilson, S. S. Richter, G. W. Procop; Cleveland Clinic, Cleveland, OH
- 108 Rapid Identification and Susceptibility Testing of Bacteria from Positive Blood Culture Bottles by Using a Lysis-Filtration Method, MALDI-ToF VITEK Mass Spectrum Analysis with SARAMIS Database, and the VITEK2 System**  
A. Machen<sup>1</sup>, T. Drake<sup>2</sup>, Y. Wang<sup>1,2</sup>; <sup>1</sup>Emory Univ. Sch. of Med., Atlanta, GA, <sup>2</sup>Grady Mem. Hosp., Atlanta, GA
- 109 Reproducibility of bioMérieux VITEK MS for Identification of Bacteria and Yeasts**  
C. Bradford, J. Gierer, D. Pincus; bioMérieux Inc., Hazelwood, MO
- 110 Evaluation and Implementation of Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS) in a Public Health Bacteriology Laboratory**  
L. Mingle, E. Nazarian, T. Passaretti, M. Dickinson, A. Kidney, R. Limberger, N. Dumas, K. Musser; Wadsworth Ctr., New York State Dept. of Hlth., Albany, NY
- 111 Evaluation of Three Rapid Diagnostic Assays to Directly Identify Organisms from Positive Blood Cultures**  
R. M. Martinez<sup>1</sup>, E. R. Bauerle<sup>1</sup>, T. R. Smith<sup>2</sup>, F. C. Fang<sup>1,2</sup>, S. M. Butler-Wu<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Harborview Med. Ctr., Seattle, WA
- 112 "Mixed Growth of Doubtful Significance" may be Clinically Significant in Patients with LUTS**  
S. Sathiananthamoorthy<sup>1</sup>, S. Swamy<sup>1</sup>, A. S. Kupelian<sup>1</sup>, H. Horsley<sup>1</sup>, K. Gill<sup>1</sup>, L. Collins<sup>2</sup>, M. De Iorio<sup>1</sup>, G. Baio<sup>1</sup>, J. G. Malone-Lee<sup>1</sup>; <sup>1</sup>Univ. Coll. London, London, United Kingdom, <sup>2</sup>Univ. of Southampton, London, United Kingdom

## 016 Gram-Negative Identification (Division C)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 113 Evaluation of Costs, Technologists Time and Turn-around Times for Conventional Stool Cultures**  
S. G. Beal, M. Mesfin, J. Ciurca, G. Smith, R. M. Gander; UT Southwestern, Dallas, TX

- 114 Evaluation of 16s rRNA Gene Sequencing for the Identification of Anaerobes Referred to a Large Public Health Reference Laboratory in Ontario, Canada**  
D. J. Farrell<sup>1,2</sup>, S. Brown<sup>1</sup>, P. Rawte<sup>1</sup>, N. Ocampo<sup>1</sup>, J. Villaruel<sup>1</sup>, E. Lombos<sup>1</sup>, S. Nagra<sup>1</sup>, C. De Lima<sup>1</sup>, K. Choi<sup>1</sup>, A. Li<sup>1</sup>, F. B. Jamieson<sup>1,2</sup>; <sup>1</sup>Publ. Hlth. Ontario Lab., Toronto, ON, Canada, <sup>2</sup>Dept. of Lab. Med. and Pathobiology, Univ. of Toronto, Toronto, ON, Canada
- 115 Comparison of BBL™ CHROMagar™ *Salmonella* to XLD Agar for the Recovery of *Salmonella* from Clinical Specimens**  
M. L. Majors, A. Robinson; PAML and Providence Sacred Heart Med. Ctr., Spokane, WA
- 116 The Selection of an Environmental Friendly Microbial Enrichment Broth: A *Salmonella* Story**  
T. E. Whiteside, G. F. Caviness, J. Locklear, P. T. Johnson, W. K. Steinmetz, C. L. Smith, J. E. Thigpen; NIEHS, RTP, NC
- 117 Performance of Sofia™ Legionella FIA: A Rapid Fluorescent Immunoassay for Legionella**  
J. McClure, C. Bobritchi, R. Lollar, N. McCunn, C. Shaw, L. Mimms; Quidel, San Diego, CA
- 118 GC/MS Method for Rapid Identification and Differentiation of *Burkholderia pseudomallei*, *Burkholderia mallei*, *Burkholderia thailandensis*, and Several Members of the *Burkholderia cepacia* Complex**  
J. K. March, D. Li, B. C. Holt, C. E. Wilson, C-W. Lowe, D. Tolley, M. L. Lee, R. A. Robinson; Brigham Young Univ., Provo, UT
- 119 Rapid Identification and Susceptibility Testing of *Enterobacteriaceae* Isolated from Positive Blood Culture Samples by Combining MALDI-ToF MS and Phoenix™ TM Analysis**  
S. Nys<sup>1</sup>, A. Joosten<sup>1</sup>, E. Willems<sup>1</sup>, L. Waumans<sup>1</sup>, R. Cartuyvels<sup>1</sup>, K. Magerman<sup>2</sup>; <sup>1</sup>Jessa Hosp. Hasselt, Hasselt, Belgium, <sup>2</sup>Univ. Hasselt, Hasselt, Belgium
- 120 The Application of MALDI-ToF Mass Spectrometry for the Identification of Fastidious Pediatric Pathogens: *Aggregatibacter*, *Eikenella*, *Haemophilus*, and *Kingella***  
E. A. Powell<sup>1,2</sup>, D. Blecker-Shelly<sup>3</sup>, S. Montgomery<sup>3</sup>, J. Mortensen<sup>2,1</sup>; <sup>1</sup>Univ. of Cincinnati, Cincinnati, OH, <sup>2</sup>Cincinnati Children's Hosp. Med. Ctr., Cincinnati, OH, <sup>3</sup>The Children's Hosp. of Philadelphia, PA, Philadelphia, PA
- 121 Multi-Center Evaluation of the VITEK® MS System for Mass Spectrometric Identification of Gram-Negative Non-*Enterobacteriaceae***  
R. Manji<sup>1</sup>, M. Bythrow<sup>1</sup>, J. A. Branda<sup>2</sup>, C-A. D. Burnham<sup>3,4</sup>, M-J. Ferraro<sup>2</sup>, O. B. Garner<sup>5</sup>, R. Jennemann<sup>3</sup>, M. A. Lewinski<sup>5</sup>, B. A. Mochon<sup>5</sup>, G. W. Procop<sup>6</sup>, S. S. Richter<sup>6</sup>, J. A. Rychert<sup>2</sup>, L. Sercia<sup>6</sup>, L. F. Westblade<sup>3,4,7</sup>, C. C. Ginocchio<sup>1,7</sup>; <sup>1</sup>North Shore-LIJ Hlth. System Lab., New Hyde Park, NY, <sup>2</sup>Massachusetts Gen. Hosp. and Harvard Med. Sch., Boston, MA, <sup>3</sup>Barnes Jewish Hosp., St. Louis, MO, <sup>4</sup>Washington Univ. Sch. of Med., St. Louis, MO, <sup>5</sup>David Geffen Sch. of Med. at UCLA, Los Angeles, CA, <sup>6</sup>Cleveland Clinic, Cleveland, OH, <sup>7</sup>Hofstra North Shore, LIJ Sch. of Med., Hempstead, NY
- 122 Identification of *Enterobacteriaceae* by Matrix Assisted Laser Desorption Ionization-Time of Flight (MALDI-ToF) Mass Spectrometry (MS) Using VITEK MS**  
S. S. Richter<sup>1</sup>, L. Sercia<sup>1</sup>, J. A. Branda<sup>2</sup>, C-A. D. Burnham<sup>3</sup>, M. Bythrow<sup>4</sup>, M. J. Ferraro<sup>2</sup>, O. B. Garner<sup>5</sup>, C. C. Ginocchio<sup>4,6</sup>, R. Jennemann<sup>7</sup>, M. A. Lewinski<sup>5</sup>, R. Manji<sup>4</sup>, B. A. Mochon<sup>5</sup>, J. A. Rychert<sup>2</sup>, L. F. Westblade<sup>3</sup>, G. W. Procop<sup>1</sup>; <sup>1</sup>Dept. of Clinical Pathology, Cleveland Clinic, Cleveland, OH, <sup>2</sup>Dept. of Pathology, Massachusetts Gen. Hosp. and Harvard Med. Sch., Boston, MA, <sup>3</sup>Dept. of Pathology & Immunology, Washington Univ. Sch. of Med., St. Louis, MO, <sup>4</sup>Dept. of Pathology and Lab. Med., North Shore-LIJ Hlth. System Lab., Lake Success, NY, <sup>5</sup>Dept. of Pathology and Lab. Med., David Geffen Sch. of Med. at UCLA, Los Angeles, CA, <sup>6</sup>Hofstra North Shore – LIJ Sch. of Med., Hempstead, NY, <sup>7</sup>Barnes Jewish Hosp., St. Louis, MO



- 123 Comparison of the Vitek 2™ and Vitek MS™ MALDI-ToF Mass Spectrometry Systems for Identification of Gram-Negative Aerobic Bacteria**  
P. Lebel<sup>1</sup>, A.-M. Bourgault<sup>1</sup>, J.-S. Henry-Lebel<sup>2</sup>, C. Lavallée<sup>3</sup>, S. Lévesque<sup>4</sup>, V. Loo<sup>5</sup>, N. Lussier<sup>6</sup>, J. McDonald<sup>1</sup>, M. Miller<sup>6,7</sup>, E. Simoneau<sup>8</sup>, L. Stutzman<sup>9</sup>, C. Tsimiklis<sup>10</sup>, M. Behr<sup>1</sup>, T. Nickolaou<sup>1</sup>; <sup>1</sup>McGill Univ. Hlth. Ctr., Montréal, QC, Canada, <sup>2</sup>Univ. de Sherbrooke, Sherbrooke, QC, Canada, <sup>3</sup>Hosp. Maisonneuve-Rosemont, Montréal, QC, Canada, <sup>4</sup>Lab. de Santé Publ. du Québec, St-Anne-de-Bellevue, QC, Canada, <sup>5</sup>Hosp. Charles LeMoine, Greenfield Park, QC, Canada, <sup>6</sup>Jewish Gen. Hosp., Montreal, QC, Canada, <sup>7</sup>bioMérieux France, France, <sup>8</sup>Hosp. Cité-de-la-Santé, Laval, QC, Canada, <sup>9</sup>bioMérieux Canada Inc., St-Laurent, QC, Canada, <sup>10</sup>Hosp. du Sacré-Coeur de Montréal, Montreal, QC, Canada
- 124 MALDI-ToF MS in the Identification of Atypical or Rare Non-Fermenting Gram-Negative Bacilli Isolated from Respiratory Tract of Cystic Fibrosis Patients**  
D. Garcia<sup>1</sup>, C. R. Saraiva<sup>1</sup>, L. R. da Silva Filho<sup>2</sup>, M. Matté<sup>3</sup>; <sup>1</sup>Inst. Adolfo Lutz, São Paulo, Brazil, <sup>2</sup>Inst. Criança, Univ. of São Paulo, São Paulo, Brazil, <sup>3</sup>Publ. Hlth. Coll., Univ. of São Paulo, São Paulo, Brazil
- 125 Dramatic Improvement in Accuracy and Time to Reporting When Identifying Cystic Fibrosis Pathogens: The Practical Impact of Mass Spectrometry**  
T. R. Fritsche<sup>1,2</sup>, B. J. Olson<sup>3</sup>, C. L. Pike<sup>1</sup>, P. D. Holzwarth<sup>4</sup>, M. E. Stemper<sup>1,2</sup>, S. J. Schrodi<sup>3</sup>, S. K. Shukla<sup>3,2</sup>, J. K. Meece<sup>3,2</sup>, T. J. Novicki<sup>1</sup>; <sup>1</sup>Marshfield Clinic, Marshfield, WI, <sup>2</sup>Univ. of Wisconsin, La Crosse, WI, <sup>3</sup>Marshfield Clinic Res. Fndn., Marshfield, WI, <sup>4</sup>St. Vincent Hosp., Green Bay, WI
- 126 Performance of 3 Mass Spectrometry Platforms for the Identification of Bacteria from Cystic Fibrosis Patients**  
K. Alby<sup>1</sup>, M. B. Miller<sup>1,2</sup>, P. H. Gilligan<sup>1,2</sup>; <sup>1</sup>UNC Healthcare, Chapel Hill, NC, <sup>2</sup>UNC Sch. of Med., Chapel Hill, NC
- 127 Decreased Time to Reporting of Stool Culture Results Using HardyCHROM™ SS Agar Combined with MALDI-ToF-MS**  
K. L. Schwartz, S. M. Butler-Wu; Univ. of Washington Med. Ctr., Seattle, WA
- 128 Detection of Non-jejuni/coli *Campylobacter* Species from Stool with an Immunochromatographic Antigen Detection Assay**  
B. Couturier<sup>1</sup>, M. R. Couturier<sup>1,2</sup>, K. Kalp<sup>1</sup>, M. A. Fisher<sup>1,2</sup>; <sup>1</sup>ARUP Inst. for Clinical and Experimental Pathology, Salt Lake City, UT, <sup>2</sup>Univ. of Utah, Dept. of Pathology, Salt Lake City, UT
- 129 *Fusobacterium nucleatum* Subspecies Identification by Matrix-Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry**  
S. Nie<sup>1,2</sup>, X. Wang<sup>3</sup>, D. Pincus<sup>4</sup>, Y. Huang<sup>3</sup>, X. Lu<sup>1</sup>, Y. Han<sup>3</sup>, Y.-W. Tang<sup>2</sup>; <sup>1</sup>Dept. of Lab. Med., Futian Hosp., Guangdong Med. Coll., Shenzhen, China, <sup>2</sup>Dept. of Lab. Med., Mem. Sloan-Kettering Cancer Ctr., New York, NY, <sup>3</sup>Dept. of Periodontics, Case Western Reserve Univ., Cleveland, OH, <sup>4</sup>bioMérieux Inc., Hazelwood, MO
- 130 MALDI-ToF Mass Spectrometry for Instant Differentiation of *Haemophilus haemolyticus* from *Haemophilus influenzae***  
S. Spinali<sup>1,2</sup>, R. J. Courcol<sup>2</sup>, M. Simonet<sup>2</sup>, O. Gaillot<sup>1,2</sup>; <sup>1</sup>Haemophilus Influenzae Natl. Reference Ctr., France, <sup>2</sup>Lille Univ. Med. Ctr., Lille, France
- 131 Comparison of Real-time PCR Positivity Rate of *Bordetella pertussis* Between Specimens Collected with BD BBL™ CultureSwab™ Plus Amies Gel with Charcoal, Regular Aluminum Wire and BD™ Universal Viral Transport Media with Flocked Swabs During an Epidemic**  
S. S. Arbefeille, P. Ferrieri; Univ. of Minnesota Med. Sch., and Univ. of MN Med. Ctr., Fairview, Minneapolis, MN
- 132 Real-Time PCR Assay for Direct Detection of *Legionella* in Municipal Water**  
N. L. Nguyen, D. J. Vicino, D. J. Hardy; Univ. of Rochester Med. Ctr., Rochester, NY
- 133 Rapid Detection and Speciation of Pathogenic Non-pneumophila *Legionella* species Using a Multiplex Real-time PCR Assay**  
A. Benitez, J. Winchell; CDC, Atlanta, GA
- 134 Evaluation of Automated Rapid Diagnostic Test for Direct Identification of Gram-Negative Bacteria from Positive Blood Cultures**  
M. Tojo<sup>1</sup>, H. Takahashi<sup>2</sup>, K. Hayakawa<sup>1</sup>, M. Nagamatsu<sup>1</sup>, K. Shimada<sup>3</sup>, T. Miyoshi-Akiyama<sup>3</sup>, T. Kirikae<sup>3</sup>, N. Ohmagari<sup>1</sup>; <sup>1</sup>Disease Control and Prevention Ctr., Natl. Ctr. for Global Hlth. and Med., Tokyo, Japan, <sup>2</sup>East-West Diagnostics/Theranostics, Tokyo, Japan, <sup>3</sup>Dept. of Infectious Diseases, Res. Inst., Natl. Ctr. for Global Hlth. and Med., Tokyo, Japan
- 135 Evaluation of the *Ilumigene Pertussis* Nucleic Acid Test for the Detection of *Bordetella pertussis* from Nasopharyngeal Swabs**  
N. A. Ledeboer<sup>1</sup>, T.-L. A. Mackey<sup>2</sup>, G. C. Reymann<sup>2</sup>, B. W. Buchan<sup>1</sup>; <sup>1</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>2</sup>Dynacare Lab., Milwaukee, WI
- 136 Evaluation of a Commercial FDA-cleared Multiplexed PCR Assay for Detection of *Bordetella pertussis* and *Mycoplasma pneumoniae* in Pediatric Respiratory Tract Specimens**  
D. Salamon<sup>1</sup>, T. Peterson<sup>1</sup>, D. Roberts<sup>1</sup>, K. Everhart<sup>1</sup>, M. J. Marcon<sup>2</sup>; <sup>1</sup>Nationwide Children's Hosp., Columbus, OH, <sup>2</sup>Retired, Westerville, OH
- 137 A Comparative Evaluation of the Diagenode Multiplex PCR Kit on the BDMAX Versus Routine In-house Assay Used to Diagnose *Bordetella pertussis***  
J. E. M. Kenicer, A. M. Hardie, N. J. Gadsby, K. E. Templeton; Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

## 017 Gram Positive AST (Division C)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 138 The Use of Prediffusion Methodology to Evaluate the Susceptibility of *Staphylococcus aureus* to Vancomycin and to Detect hVISA**  
P. A. d'Azevedo<sup>1</sup>, A. C. O. Silveira<sup>1,2</sup>, G. E. Sambrano<sup>1</sup>, J. Caierão<sup>1</sup>, C. M. M. Córdova<sup>2</sup>; <sup>1</sup>Univ. Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil, <sup>2</sup>Fundação Univ. Regional de Blumenau, Blumenau, Brazil
- 139 Multicenter Evaluation of a MicroScan Dried Overnight Panel for Susceptibility Testing of Ceftaroline against *Staphylococcus aureus***  
M. A. Lewinski<sup>1</sup>, C. R. Polage<sup>2</sup>, S. Riedel<sup>3</sup>, S. W. Eisinger<sup>3</sup>, M. Schwartz<sup>3</sup>, P. Connolly<sup>2</sup>, E. Papathakis<sup>2</sup>, J. F. Hindler<sup>1</sup>, M. Tagarao<sup>1</sup>, D. Roe-Carpenter<sup>4</sup>, H. Bains<sup>4</sup>, L. M. Mann<sup>4</sup>; <sup>1</sup>David Geffen Sch. of Med. at UCLA, Los Angeles, CA, <sup>2</sup>UC Davis Med. Ctr. and Hlth. System, Sacramento, CA, <sup>3</sup>The Johns Hopkins Univ. Sch. of Med., Baltimore, MD, <sup>4</sup>Siemens Healthcare Diagnostics, West Sacramento, CA
- 140 Comparison of a Novel Chromogenic Group B *Streptococcus* (GBS) Media with Two Other Chromogenic GBS Media and an Enhanced Blood Plate for the Purpose of GBS Detection from Broth Enriched Vaginal/Rectal Samples**  
P. Kornherr, L. Nguyen, R. Pizarro, R. Beaudry, L. Zhu; Gamma-Dynacare Lab., Ottawa, ON, Canada
- 141 Identification and Antimicrobial Susceptibility Testing of *Streptococcus anginosus* Group Organisms in a Pediatric Setting**  
C. Burch<sup>1</sup>, S. Sims<sup>1</sup>, C. Cummins<sup>1</sup>, K. Wilkey<sup>2</sup>, J. Colon-Reveles<sup>2</sup>, D. Pincus<sup>2</sup>, M. J. Marcon<sup>3</sup>; <sup>1</sup>Nationwide Children's Hosp., Columbus, OH, <sup>2</sup>bioMérieux, Inc., Hazelwood, MO, <sup>3</sup>Retired, Westerville, OH
- 142 Reliability of Vitek-2 for Detection of Methicillin Resistant Coagulase-negative Staphylococci**  
K. N. Johnson<sup>1</sup>, K. Andreaacchio<sup>2</sup>, P. H. Edelstein, M.D.<sup>3</sup>; <sup>1</sup>Sch. of Arts and Sci., Univ. of Pennsylvania, Philadelphia, PA, <sup>2</sup>Hosp. of the Univ. of Pennsylvania, Philadelphia, PA, <sup>3</sup>Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA

- 143 Performance of Two PBP2a Assays in the Detection of Methicillin Resistance in *Staphylococcus aureus***  
S. Miller, S. Saeki, R. Humphries; Univ. of California, Los Angeles, Los Angeles, CA
- 144 Maintenance of Elevated Daptomycin and Vancomycin MICs Following Serial Subculture of Clinical MRSA Isolates**  
C. L. Giltner, J. A. Hindler, A. M. Bobenchik, R. M. Humphries; UCLA, Los Angeles, CA
- 145 The role of Rapid PBP2a Reporting Using a Rapid Immunochromatographic Qualitative Assay and Assessment of Clinical Use In an Inner City Hospital Setting**  
K. Connors<sup>1</sup>, K. Considine<sup>1</sup>, K. Hanson<sup>1</sup>, R. Gottschall<sup>1</sup>, R. Zadroga<sup>1</sup>, G. Hansen<sup>1,2</sup>; <sup>1</sup>Hennepin County Med. Ctr., Minneapolis, MN, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN
- 146 Rapid Identification of Methicillin-Sensitive *Staphylococcus aureus* from Positive Blood Cultures using the Verigene System: A System-wide Impact on Patient Treatment and Physician Compliance**  
B. A. Koeneman<sup>1</sup>, J. M. Silverberg<sup>2</sup>, A. Khalsa<sup>1</sup>, H. Fisher<sup>1</sup>, K. M. McCabe<sup>3</sup>, M. A. Saubolle<sup>1,4</sup>, A. B. Mochon<sup>1,5</sup>; <sup>1</sup>Div. of Infectious Diseases, Lab. Sci. of Arizona/Sonora Quest Lab., Tempe, AZ, <sup>2</sup>Dept. of Pharmacy, Banner Gateway Med. Ctr. & Banner MD Anderson Cancer Ctr., Gilbert, AZ, <sup>3</sup>Div. of Pathology, Banner Gateway Med. Ctr. & Banner MD Anderson Cancer Ctr., Gilbert, AZ, <sup>4</sup>Dept. of Med., Coll. of Med., Univ. of Arizona, Phoenix, AZ, <sup>5</sup>Dept. of Pathology, Coll. of Med., Univ. of Arizona, Phoenix, AZ
- 147 Multicenter Evaluation of a MicroScan Dried MICroSTREP plus<sup>®</sup> Panel for Susceptibility Testing of Daptomycin against Streptococci**  
P. Schreckenberger<sup>1</sup>, J. Tjho<sup>1</sup>, J. Hindler<sup>2</sup>, M. Lewinski<sup>2</sup>, F. Sooudipour<sup>2</sup>, M. Weinstein<sup>3</sup>, J. Rothberg<sup>3</sup>, K. Rusak<sup>3</sup>, J. O'Connor<sup>4</sup>, H. Boyd<sup>4</sup>, S. Shinn<sup>4</sup>, A. Chipman<sup>4</sup>; <sup>1</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>2</sup>UCLA Med. Ctr., Los Angeles, CA, <sup>3</sup>Robert Wood Johnson Med. Sch., New Brunswick, NJ, <sup>4</sup>Siemens Healthcare Diagnostics, West Sacramento, CA
- 148 Multicenter Evaluation of a MicroScan Dried MICroSTREP plus<sup>®</sup> Panel for Susceptibility Testing of Minocycline against Streptococci using EUCAST Interpretive Breakpoints**  
M. Weinstein<sup>1</sup>, J. Rothberg<sup>1</sup>, K. Rusak<sup>1</sup>, P. Schreckenberger<sup>2</sup>, J. Tjho<sup>2</sup>, J. Hindler<sup>3</sup>, M. Lewinski<sup>3</sup>, F. Sooudipour<sup>3</sup>, H. Boyd<sup>4</sup>, S. Shinn<sup>4</sup>, J. O'Connor<sup>4</sup>; <sup>1</sup>Robert Wood Johnson Med. Sch., New Brunswick, NJ, <sup>2</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>3</sup>UCLA Med. Ctr., Los Angeles, CA, <sup>4</sup>Siemens Healthcare Diagnostics, West Sacramento, CA
- 149 Multicenter Evaluation of a MicroScan Dried MICroSTREP plus<sup>®</sup> Panel for Susceptibility Testing of Moxifloxacin against Streptococci**  
P. Schreckenberger<sup>1</sup>, J. Tjho<sup>1</sup>, J. Hindler<sup>2</sup>, M. Lewinski<sup>2</sup>, F. Sooudipour<sup>2</sup>, M. Weinstein<sup>3</sup>, J. Rothberg<sup>3</sup>, K. Rusak<sup>3</sup>, J. O'Connor<sup>4</sup>, H. Boyd<sup>4</sup>, S. Shinn<sup>4</sup>, H. Bains<sup>4</sup>; <sup>1</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>2</sup>UCLA Med. Ctr., Los Angeles, CA, <sup>3</sup>Robert Wood Johnson Med. Sch., New Brunswick, NJ, <sup>4</sup>Siemens Healthcare Diagnostics, West Sacramento, CA
- 150 Use of a Selective MRSA Agar for Rapid Detection and Reporting of MSSA and MRSA from Positive Blood Cultures**  
S. Sims<sup>1</sup>, C. Burch<sup>1</sup>, C. Zamistil<sup>1</sup>, A. Leber<sup>1,2</sup>, M. J. Marcon<sup>3</sup>; <sup>1</sup>Nationwide Children's Hosp., Columbus, OH, <sup>2</sup>The Ohio State Univ. Coll. of Med., Columbus, OH, <sup>3</sup>Retired, Westerville, OH
- 151 Evaluation of a New Combined Chromogenic Medium & Collection Device for MRSA, with Confirmation by PCR**  
K. Khan<sup>1</sup>, H. L. Jones<sup>1</sup>, M. Stuczen<sup>2</sup>, D. Shedden<sup>3</sup>; <sup>1</sup>NHS Heatherwood and Wexham Park Hosp., Slough, United Kingdom, <sup>2</sup>Univ. of Manchester, Manchester, United Kingdom, <sup>3</sup>Med. Wire & Equipment, Bath, United Kingdom
- 152 Sensitivity of Different Culture-based Methods for MRSA-screening**  
U. Aurbach<sup>1</sup>, T. Hoppe<sup>1</sup>, A. Hamprecht<sup>2</sup>, H. Seifert<sup>2</sup>, G. Plum<sup>2</sup>, H. Wisplinghoff<sup>1,3</sup>; <sup>1</sup>Lab. Med. Cologne, Dres. Wisplinghoff & Colleague, Cologne, Germany, <sup>2</sup>Inst. for Med. Microbiol., Immunology and Hygiene, Univ. of Cologne, Cologne, Germany

- 153 Investigation of an Increase in Incidence of Linezolid Resistance in Staphylococci and Enterococci Following Implementation of the Vitek2 Automated Susceptibility Testing System**  
C. Doern<sup>1</sup>, J. Park<sup>1</sup>, M. Mitui<sup>2</sup>, M. Gallegos<sup>2</sup>, K. Leos<sup>2</sup>, C-A. D. Burnham<sup>3</sup>; <sup>1</sup>Univ. of Texas Southwestern Med. Ctr., Dallas, TX, <sup>2</sup>Children's Med. Ctr., Dallas, TX, <sup>3</sup>Washington Univ. Sch. of Med., St. Louis, MO
- 154 Feasibility Study Demonstrating that Enzymatic Template Generation and Amplification Can Be Employed as a Novel Method for Molecular Antimicrobial Susceptibility Testing**  
B. I. Sodowich, D. R. Zweitzig, N. M. Riccardello, S. M. O'Hara; Zeus Scientific Inc., Raritan, NJ
- 155 Multicenter Evaluation of a MicroScan Dried MICroSTREP plus<sup>®</sup> Panel for Susceptibility Testing of Linezolid against Streptococci**  
J. Hindler<sup>1</sup>, M. Lewinski<sup>1</sup>, F. Sooudipour<sup>1</sup>, P. Schreckenberger<sup>2</sup>, J. Tjho<sup>2</sup>, M. Weinstein<sup>3</sup>, J. Rothberg<sup>3</sup>, K. Rusak<sup>3</sup>, J. O'Connor<sup>4</sup>, H. Boyd<sup>4</sup>, S. Shinn<sup>4</sup>; <sup>1</sup>UCLA Med. Ctr., Los Angeles, CA, <sup>2</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>3</sup>Robert Wood Johnson Med. Sch., New Brunswick, NJ, <sup>4</sup>Siemens Healthcare Diagnostics, West Sacramento, CA
- 156 In vitro Activity of Antimicrobial Agents against Methicillin-Resistant *Staphylococcus aureus* (MRSA): A Comparative Evaluation of Broth Dilution and E-test Methods**  
L. Villarreal, R. Mercado, J. F. Contreras, C. E. Hernández, M. M. Vela; Univ. Autónoma de Nuevo León, Nuevo Leon, Mexico
- 018 Microbial Entry (Invasion or Internalization) and Survival within Host Cells (Division D)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 157 Mechanism of Systemic Dissemination of Group A *Streptococcus***  
Z. Stetzer, B. Lei; Montana State Univ., Bozeman, MT
- 158 Inhibition of *C. Neoformans*-mediated Phago-lysosome Damage By Induced Lysosomal Renitence Constrains Fungal Growth**  
M. J. Davis, Y. Qiu, M. A. Olszewski; Univ. of Michigan, Ann Arbor, MI
- 159 Streptococcal Secreted Esterase Produced by Serotype M28 Group A Streptococcus Is a Potent Platelet-activating Factor Acetylhydrolase and Contributes to Innate Immune Evasion**  
G. Liu, M. Liu, B. Lei; Montana State Univ., Bozeman, MT
- 160 Phagocytosis and Killing of *Staphylococcus aureus* by Human Neutrophils**  
T. Lu, S. D. Kobayashi, F. R. DeLeo; Rocky Mountain Lab., NIAID, NIH, Hamilton, MT
- 161 Small Colony Variants of *Staphylococcus aureus* in Chronic Rhinosinusitis**  
S. A. Gitomer, D. N. Frank, V. R. Ramakrishnan; Univ. of Colorado Sch. of Med., Denver, CO
- 162 Invasive, Intracellular *Enterococcus faecalis* is Associated with Chronic Urinary Tract Infection**  
H. Horsley, R. Khasriya, J. Malone-Lee, J. L. Rohn; Univ. Coll. London, London, United Kingdom
- 163 Determinants of Virulence: Hypoxic Viability and Signaling in *Mycobacterium Tuberculosis***  
U. S. Gautam<sup>1</sup>, A. McGillivray<sup>1</sup>, R. Kisse<sup>2</sup>, S. Mehra<sup>1</sup>, M. H. Ahsan<sup>1</sup>, D. Sherman<sup>2</sup>, D. Kaushal<sup>1</sup>; <sup>1</sup>Tulane Natl. Primate Res. Ctr., Covington, LA, <sup>2</sup>Seattle BioMed. Res. Inst., Seattle, WA
- 164 Establishing a New Niche for Bacterial Replication: The InlAB Cell Invasion Locus Confers Cardiotropism to Subpopulations of *Listeria monocytogenes***  
P. D. McMullen, N. Freitag; Univ. of Illinois at Chicago, Chicago, IL



- 165 Group A Streptococcal Pyrogenic Exotoxin B Cleaves Epithelial Junctions and Contributes to Bacterial Translocation**  
T. Sumitomo<sup>1</sup>, M. Nakata<sup>1</sup>, M. Higashino<sup>1</sup>, Y. Terao<sup>2</sup>, S. Kawabata<sup>1</sup>;  
<sup>1</sup>Osaka Univ., Suita-Osaka, Japan, <sup>2</sup>Niigata Univ., Niigata, Japan
- 166 Influence of Gene *cnm* of *Streptococcus mutans* in the Interaction with Endothelial Cells**  
L. K. Siriani<sup>1</sup>, J. Abranches<sup>2</sup>, M. P. A. Mayer<sup>1</sup>, P. H. Rodrigues<sup>1</sup>, M. L. Simonato<sup>1</sup>; <sup>1</sup>Inst. of BioMed. Sci., Univ. of São Paulo, São Paulo – SP, Brazil, <sup>2</sup>Sch. of Med. and Dentistry, Univ. of Rochester, Rochester, NY
- 167 Eukaryote-Type Ser/Thr Kinase and Phosphatase-Mediated Reciprocal Regulation of Group A *Streptococcus* Carbohydrate Metabolism and Metabolic Fitness in the Host Environment**  
S. Kant, A. Kamboj, A. T. Ruley, P. Pancholi, V. Pancholi; The Ohio State Univ., Columbus, OH
- 168 Role of *Francisella tularensis* Antioxidants in the Subversion of Host Immune Responses**  
S. M. Rabadi<sup>1</sup>, E. Westcott<sup>2</sup>, M. Malik<sup>2</sup>, C. S. Bakshi<sup>1</sup>; <sup>1</sup>New York Med. Coll., Valhalla, NY, <sup>2</sup>Albany Coll. of Pharmacy and Hlth. Sci., Albany, NY
- 169 Expression of *S. pneumoniae* mRNA coding for Virulence Factors, Adhesins and Regulators in the Nasopharynx of Healthy Children**  
J. E. Vidal, F. Sakai, D. Morii, S. J. Talekar, K. P. Klugman; Rollins Sch. of Publ. Hlth., Emory Univ., Atlanta, GA
- 170 T<sub>H</sub>17-Related Response in Oral Keratinocytes and Human Gingival Fibroblasts after Infection with *Porphyromonas gingivalis***  
Y.-J. Jung, H.-K. Jun, B.-K. Choi; Sch. of Dentistry, Seoul Natl. Univ., Seoul, Republic of Korea
- 171 Superantigens are Critical for *Staphylococcus aureus* Infective Endocarditis in Rabbits**  
W. Salgado-Pabón<sup>1</sup>, L. Breshears<sup>2</sup>, A. R. Spaulding<sup>1</sup>, J. A. Merriman<sup>1</sup>, C. S. Stach<sup>1</sup>, A. R. Horswill<sup>1</sup>, M. L. Peterson<sup>2</sup>, P. M. Schlievert<sup>1</sup>; <sup>1</sup>Univ. of Iowa, Iowa City, IA, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN
- 172 Monoclonal Antibody to PNAG Requires IL-17 Receptor Signaling and Lymphocytes to Mediate Defense against *Staphylococcus aureus* Keratitis**  
T. H. Zaidi<sup>1</sup>, T. S. Zaidi<sup>1</sup>, G. P. Priebe<sup>2</sup>, G. B. Pier<sup>1</sup>; <sup>1</sup>Brigham & Women's Hosp. and Harvard Med. Sch., Boston, MA, <sup>2</sup>Brigham & Women's Hosp. and Harvard Med. Sch., Div. of Critical Care Med. and Infectious Diseases, Children's Hosp. Boston, Boston, MA
- 173 NLRP 3 Inflammasome Assembly is Required for Caspase Activation During Chlamydia Infections**  
D. N. McKeithen<sup>1,2</sup>, Y. Omosun<sup>2</sup>, E. C. Kibakaya<sup>2</sup>, F. Eko<sup>2</sup>, C. M. Black<sup>2</sup>, J. U. Igiertseme<sup>2,3</sup>, G. A. Ananaba<sup>1</sup>, Q. He<sup>2</sup>; <sup>1</sup>Clark Atlanta Univ., Atlanta, GA, <sup>2</sup>Morehouse Sch. of Med., Atlanta, GA, <sup>3</sup>CDC, Atlanta, GA
- 174 Effects of Temperature-dependent Lipid-A modification on Neutrophil Responses to *Yersinia pestis* *In vivo***  
J. G. Shannon, A. M. Hasenkrug, D. W. Dorward, B. J. Hinnebusch; Rocky Mountain Lab. NIAID, NIH, Hamilton, MT
- 175 Cardiac Lesion Formation Occurs During Severe Invasive Pneumococcal Disease**  
A. Brown<sup>1</sup>, G. Halade<sup>1</sup>, E. Mortensen<sup>2</sup>, M. Lindsey<sup>1</sup>, M. Hanes<sup>1</sup>, E. Tuomanen<sup>3</sup>, C. Orihuela<sup>1</sup>; <sup>1</sup>The Univ. of Texas Hlth. Sci. Ctr., San Antonio, TX, <sup>2</sup>The Univ. of Texas Southwestern, Dallas, TX, <sup>3</sup>St. Jude Children's Res. Hosp., Memphis, TN
- 176 *Ehrlichia* Type 1 Secreted Effectors Exploit Host SUMO Pathways**  
P. S. Dunphy, J. W. McBride; Univ. of Texas Med. Branch Galveston, Galveston, TX
- 177 Streptococcal Collagen-Like Protein 1 (Sci-1) Contributes to Group A *Streptococcus* Evasion of Phagocytic Killing**  
S. Dohrmann<sup>1</sup>, S. Anik<sup>1</sup>, J. Olson<sup>1</sup>, V. Nizet<sup>1</sup>, C. Y. M. Okumura<sup>2,1</sup>; <sup>1</sup>Univ. of California San Diego, La Jolla, CA, <sup>2</sup>Occidental Coll., Los Angeles, CA

- 178 The Effect of Nutrient Availability on the Production of Host Immune Suppressive Molecules by *Francisella tularensis***  
L. C. Kingry<sup>1</sup>, J. M. Petersen<sup>1</sup>, J. T. Belisle<sup>2</sup>; <sup>1</sup>CDC, Fort Collins, CO, <sup>2</sup>Colorado State Univ., Fort Collins, CO
- 179 Effector Role of Invasion Plasmid Antigen D (IpaD) of the T3SS from *S. flexneri***  
O. Arizmendi<sup>1</sup>, N. E. Dickenson<sup>1</sup>, A. J. Olive<sup>2</sup>, W. D. Picking<sup>1</sup>, W. L. Picking<sup>1</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Harvard Med. Sch., Boston, MA
- 180 TLR2 and MyD88 are Required for Inflammatory Response to *B. melitensis* in Human Macrophages but not for Infection Clearance**  
O. Dimitrakopoulos, K. Liopeta, G. Dimitrakopoulos, F. Paliogianni; Univ. of Patras Med. Sch., Dept. of Microbiol., Patras Greece, Greece
- 019 Gene Expression— General (Division H)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 181 Inhibition of Quorum Sensing Signal Transmission by Indole in *Acinetobacter oleivorans* DR1**  
J. Kim, W. Park; Dept. of Environmental Sci. and Ecological Engineering, Korea Univ., Seoul, Republic of Korea
- 182 Transcriptomic Profiling of Group G Streptococci Using a Murine Infection Model**  
S. Watanabe, T. Kirikae, T. Miyoshi-Akiyama; Natl. Ctr. for Global Hlth. and Med., Tokyo, Japan
- 183 Characterization of the PhoU Signaling Protein of *Escherichia coli***  
S. G. Gardner, W. R. McCleary; Brigham Young Univ., Provo, UT
- 184 The PTS<sup>Mr</sup> Regulates the Alkylresorcinol Synthesis in *Azotobacter vinelandii***  
L. F. Muriel, Y. Romero, S. Moreno, D. Segura, G. Espin; Molecular Microbiol. Dept. Biotechnology Inst. Natl. Autonomous Univ. of Mexico, Cuernavaca, Mexico
- 185 *In vitro* and Live Cell Single-Molecule Studies of Bacterial Transcriptional Bursting induced by DNA Supercoiling**  
C. Chen<sup>1,2</sup>, S. Chong<sup>1</sup>, H. Ge<sup>3,4</sup>, S. Xie<sup>1,3</sup>; <sup>1</sup>Dept. of Chemistry and Chemical Biol., Harvard Univ., Cambridge, MA, <sup>2</sup>Dept. of Molecular and Cellular Biol., Harvard Univ., MA, <sup>3</sup>Biodynamic Optical Imaging Ctr. (BIOPTIC), Peking Univ., Beijing, China, <sup>4</sup>Beijing Intl. Ctr. for Mathematical Res., Peking Univ., Beijing, China
- 186 Characterization of an Acid-Inducible Sulfatase in *Salmonella enterica* serovar Typhimurium LT2**  
S. Das<sup>1</sup>, S. Singh<sup>1</sup>, M. McClelland<sup>2</sup>, S. Forst<sup>1</sup>, G. Prasad<sup>1</sup>; <sup>1</sup>UWM, Milwaukee, WI, <sup>2</sup>Vaccine Res. Inst., San Diego, CA
- 187 Use of Whole Transcriptome RNA-Seq Data for Promoter Analysis of *E. coli* K-12**  
J. P. Creecy; Univ. of Oklahoma, Norman, OK
- 188 The PA4203 *Pseudomonas aeruginosa* LysR-Type Transcriptional Regulator: Determination of its Regulon and of its DNA Binding Sites**  
K. Vercammen, Q. Wei, D. Charlier, P. E. Cornelis; Vrije Univ. Brussel, Brussels, Belgium
- 189 The *trpE* Gene Negatively Regulates Differentiation at the Level of Induction in *Anabaena* sp. Strain PCC 7120**  
P. J. Videau, J. E. Young, S. M. Callahan; Univ. of Hawaii at Manoa, Honolulu, HI
- 190 Regulation of *ymaH* Gene, an *hfq* Homologue, in *B. subtilis***  
C. B. Jagtap<sup>1</sup>, P. Kumar<sup>1</sup>, K. K. Rao<sup>2</sup>; <sup>1</sup>Naval Materials Res. Lab., Ambarnath, India, <sup>2</sup>Indian Inst. of Technology Bombay, Powai, India
- 191 Novel Inducers of Gliotoxin Production in *Aspergillus fumigatus***  
T. Schoberle<sup>1</sup>, J. Herold<sup>1</sup>, A. Yang<sup>2</sup>, M. Weirauch<sup>2</sup>, T. R. Hughes<sup>2</sup>, G. S. May<sup>1</sup>; <sup>1</sup>UT MD Anderson Cancer Ctr., Houston, TX, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada

- 192 A Novel Lignocellulosic Enzymes Producing Strain *Penicillium expansum* YTO2 and Its Gene Expression on Different Substrates**  
Y. Li, P. Liu, Q. Tu, L. Gao, A. Zhou, Z. He, L. Wu, J. Zhou; Univ. of Oklahoma, Norman, OK
- 193 Mutational Analysis of the Chaperones Spy and CpxP in *Escherichia coli***  
J. L. Wong, T. L. Raivio; Univ. of Alberta, Edmonton, AB, Canada
- 194 Coordinate Regulation of the Chitin Degradation and Utilization System by Small RNA in *Serratia marcescens***  
K. Suzuki, M. Shimizu, C. Ogawa, N. Sasaki, S. Takano, H. Sugimoto, T. Watanabe; Niigata Univ., Niigata, Japan
- 195 Laboratory Evolution Of *Thermotoga maritima* Under Different Selective Pressures Reveals Different Adaptation Strategies**  
H. Latif<sup>1</sup>, M. Sahin<sup>1</sup>, V. A. Portnoy<sup>1</sup>, Y. Tarasova<sup>1</sup>, H. Harish Nagarajan<sup>1</sup>, S. Ossowski<sup>2</sup>, D. Bezdán<sup>2</sup>, K. Zengler<sup>1</sup>; <sup>1</sup>Univ. of California San Diego, La Jolla, CA, <sup>2</sup>Ctr. for Genomic Regulation, Spain
- 196 *A. Tumefaciens* Bira and Bior Define a New Two-protein Paradigm for Bacterial Biotin Sensing**  
Y. Feng; UIUC, Urbana, IL
- 197 Systematic Analysis of Genetic Interaction between sRNA and Protein Coding Genes in *E. coli***  
W. Nomura<sup>1</sup>, R. Takeuchi<sup>1</sup>, T. Nakayashiki<sup>1</sup>, S. Katsu<sup>1</sup>, B. L. Wanner<sup>2</sup>, H. Mori<sup>1</sup>; <sup>1</sup>Graduate Sch. of Biological Sci., Nara Inst. of Sci. and Technology, Nara, Japan, <sup>2</sup>Dept. of Biological Sci., Purdue Univ., West Lafayette, IN
- 198 Thermoregulated Expression of the Region 1 Promoter of the *Escherichia coli* K5 Capsule Gene Cluster: Identification of Multiple Transcriptional Start Sites**  
J. Jia, I. Roberts; The Univ. of Manchester, Manchester, United Kingdom
- 199 Investigation of the Role [4Fe-4S] Clusters Play in RNA Polymerase Formation and Function in *Methanosarcina acetivorans***  
M. E. Jennings<sup>1</sup>, F. H. Lessner<sup>1</sup>, E. A. Karr<sup>2</sup>, D. J. Lessner<sup>1</sup>; <sup>1</sup>Univ. of Arkansas, Fayetteville, AR, <sup>2</sup>Univ. of Oklahoma, Norman, OK
- 200 Augmented Expression of Group B Streptococcal Adherence and Invasion Genes Post-Exposure to Human Lung Epithelial Cells**  
M. Tikhonenko, N. Porcek, R. Al Safadi, S. D. Manning; Michigan State Univ., East Lansing, MI
- 201 *In vitro* and *In vivo* Characterization of Orf6, a Putative Thioesterase**  
M. M. Rodriguez-Guilbe<sup>1</sup>, T. Motoigi<sup>2</sup>, H. Okuyama<sup>2</sup>, A. Baerga-Ortiz<sup>1</sup>; <sup>1</sup>Univ. of Puerto Rico, Sch. of Med., San Juan, PR, <sup>2</sup>Hokkaido Univ., Graduate Sch. of Environmental Sci., Kita-Ku, Sapporo, Japan
- 202 The Quorum-Sensing Noncoding RNAs Use Multiple Mechanisms to Regulate Their Different mRNA Targets**  
L. Feng<sup>1</sup>, S. T. Rutherford<sup>1</sup>, N. S. Wingreen<sup>1</sup>, B. L. Bassler<sup>1,2</sup>; <sup>1</sup>Princeton Univ., Princeton, NJ, <sup>2</sup>Howard Hughes Med. Inst., Chevy Chase, MD
- 203 Indecent Interactions: The PmrAB Two-component System Activates QseB in the Absence of Its Cognate Sensor**  
M. Hadjifrangiskou<sup>1</sup>, M. Kostakioti<sup>2</sup>, K. Guckes<sup>1</sup>, C. L. Shaffer<sup>1</sup>, C. Martinez, III<sup>1</sup>, S. J. Hultgren<sup>2</sup>; <sup>1</sup>Vanderbilt Univ. Sch. of Med., Nashville, TN, <sup>2</sup>Washington Univ. in Saint Louis Sch. of Med., Saint Louis, MO
- 204 Direct Protein-Protein Interactions Between PstB and PhoU in the Phosphate Signaling Pathway of *Escherichia coli***  
K. D. Johns, R. N. Tanner, K. J. Richardson, W. R. McCleary; Brigham Young Univ., Provo, UT

**020 Biology of Archaea (Division I)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 205 Isolation and Characterization of Halophilic Archaea Capable of Autotrophic Growth from Cabo Rojo, Puerto Rico**  
M. X. Oyola, E. L. Tosado, J. Clavell, L. Aleman, R. Montalvo-Rodriguez; Univ. of Puerto Rico, Mayaguez, PR
- 206 Correlations of Methanogenic Activities and Environmental Parameters in Tropical Mangrove Sediments**  
C. Wu, S. Nagarajan, H. Jing, Z. Zhou; Natl. Univ. of Singapore, Singapore, Singapore
- 207 Biochemical Characterization of Thioredoxin Homologs Encoded in the Genome of *Methanosarcina acetivorans***  
A. McCarver, D. J. Lessner; Univ. of Arkansas Fayetteville, Fayetteville, AR
- 208 Characterization of Microbial Populations Responsible for Ammonia Oxidation in Saline Environments from Cabo Rojo, Puerto Rico**  
E. L. Tosado-Rodriguez, M. X. Oyola, J. Clavell, L. Aleman, R. Montalvo-Rodriguez; Univ. of Puerto Rico, Mayaguez, PR
- 209 Isolation and Biochemical Characterization of the *Methanospirillum hungatei* Flagellum**  
N. Poweleit, R. R. Ogorzalek Loo, H. Z. Zhou, R. P. Gunsalus; Univ. of California-Los Angeles, Los Angeles, CA
- 210 Genomics of Speciation in the Model Archaeon *Sulfolobus islandicus***  
C. Zhang, D. J. Krause, R. J. Whitaker; UIUC, Urbana, IL
- 211 Partial Characterization of a Beta-glucosidase from *Halogeometricum borinquense***  
J. E. Santiago-Correa, K. M. Badillo, R. Montalvo-Rodriguez; Univ. of Puerto Rico, Mayaguez, PR
- 212 Biochemical and Molecular Characterization of a Newly Isolated Broad-spectrum Antibiotics Producing-*Streptomyces* Species**  
K. S. Ng<sup>1</sup>, M. L. Delos Santos<sup>1</sup>, R. S. Estacio<sup>2</sup>, T. O. Zulaybar<sup>3</sup>, I. A. Papa<sup>3</sup>, M. S. Delos Santos<sup>2</sup>; <sup>1</sup>Inst. of Biol., Univ. of the Philippines, Diliman, Quezon City, Philippines, <sup>2</sup>Dept. Ed Makati, Makati City, Philippines, <sup>3</sup>Inst. of Molecular Biol., Univ. of the Philippines, Los Baños, Metro Manila, Philippines
- 213 A Novel Class of Sensory Opsins in the Haloarchaea**  
E. A. Becker<sup>1</sup>, T. Wang<sup>1</sup>, P. M. Seitzer<sup>1</sup>, K. S. Y. Shao<sup>2</sup>, M. T. Facciotti<sup>1</sup>; <sup>1</sup>Univ. of California, Davis, Davis, CA, <sup>2</sup>Williams Coll., Williamstown, MA
- 214 Effects of Ultraviolet Radiation on Methanogens: Implications for Life on Mars**  
N. Sinha, T. A. Kral; Univ. of Arkansas, Fayetteville, AR
- 215 Complete Genome Sequence and Comparative Analysis of the Metabolic Pathway in *Pyrococcus* sp. ST04**  
J.-H. Jung<sup>1</sup>, D.-H. Seo<sup>1</sup>, E.-J. Jeon<sup>1</sup>, J. F. Holden<sup>2</sup>, J.-H. Lee<sup>1</sup>, C.-S. Park<sup>1</sup>; <sup>1</sup>Dept. of Food Sci. and Technology, Kyung Hee Univ., Yongin, Republic of Korea, <sup>2</sup>Dept. of Microbiol., Univ. of Massachusetts, Amherst, MA
- 021 Cell Division, Cytoskeleton, Organelles (Division J)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 216 Engineering Expression Flux to Accelerate Gene Discovery**  
J. K. Herman (Wagner), A. Miller, J. Mcanulty, S. Rousseau, B. Mercado; Texas A&M Univ., College Station, TX
- 217 Functional Analysis of *minC*, *D* and *E* Genes of *Helicobacter pylori***  
Y. Kadota<sup>1</sup>, H. Takeuchi<sup>1</sup>, A. Umeda<sup>2</sup>, N. Morimoto<sup>1</sup>, Y. Nisida<sup>1</sup>, T. Sugiyara<sup>1</sup>; <sup>1</sup>Dept. of Clinical Lab. Med., Kochi Med. school, Kochi, Japan, <sup>2</sup>Dept. of Basic Lab. Med., Graduate Sch. of Med., Yamaguchi Univ., Yamaguchi, Japan

- 218 Functional Analysis of Actin-Like Cytoskeletal Protein MamK Associated with Magnetosomes Using Swimming Assay**  
A. Taoka<sup>1</sup>, S. Sakaguchi<sup>2</sup>, Y. Fukumori<sup>1</sup>; <sup>1</sup>Sch. of Natural System, Coll. of Sci. and Engineering, Kanazawa Univ., Kanazawa, Japan, <sup>2</sup>Dept. of Life Sci., Graduate Sch. of Natural Sci. and Technology, Kanazawa Univ., Kanazawa, Japan
- 219 A Genetic Tool to Study Magnetosome Membrane Formation in *Magnetospirillum magneticum* AMB-1**  
E. Cornejo-Warner, A. Komeili; Univ. of California, Berkeley, CA
- 220 Isolation and Identification of Proteins that Co-localize to the Cell Poles in the Absence of the TolC Protein in *Escherichia coli***  
D. E. Vega Mendoza; Univ. of Arkansas for Med. Sci., Little Rock, AR
- 221 WITHDRAWN**
- 222 Generation and Validation of an In Silico Model of the Major Bactofilin of *Myxococcus xanthus***  
K. Xie, D. M. Zuckerman, E. Hoiczyk; Johns Hopkins Univ-Hyg & Publ. Hlth., Baltimore, MD
- 223 Purification of Flexirubin Pigments from *Chryseobacterium***  
J. E. Krebs, A. N. Gale, J. N. Newman; Lycoming Coll., Williamsport, PA
- 022 Biosynthesis (Division K)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 224 Analysis of Taurine Biosynthesis in Microalgae using LC-MS**  
R. Tevatia<sup>1</sup>, T. Clemente<sup>2</sup>, Y. Demirel<sup>1</sup>, H. Cerutti<sup>3,2</sup>, J. Allen<sup>4</sup>, P. Blum<sup>3</sup>; <sup>1</sup>Dept. of Chemical & Biomolecular Engr., UNL, Lincoln, NE, <sup>2</sup>Ctr. for Plant Sci. Innovation, UNL, Lincoln, NE, <sup>3</sup>Sch. of Biological Sci., UNL, Lincoln, NE, <sup>4</sup>Dept. of Biochemistry, UNL, Lincoln, NE
- 225 Pyomelanin Production in a Novel *Pseudomonas* Species is Cell Density-Dependent**  
S. L. Seifert, K. Shikula, L. R. Aaronson; Utica Coll., Utica, NY
- 226 Identification of the Angucyclinone WS5995B Monooxygenase and Putative Biosynthetic Gene Cluster from *Streptomyces acidiscabies* 84.104**  
P. Limsirichai, K. Eaton, C. Spaulding, G. Wilson, F. G. Healy; Trinity Univ., San Antonio, TX
- 227 A Green Synthesis Route to Nitro Group Containing Compounds: Recruitment of Natural Product Biosynthetic Pathways in Bacteria**  
K. Indest, J. O. Eberly, D. Hancock; Engineer Res. and Dev. Ctr., Vicksburg, MS
- 228 Co-regulation of Virulence, Buoyancy and Production of Two Antimicrobials in an Enterobacterium**  
G. P. C. Salmond<sup>1</sup>, N. Williamson<sup>1</sup>, J. Ramsay<sup>2,1</sup>, P. Fineran<sup>2,1</sup>, N. Wilf<sup>1</sup>, R. Monson<sup>1</sup>, H. Bhalara<sup>1</sup>, F. Leeper<sup>1</sup>; <sup>1</sup>Univ. of Cambridge, Cambridge, United Kingdom, <sup>2</sup>Univ. of Otago, Dunedin, New Zealand
- 229 Expression, Characterization and Inhibition of 4-Diphosphocytidyl-2-C-Methyl-D-Erythritol Synthases from Bacterial Pathogens**  
H. Eoh<sup>1</sup>, V. Pujari<sup>2</sup>, P. Narayanasamy<sup>3</sup>, D. C. Crick<sup>2</sup>; <sup>1</sup>Dept. of Med., Cornell Univ., New York, NY, <sup>2</sup>Colorado State Univ., Fort Collins, CO, <sup>3</sup>UNMC Dept. of Pharmacology and Experimental NeuroSci., Nebraska Med. Ctr., Omaha, NE
- 230 A New *Streptomyces* Regulatory Protein Involved in the Biosynthesis of an Antitumor Benzoisochromanquinone Antibiotic**  
A. Li, W. Wang; Central China Normal Univ., China, China
- 231 Assembling Metabolic Pathway Gene Cassettes into A Yeast Genome with Designer Gene Expression Level for Astaxanthin Production**  
J.-J. Chang<sup>1,2</sup>, C. Thia<sup>3</sup>, F.-J. Ho<sup>1</sup>, Y.-C. Wu<sup>1</sup>, Y.-H. Hou<sup>1</sup>, M.-C. Shih<sup>4</sup>, C.-C. Huang<sup>4</sup>, W.-H. Li<sup>1,2</sup>; <sup>1</sup>Biodiversity Res. Ctr., Academia Sinica, Taipei, Taiwan, <sup>2</sup>Genomics Res. Ctr., Academia Sinica, Taipei, Taiwan, <sup>3</sup>Dept. of Life Sci., Natl. Chung Hsing Univ., Taichung, Taiwan, <sup>4</sup>Agricultural Biotechnology Res. Ctr., Academia Sinica, Taipei, Taiwan

- 232 Newly Isolated Giant Rod-shaped Magnetotactic Bacterium From Fresh Water Pond In Japan**  
Y. Fukumori<sup>1,2</sup>, J. Kondo<sup>1,3</sup>, A. Taoka<sup>1,2</sup>; <sup>1</sup>Kanazawa Univ., Kanazawa, Japan, <sup>2</sup>Coll. of Sci. and Engineering, Japan, <sup>3</sup>Graduate Sch. of Natural Sci. and Technology, Japan
- 233 A Novel Lantibiotic Gene Cluster For Biosynthesis Of Apnin From *Bacillus subtilis* Bsn5 Reveals An Extensive Pep5 Group Lantibiotics With Diverse Distribution And Genetic Feature In Environment**  
Y. Deng, J.-J. Fu, C.-Z. Li, Y.-G. Zhu, D.-H. Peng, L.-F. Ruan, M. Sun; Huazhong Agricultural Univ., Wuhan, China
- 234 Identification of a Potential Amidotransferase Gene Required for Rhodoquinone Biosynthesis in *Rhodospirillum rubrum***  
M. Schroll, M. Owen, J. Shepherd; Gonzaga Univ., Spokane, WA
- 235 In vitro Analysis of the Electricidal Effect on Staphylococcal and Pseudomonal Biofilms Using Confocal Microscopy**  
C. L. Brinkman, J. Mandrekar, R. Patel; Mayo Clinic, Rochester, MN
- 023 Cell Walls, Membranes, Compartment, Organelles and Biofilms (Division K)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 236 Characterization of TonB in *Rhizobium leguminosarum* ATCC 14479**  
B. D. Hill, R. N. Chakraborty; East Tennessee State Univ., Johnson City, TN
- 237 Modeling of Protein Translocation and Compartmentalization in *Escherichia coli***  
J. Liu, E. O'Brien, J. Lerman, B. Ø. Palsson, K. Zengler; Univ. of California San Diego, San Diego, CA
- 238 Spectral, Redox and Thermodynamic Properties of Ag(I), Au(III), Cd(II), Co(II), Cr(VI), Fe(III), Hg(II), Mn(II), Ni(II), Pb(II), U(VI), and Zn(II) Binding by Methanobactin from Methylocystis Species Sb2**  
A. A. DiSpirito<sup>1</sup>, N. L. Bandow<sup>1</sup>, B. S. Baral<sup>1</sup>, J. D. Semrau<sup>2</sup>, B. C. Freemeier<sup>1</sup>, B. H. Bergman<sup>1</sup>; <sup>1</sup>Iowa State Univ., Ames, IA, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI
- 239 Toxin GhoT of the Novel Type V Toxin/Antitoxin System GhoT/GhoS Damages the Cell Membrane at the Poles**  
H.-Y. Cheng, V. Soo, T. K. Wood; Pennsylvania State Univ., University Park, PA
- 240 Identification and Characterization of Aerobic C4-Dicarboxylate Transporters in *Vibrio cholerae***  
N. Chowdhury, E. F. Boyd; Dept. of Biological Sci., Univ. of Delaware, Newark, DE
- 241 Investigating Sigma and Anti-Sigma Factor Interactions in a *Pseudomonas aeruginosa* Siderophore Uptake Pathway**  
R. J. Edgar<sup>1,2</sup>, D. F. Ackerley<sup>2</sup>, I. L. Lamont<sup>1</sup>; <sup>1</sup>Univ. of Otago, Dunedin, New Zealand, <sup>2</sup>Victoria Univ. of Wellington, Wellington, New Zealand
- 242 Differential Expression of the *Staphylococcus aureus* cid and Irg Operons as a Function of Heterogeneous Metabolic Microenvironments within a Developing Biofilm**  
D. E. Mooremeier<sup>1</sup>, J. L. Endres<sup>1</sup>, E. E. Mann<sup>2</sup>, M. R. Sadykov<sup>1</sup>, A. R. Horswill<sup>3</sup>, K. C. Rice<sup>4</sup>, P. D. Fey<sup>1</sup>, K. W. Bayles<sup>1</sup>; <sup>1</sup>Univ. of Nebraska Med. Ctr., Omaha, NE, <sup>2</sup>The Ohio State Univ., Columbus, OH, <sup>3</sup>Univ. of Iowa, Iowa City, IA, <sup>4</sup>Univ. of Florida, Gainesville, FL
- 243 Free Fatty Acid Export in *Escherichia coli***  
S. Srinivas, J. E. Cronan; Univ. of Illinois, Champaign, IL
- 244 C6 Branched – Chain Carboxylic Acids Result in Increased Growth, Novel 'Unnatural' Fatty Acids and Altered Membrane Properties in a *Listeria monocytogenes* Branched – Chain  $\alpha$ -Keto Acid Dehydrogenase Mutant**  
S. Sen, S. Sirobhushanam, L. Fernandez-Flores, M. P. Pantak, C. Gatto, B. J. Wilkinson; Illinois State Univ., Normal, IL

- 245 Characterization of Small Transmembrane Proteins Involved in Cytochrome bd Oxidase Activity**  
C. VanOrsdel<sup>1</sup>, S. Bhatt<sup>2</sup>, R. Allen<sup>1</sup>, J. Hobson<sup>1</sup>, E. Brenner<sup>1</sup>, A. Jamil<sup>1</sup>, B. Haynes<sup>1</sup>, M. Hemm<sup>1</sup>; <sup>1</sup>Towson Univ., Towson, MD, <sup>2</sup>NIH, Bethesda, MD
- 246 Characterization of the C-terminal Domain of the Flagellar Protein FlgJ from *Salmonella enterica* serovar typhimurium**  
F. Herlihey, A. J. Clarke; Univ. of Guelph, Guelph, ON, Canada
- 247 Calcium Homeostasis in *Pseudomonas aeruginosa* Requires ATPases and Gradient Driven Exchangers**  
M. Guragain, D. L. Lenaburg, F. S. Moore, I. R. Reutlinger, M. A. Patrauchan; Oklahoma State Univ., Stillwater, OK
- 248 Gene Regulation of *flhD* and *ompR* in *Escherichia coli* Biofilms**  
P. Samanta, S. M. Horne, B. M. Pruess; North Dakota State Univ., Fargo, ND
- 249 Exploring the Catalytic Domain of OatA, a Peptidoglycan O-acetyltransferase from *Staphylococcus aureus***  
P. J. Moynihan, A. Vaidya, A. J. Clarke; Univ. of Guelph, Guelph, ON, Canada
- 250 The Optimum Conditions for the Polar Localization of a Drug Efflux Transporter, MacB, in *Escherichia coli***  
N. Matsumoto<sup>1</sup>, M. Futamata<sup>1</sup>, N. Tani<sup>1</sup>, A. Kitamura<sup>1</sup>, K. Nishino<sup>2</sup>, A. Yamaguchi<sup>2</sup>, T. Hirata<sup>1</sup>; <sup>1</sup>Josai Intl. Univ., Chiba, Japan, <sup>2</sup>Inst. Scientific and Industrial Res., Osaka, Japan
- 251 From Antagonism to Synergism: Natural Toxin Phenazines Mediate the Cross-Kingdom Interaction of *Pseudomonas aeruginosa* and *Aspergillus fumigatus***  
H. Zheng, M. Liew, Y. Wang; Northwestern Univ., Evanston, IL
- 252 Exploring the Interaction Between the EccC ATPase and Its Secreted Substrates in *Mycobacterium tuberculosis***  
D. K. Romero<sup>1,2</sup>, D. Dovala<sup>2</sup>, O. Rosenberg<sup>2</sup>, J. Cox<sup>2</sup>; <sup>1</sup>San Jose State Univ., San Jose, CA, <sup>2</sup>Univ. of California San Francisco, San Francisco, CA
- 252a An Alternative PSII Core Protein Encoded by *psbA1* has Roles Under Aerobic and Low-oxygen Conditions in the cyanobacterium *Synechocystis* sp. PCC 6803**  
T. Crawford, J. P. Chua, J. J. Eaton-Rye, T. C. Summerfield; Univ. of Otago, Dunedin, New Zealand
- 024 Geomicrobiology (Division N)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 253 Molecular Characterization of a Microbial Community Associated with Manganese-Barium Rich Deposits**  
N. J. Catanzaro, M. O'Hara, T. Lee, J. Berkley; SUNY Fredonia, Fredonia, NY
- 254 Alkalilimnicola ehrlichii MLHE-1 as a Model for Carbon Monoxide Uptake Under Conditions Mimicking "Temperate" Mars**  
G. M. King; Louisiana State Univ., Baton Rouge, LA
- 255 Methanogenesis Facilitated by Geobiochemical Iron Cycle in A Syntrophic Microbial Community**  
S. Jiang<sup>1</sup>, S. Park<sup>2</sup>, N. P. Dan<sup>3</sup>, M. J. Sadowsky<sup>4</sup>, H-G. Hur<sup>5</sup>; <sup>1</sup>Harbin Far East Inst. of Technology, Harbin, China, <sup>2</sup>Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea, <sup>3</sup>Ho Chi Minh City Univ. of Technology, Ho Chi Minh City, Viet Nam, <sup>4</sup>Univ. of Minnesota, St. Paul, MN, <sup>5</sup>Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea
- 256 The Use of Tn-seq to Identify a New c-type Cytochrome Essential for Reduction of Soluble but Not Insoluble Fe(III) By *G. sulfurreducens***  
C. E. Levar, M. G. Mehta-Kolte, E. D. Brutinel, J. A. Gralnick, D. R. Bond; Univ. of Minnesota, St. Paul, MN

- 257 Archaeal Membrane Vesicles are Functional Entities that Promote Lithoautotrophy and Survival in Toxic Metal Environments**  
T. B. Johnson, P. Blum; Univ. of Nebraska-Lincoln, Lincoln, NE
- 258 Bacterial Ferric Iron Reduction by a Fermentative *Orenia* sp. (Strain 6634) Isolated from 2.02 KM Depth Cambrian-age Mt. Simon Sandstone, Illinois Basin, USA**  
Y. Dong<sup>1</sup>, R. A. Sanford<sup>1</sup>, R. A. Locke, II<sup>2</sup>, J. R. Weber<sup>1</sup>, S. M. Egan<sup>1</sup>, I. K. O. Cann<sup>1</sup>, R. I. Mackie<sup>1</sup>, B. W. Fouke<sup>1</sup>; <sup>1</sup>Univ. of Illinois Urbana Champaign, Urbana, IL, <sup>2</sup>Illinois State Geological Survey, Urbana, IL
- 259 Arsenic Resistance Determinants of Bacteria Isolated from Bengal Basin of Asia**  
V. Vijay<sup>1</sup>, K. B. Vandana<sup>1</sup>, R. Mathan Kumar<sup>1</sup>, S. R. Prabakaran<sup>1,2</sup>; <sup>1</sup>Bharathiar Univ., Coimbatore, India, <sup>2</sup>Univ. of California Santa Cruz, Santa Cruz, CA
- 260 WITHDRAWN**
- 261 Analysis of an Iron(II) Binding Factors Produced by Cryptoendolithic Bacteria from an Arid Habitat**  
S. Kaur, H. D. Kurtz, Jr.; Clemson Univ., Clemson, SC
- 262 Metagenomics and High-Resolution Sampling of an Iron Dominated Microbial Mat at Lōihi Seamount**  
H. Fullerton, K. Jessor, C. Moyer; Western Washington Univ., Bellingham, WA
- 263 Genomic and Physiological Characterization of the Chromate-Reducing Firmicute *Pelosinus* sp. Strain HCF1 and its Importance in Aquifer Metatranscriptomes**  
H. R. Beller, R. Han, U. Karaoz, H. Lim, E. L. Brodie; Lawrence Berkeley Natl. Lab., Berkeley, CA
- 264 Fermentation-Driven Biological Iron Reduction at Temperature Extremes**  
D. White<sup>1</sup>, R. Singh<sup>1</sup>, K. Weber<sup>1</sup>, R. Kelly<sup>2</sup>, P. Blum<sup>1</sup>; <sup>1</sup>Univ. of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>North Carolina State Univ., Raleigh, NC
- 265 Geochemical Diversity and Microbial-environmental Associations Of Uranium-contaminated Groundwater at Oak Ridge Field Research Sites**  
A. M. Rocha<sup>1,2</sup>, J. L. Fortney<sup>1,2</sup>, S. M. Techtman<sup>1,2</sup>, D. Joyner<sup>1,2</sup>, T. L. Mehlhorn<sup>1</sup>, J. Earles<sup>1</sup>, K. A. Lowe<sup>1</sup>, D. B. Watson<sup>1</sup>, J. H. Campbell<sup>1</sup>, E. Alm<sup>3</sup>, M. Smith<sup>3</sup>, A. P. Arkin<sup>4</sup>, T. C. Hazen<sup>1,2,4</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Univ. of Tennessee, Knoxville, TN, <sup>3</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>4</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 266 Transcriptomic and Proteomic Analysis of *Geobacter sulfurreducens* PCA and *Desulfovibrio vulgaris* Hildenborough Co-cultures**  
K. L. Bailey<sup>1</sup>, J. G. Moberly<sup>2</sup>, T. J. Phelps<sup>1</sup>, M. Podar<sup>1</sup>, S. D. Brown<sup>1</sup>, Z. K. Yang<sup>1</sup>, M. M. Drake<sup>1</sup>, T. C. Hazen<sup>1,3</sup>, A. P. Arkin<sup>4</sup>, A. V. Palumbo<sup>1</sup>, D. A. Elias<sup>1</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Geosyntec Consultants, Knoxville, TN, <sup>3</sup>Univ. of Tennessee, Knoxville, TN, <sup>4</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 267 Cytochromes Identified by Shearing and Implicated in Electrode Respiration of *Geobacter sulfurreducens***  
L. Zacharoff<sup>1,2</sup>, E. Johnson<sup>1,3</sup>, C. Levar<sup>1,4</sup>, D. Bond<sup>1,5</sup>; <sup>1</sup>Univ. of Minnesota, Minneapolis, MN, <sup>2</sup>Biochemistry, Molecular Biol., Biophysics, Minneapolis, MN, <sup>3</sup>Coll. of Biol. Sci., Minneapolis, MN, <sup>4</sup>Microbiol., Immunology, Cancer Biol., Minneapolis, MN, <sup>5</sup>BioTechnology Inst., St. Paul, MN
- 268 Investigation of Diversity and Anoxygenic Phototroph Activity in the Pink Layer of a Salt Marsh Microbial Mat by Targeting the *pufM* Gene with <sup>13</sup>C Stable Isotope Probing**  
T. Whitman, S. H. Zinder, D. H. Buckley; Cornell Univ., Ithaca, NY
- 269 Physiological Analysis of Denitrification by Aerobic Methane-Oxidizing Bacteria**  
K. D. Kits, D. Campbell, L. Y. Stein; Univ. of Alberta, Edmonton, AB, Canada



- 270 Novel Large Sulfur-Oxidizing Bacteria in Sippewissett Salt Marsh**  
V. Salman<sup>1</sup>, V. P. Edgcomb<sup>2</sup>, E. Angert<sup>3</sup>, F. Klein<sup>2</sup>, A. Teske<sup>1</sup>; <sup>1</sup>UNC, Chapel Hill, NC, <sup>2</sup>WHOI, Woods Hole, MA, <sup>3</sup>Cornell, Ithaca, NY
- 271 From Biological Process to Protein Function: Understanding Microbial Iron and Sulfate Reduction through Functional Proteomics Assays**  
S. J. Callister<sup>1</sup>, A. E. Ottwell<sup>2</sup>, L. McCue<sup>1</sup>, M. J. Wilkins<sup>1</sup>, R. E. Sherwood<sup>2</sup>, D. S. Curtis<sup>1</sup>, A. R. Phillips<sup>1</sup>, S. Zhang<sup>2</sup>, H. Lin<sup>2</sup>, R. E. Richardson<sup>2</sup>; <sup>1</sup>Pacific Northwest Natl. Labs, Richland, WA, <sup>2</sup>Cornell Univ., Ithaca, NY
- 272 Enzymes of Alkaliphilic Bacteria Isolated from Grutas de Nombre de Dios caves, Chihuahua Mexico**  
P. A. Rodríguez-Ramos, F. J. Zavala Díaz de la Serna, G. V. Nevárez-Moorillón; Univ. Autónoma de Chihuahua, Chihuahua, Mexico
- 273 Physiology, Phylogeny and Genomics of a Newly Isolated Ammonia-Oxidizing Bacterium in the "Nitrosospora Cluster 0" Lineage**  
H. Urakawa<sup>1</sup>, J. C. Garcia<sup>1</sup>, J. L. Nielsen<sup>2</sup>, L. Y. Stein<sup>3</sup>, M. G. Klotz<sup>4</sup>; <sup>1</sup>Florida Gulf Coast Univ., Fort Myers, FL, <sup>2</sup>Aalborg Univ., Aalborg, Denmark, <sup>3</sup>Univ. of Alberta, Edmonton, AB, Canada, <sup>4</sup>Univ. of North Carolina, Charlotte, NC
- 025 Human Microbiome (Division N)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 274 The Intestinal Microbiota as a Predictor for Nosocomial *Clostridium difficile* Infection**  
C. Vincent<sup>1,2,3</sup>, D. A. Stephens<sup>1</sup>, V. G. Loo<sup>1,2</sup>, T. J. Edens<sup>4</sup>, M. A. Behr<sup>1,2</sup>, K. Dewar<sup>1,2,3</sup>, A. R. Manges<sup>5</sup>; <sup>1</sup>McGill Univ., Montréal, QC, Canada, <sup>2</sup>Res. Inst. of the McGill Univ. Hlth. Ctr., Montréal, QC, Canada, <sup>3</sup>McGill Univ. and Genome Québec Innovation Ctr., Montréal, QC, Canada, <sup>4</sup>Devil's Staircase Consulting, Vancouver, BC, Canada, <sup>5</sup>Univ. of British Columbia, Vancouver, BC, Canada
- 275 Microbial Community Analysis of Coprolites from Pre-Taino Cultures in Puerto Rico**  
T. Santiago Rodríguez<sup>1</sup>, Y. Narganes<sup>1</sup>, E. Crespo<sup>1</sup>, A. Laubscher<sup>2,3</sup>, A. Hamrick<sup>2</sup>, G. Toranzo<sup>1</sup>, R. J. Cano<sup>2,4</sup>; <sup>1</sup>Univ. of Puerto Rico, Rio Piedras, PR, <sup>2</sup>California Polytech. State Univ., San Luis Obispo, CA, <sup>3</sup>Dairy Products Technology Ctr., San Luis Obispo, CA, <sup>4</sup>Ctr. for Applied Biotechnology, San Luis Obispo, CA
- 277 Intestinal Microbial Communities in Patients with Enteric Infections**  
P. Singh<sup>1</sup>, K. Jernigan<sup>1</sup>, R. Mosci<sup>1</sup>, A. Zell<sup>1</sup>, D. W. Newton<sup>2</sup>, H. Salimnia<sup>3</sup>, P. Lephart<sup>4</sup>, D. Sundin<sup>4</sup>, W. Khalife<sup>5</sup>, J. T. Rudrik<sup>6</sup>, S. D. Manning<sup>1</sup>; <sup>1</sup>Michigan State Univ., East Lansing, MI, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI, <sup>3</sup>Wayne State Univ., Detroit, MI, <sup>4</sup>Spectrum Hlth., Grand Rapids, MI, <sup>5</sup>Sparrow Hosp., Lansing, MI, <sup>6</sup>Michigan Dept. of Community Hlth., Lansing, MI
- 278 Effects of Resistant Starch on Host Metabolic Response and the Gut Microbiome of Insulin-resistant Individuals**  
R. Lamendella<sup>1</sup>, M. Sing<sup>1</sup>, A. Maul<sup>1</sup>, S. Chiu<sup>2</sup>, G. Ackermann<sup>3</sup>, T. Walters<sup>3</sup>, D. McDonald<sup>3</sup>, Y. Baeza<sup>3</sup>, R. Knight<sup>3,4</sup>, N. Bergeron<sup>5</sup>, R. Krauss<sup>5</sup>, J. Jansson<sup>6,7</sup>; <sup>1</sup>Juniata Coll., Huntingdon, PA, <sup>2</sup>Children's Hosp. Oakland Res. Inst., CA, <sup>3</sup>Univ. of Colorado, Boulder, CO, <sup>4</sup>Howard Hughes Med. Inst., MD, <sup>5</sup>Children's Hosp. Oakland Res. Inst., Oakland, CA, <sup>6</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>7</sup>Univ. of California, Berkeley, CA
- 279 Characterisation of a Growth-Enabling Factor for an "Uncultivable" Oral Bacterium**  
A. Adamowska, A. Lax, W. G. Wade; King's Coll. London, London, United Kingdom
- 280 Comparisons of CRISPR Content Between Saliva and Skin: Viral Exposures May Not Be Body Site Specific**  
R. Robles-Sikisaka<sup>1</sup>, M. Naidu<sup>1</sup>, M. Ly<sup>1</sup>, J. Salzman<sup>2</sup>, S. R. Abeles<sup>1</sup>, T. Boehm<sup>3</sup>, D. T. Pride<sup>1</sup>; <sup>1</sup>UCSD, La Jolla, CA, <sup>2</sup>Stanford Univ. Sch. of Med., Palo Alto, CA, <sup>3</sup>Western Univ. Coll. of Dental Med., Pomona, CA

- 281 Integrated View of Bacterial Communities in Cystic Fibrosis Lung**  
J. Zhao, L. A. Carmody, L. M. Kalikin, B. K. Foster, J. J. LiPuma; Univ. of Michigan-Ann Arbor, Ann Arbor, MI
- 282 Characterizing the Role of the Gut Microbiome in Colon Tumorigenesis**  
J. P. Zackular, N. T. Baxter, G. Y. Chen, P. D. Schloss; Univ. of Michigan, Ann Arbor, MI
- 283 Nurture Trumps Nature, but Ethnicity Still Plays an Essential Role in Tuning the Salivary Microbiome**  
J. He, X. Zhou, X. Xu; State Key Lab. of Oral Diseases, West China Hosp. of Stomatology, Sichuan Univ., Chengdu, China
- 284 Shifts in the Gut Microbiota of Inflammatory Bowel Disease Patients in a Longitudinal Study**  
E. E. McClure<sup>1</sup>, M. Dunkleberger<sup>1</sup>, K. Li<sup>2</sup>, J. Halfvarsson<sup>3</sup>, C. Tysk<sup>3</sup>, D. McDonald<sup>4,5</sup>, Y. Vázquez Baeza<sup>4</sup>, W. Walters<sup>4</sup>, R. Knight<sup>4,5,6</sup>, R. Lamendella<sup>1,2</sup>, J. K. Jansson<sup>2,7</sup>; <sup>1</sup>Juniata Coll., Huntingdon, PA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Orebro Univ. Hosp., Örebro, Sweden, <sup>4</sup>Univ. of Colorado Boulder, Boulder, CO, <sup>5</sup>BioFrontiers Inst., Boulder, CO, <sup>6</sup>Howard Hughes Med. Inst., Boulder, CO, <sup>7</sup>Joint Genome Inst., Walnut Creek, CA
- 285 Aggregative Interactions Between Chronic Wound Bacteria**  
D. L. Rao, PhD<sup>1</sup>, A. Frantellizzi<sup>2</sup>, M. C. Durance<sup>3</sup>, G. A. James<sup>4</sup>, A. H. Rickard<sup>5</sup>; <sup>1</sup>Marshall Univ., Huntington, WV, <sup>2</sup>Binghamton Univ., Binghamton, NY, <sup>3</sup>Univ. of Michigan, Ann Arbor, MI, <sup>4</sup>Montana State Univ., Bozeman, MT
- 286 *Escherichia coli* Diversity In The Human Gut And This Genus As Tetracycline Resistance Reservoirs**  
B. Mercado; Univ. of Puerto Rico, Rio Piedras, Puerto Rico
- 026 Bioproducts and Bioprocesses (Division O)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 287 Purification and Partial Characterization of a New Laccase with Unique pH-Activity Profiles from a Native Mexican Basidiomycete Strain**  
C. E. Hernandez-Luna<sup>1</sup>, T. Y. Villarreal-Galvan<sup>1</sup>, J. F. Contreras-Cordero<sup>1</sup>, G. Gutierrez-Soto<sup>2</sup>, S. M. Salcedo-Martínez<sup>1</sup>; <sup>1</sup>Facultad de Ciencias Biológicas UANL, San Nicolas de los Garza, N.L., Mexico, <sup>2</sup>Facultad de Agronomía UANL, Gral. Escobedo, N.L., Mexico
- 288 Isolation and Characterization of a Soluble and Thermostable Phosphite Dehydrogenase from *Ralstonia* sp. Strain 4506**  
R. Hirota, S. Ono, Y. Kodama, K. Motomura, T. Ikeda, A. Kuroda; Hiroshima Univ., Higashi-Hiroshima, Japan
- 289 Application Potential of a Laccase from *Ganoderma lucidum* in Second Generation Bioethanol Production**  
Y. Xiao; Sch. of Life Sci., Anhui Univ., Hefei, China
- 290 Development of an Efficient Whole-cell Biocatalyst System For Production of  $\gamma$ -PGA Depolymerase**  
S.-Y. Chen, Z.-H. Huang; Yuan Ze Univ., Chung-Li, Taiwan
- 291 Stirrer Speed; Influence on the Morphology of *Aspergillus carbonarius* var (Brainer) Thom IMI 366159 During Raw Starch Digesting Amylase Production**  
O. C. Amadi, B. N. Okolo, A. N. Moneke; Univ. of Nigeria Nsukka, Enugu, Nigeria
- 292 Processing of Biomass-Saccharifying Enzymes by Sand Filtration for Farm Deployable Microbial Bioreactor Laboratory Model**  
A. Nanjundawamy, C. R. Starr, B. C. Okeke; Auburn Univ. – Montgomery, Montgomery, AL
- 293 Expression of Bacteriophage Endolysins in *Saccharomyces cerevisiae***  
P. A. Khatibi<sup>1</sup>, D. R. Roach<sup>2</sup>, S. R. Hughes<sup>1</sup>, D. M. Donovan<sup>2</sup>, K. M. Bischoff<sup>1</sup>; <sup>1</sup>Natl. Ctr. for Agricultural Utilization Res., ARS, USDA, Peoria, IL, <sup>2</sup>Animal BioSci. and Biotechnology Lab., Animal & Natural Resources Inst., ARS, USDA, Beltsville, MD



- 294 Xylanase Production by Newly Isolated Bacterial Cultures Isolated from Forest Soil Samples of Kerala**  
S. S., L. A. S. V. S., S. G. S.; P.G. Dept. of Botany and Res. Ctr., Univ. Coll., Trivandrum, Kerala, Trivandrum, India
- 295 Production of Cellulases from Alkali Pretreated Sugarcane Bagasse via Solid State Fermentation by *Trametes versicolor* and *Bjerkandera adusta***  
D. Cajero-Sotelo, L. Cajero-Sotelo, Y-E. Hernandez-Flores, M-E. Ocampo-Millán, G. Valdivieso-Padilla, E. Guilbert-García, A. Quinto-Hernández, M-A. Chagolla-Gaona, H. Alonso-Jimenez, R. Salgado-Delgado, A. Alvarez-Castillo, M-J. Granados-Baeza; Inst. Tecnológico de Zacatepec, Zacatepec, Mexico
- 296 Enhanced Indirubin Production From Tryptophan by Recombinant *Escherichia coli* Containing Naphthalene Dioxygenase Genes from *Comamonas* sp. MQ**  
X. Zhang, Y. Qu, Z. Zhang, Q. Ma, J. Zhou; Dalian Univ. of Technology, Dalian, China
- 297 A Strategy for the Improvement of Polyhydroxyalkanoates Production from Crude Glycerol by Using Recombinant *Escherichia coli***  
C-W. Lan; Yuan Ze Univ., Chungli, Taiwan
- 298 Isolation and Characterization of Novel Solvent Producing *Clostridium* sp. from the Logan City Wastewater Lagoon System**  
N. N. Hengge, J. T. Ellis, R. C. Sims, C. D. Miller; Utah State Univ., Logan, UT
- 299 Wax Ester Production in *Marinobacter aquaeolei* VT8**  
E. Lenneman, B. Barney; Univ. of Minnesota, St. Paul, MN
- 300 Enhancement of Biosurfactant Production by Strains of *Serratia marcescens***  
N. Rosas-Galvan<sup>1</sup>, F. Martínez-Morales<sup>1</sup>, L. Serrano-Carreón<sup>2</sup>, R. Tinoco<sup>2</sup>, M. Trejo-Hernández<sup>1</sup>; <sup>1</sup>Univ. Autónoma del Estado de Morelos, Mexico, <sup>2</sup>Univ. Nacional Autónoma de México, Mexico
- 301 Effect of Deletion of Eliminasin Gene (elmA) from the Genome of *Escherichia coli* K5 on Heparosan Production and Shedding in Fermentation**  
A. M. Hickey, U. Bhaskar, R. J. Linhardt, J. S. Dordick; RPI, Troy, NY
- 302 Characterization of Lysine Production by *Brevibacterium lactofermentum***  
S. Ahmed<sup>1,2</sup>, M. I. Rajika<sup>3,4</sup>; <sup>1</sup>Univ. of California San Diego, La Jolla, CA, <sup>2</sup>Univ. of Agriculture, Faisalabad, Pakistan, <sup>3</sup>Natl. Inst. for Biotechnology and Genetic Engineering, Faisalabad, Pakistan, <sup>4</sup>Government Coll. Univ., Faisalabad, Pakistan
- 303 Biopolymers and Thermostable Proteins from a Thermophile**  
R. K. Sani, J. Wang, D. Salem; South Dakota Sch. of Mines and Technology, Rapid City, SD
- 304 Antimicrobial Properties of Kombucha Ferments against Bacteria and Yeast**  
J. K. Lawton, II<sup>1</sup>, R. Kumar<sup>2</sup>; <sup>1</sup>Univ. of Minnesota, Minneapolis, MN, <sup>2</sup>Minneapolis Community & Technical Coll., Minneapolis, MN
- 305 WITHDRAWN**
- 027 Beneficial and Commensal Food Microorganisms (Division P)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 306 Enhancing the Adhesion Ability of *Lactobacillus rhamnosus* GG in the Murine Gastrointestinal Tract by Low pH Adaptation**  
M. Bang<sup>1</sup>, Y. Kim<sup>2</sup>, H. Yeo<sup>3</sup>, K. Lim<sup>3</sup>, S. Oh<sup>1</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>Chonbuk Natl. Univ., Jeonju, Republic of Korea, <sup>3</sup>R&D Ctr., Maeil Dairy Co. Ltd., Pyeongtaek, Republic of Korea

- 307 Unsaturated Fatty Acids and Protein Contents of *Chlorella***  
C-F. Chang<sup>1</sup>, C-Y. Lee<sup>1</sup>, S. Huang<sup>2</sup>, H. Song<sup>2</sup>, S-S. Yang<sup>1,3</sup>; <sup>1</sup>Dept. of Food Sci., China Univ. Sci. and Technology, Taipei, Taiwan, <sup>2</sup>Taiwan Chlorella Manufacturing Company, Tao-Yuan, Taiwan, <sup>3</sup>Dept. of Biochemical Sci. and Technology, Natl. Taiwan Univ., Taipei, Taiwan
- 308 Breeding of Polyphosphate-accumulating Lactic Acid Bacteria For Superior Probiotics**  
A. Saiki<sup>1</sup>, Y. Ishida<sup>2</sup>, S. Segawa<sup>1</sup>, R. Hirota<sup>2</sup>, T. Shigyo<sup>1</sup>, A. Kuroda<sup>2</sup>; <sup>1</sup>Frontier Lab. of Value Creation, Sapporo Breweries Ltd, Yaizu, Japan, <sup>2</sup>Dept. of Molecular Biotechnology, Graduate Sch. of Advanced Sci. of Matter, Hiroshima Univ., Hiroshima, Japan
- 309 Expression of Inductive Proteins in *Lactobacillus plantarum* L67 Under Cold Stress**  
S. Song<sup>1</sup>, G-B. Kim<sup>2</sup>, J. H. Kim<sup>3</sup>, M. W. Griffiths<sup>4</sup>, S. Oh<sup>1</sup>; <sup>1</sup>Div. Animal Sci., Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>Dept. Animal Sci. & Technology, Chung-Ang Univ., Ansong, Republic of Korea, <sup>3</sup>Dept. Food Sci. & Services, Eulji Univ., Seongnam-Si, Republic of Korea, <sup>4</sup>Dept. Food Sci. and Canadian Res. Inst. for Food Safety, Guelph, ON, Canada
- 310 Linking Phenotypes and Genotypes in *Streptococcus thermophilus* by Combining Genome Sequencing and Exo-metabolomics Data using Random Forest Machine Learning**  
M. Danielsen<sup>1</sup>, B. Vriesendorp<sup>2</sup>, S. Wiese<sup>1</sup>, R. J. Siezen<sup>3</sup>, E. Brockmann<sup>1</sup>, S. A. van Hijum<sup>2,4</sup>, M. Wels<sup>2</sup>; <sup>1</sup>Chr. Hansen A/S, Hørsholm, Denmark, <sup>2</sup>NIZO Food Research BV, Wageningen, Netherlands, <sup>3</sup>Microbial Bioinformatics, Ede, Netherlands, <sup>4</sup>Radboud Univ. Med. Ctr., Nijmegen, Netherlands
- 311 Development of a Molecular Toolbox for Identification, Subtyping, and Surveillance of Live Microbial Ingredients in Dietary Supplements**  
J. N. Patro<sup>1</sup>, P. Ramachandran<sup>1</sup>, M. K. Mammeli<sup>1</sup>, J. L. Lewis<sup>1</sup>, D. W. Lacher<sup>1</sup>, E. A. Pfeiler<sup>1</sup>, T. A. Cebula<sup>2</sup>, C. A. Elkins<sup>1</sup>; <sup>1</sup>FDA, Laurel, MD, <sup>2</sup>CosmosID, College Park, MD
- 312 Dissolved Oxygen Levels Affect Microsclerotia Formation by Liquid Cultures of *Metarhizium brunneum***  
M. A. Jackson; USDA-ARS, Peoria, IL
- 313 Effect of Consumer Use on the Efficacy of Probiotics**  
J. McKinney, D. Snyder; Pfizer Consumer Healthcare, Richmond, VA
- 314 Survival of Probiotics in Frozen Yogurt with Oligofructose and Glycerol**  
H. Muzammil<sup>1</sup>, I. Javed<sup>1</sup>, B. Rasco<sup>2</sup>; <sup>1</sup>Dept. of Dairy Technology, Univ. of Vet. and Animal Sci., Lahore, Pakistan, <sup>2</sup>Sch. of Food Sci. and Human Nutrition, Washington State Univ., Pullman, WA
- 315 The Effect of Lactic Acid Bacteria Cultured In Deep Sea Water on Hypercholesterolemia**  
Y-H. Chen<sup>1</sup>, T-Y. Tsai<sup>1</sup>, T-M. Pan<sup>2</sup>; <sup>1</sup>Dept. of Food Sci., Fu Jen Catholic Univ., Taipei, Taiwan, <sup>2</sup>Dept. of Biochemical Sci. and Technology, Natl. Taiwan Univ., Taipei, Taiwan
- 316 WITHDRAWN**
- 317 Interaction between Bifidobacteria Strains and Medical Drugs**  
T. O. Obanla, R. Gyawali, S. A. Ibrahim; North Carolina A&T State Univ., Greensboro, NC
- 318 Viability and Survival of *Bifidobacterium Breve* ATCC 15701 and *Bifidobacteriu Adolescentis* ATCC 15704 in Skim Milk in the Presence of Shiitake Mushroom Extract During Refrigerated Period**  
O. A. Hassan<sup>1</sup>, A. A. AbuGhazaleh<sup>2</sup>, S. A. Ibrahim<sup>1</sup>, O. Isikhuemhen<sup>1</sup>, A. Shahbazi<sup>1</sup>; <sup>1</sup>North Carolina A&T State Univ., Greensboro, NC, <sup>2</sup>Southern Illinois Univ., Carbondale, IL
- 319 Characterization of the Bacteriocin-like Activity of *Lactobacillus rhamnosus* LcS247**  
C. Breccia, D. Boucaud; Quinipiac Univ., Hamden, CT

- 320 Isolation and Evaluation of Potential Probiotic Bifidobacteria from Sow Milk**  
R. Gyawali, R. A. Corn Minor, S. A. Ibrahim; North Carolina A&T State Univ., Greensboro, NC
- 321 Screening of Lactic Acid Bacteria from Goat Gastrointestinal Tracts for Their Potential Use as Probiotics**  
N. Suteebut<sup>1</sup>, S. Chanthachum<sup>1</sup>, K-O. Intarapichet<sup>2</sup>, K. R. Cadwallader<sup>3</sup>, M. J. Miller<sup>3</sup>; <sup>1</sup>Prince of Songkla Univ., Songkhla, Thailand, <sup>2</sup>Suranaree Univ. of Technology, Nakhon Ratchasima, Thailand, <sup>3</sup>Univ. of Illinois at Urbana-Champaign, IL
- 322 Production of a Hyperthermophilic  $\beta$ -Galactosidase by a Synthetically Designed *Lactococcus lactis***  
L. Yu, D. J. O'Sullivan; Univ. of Minnesota, Saint Paul, MN
- 323 Isolation of Lactic Acid Bacteria with Inhibitory Activity against Spoilage Microorganisms Associated with Ogi**  
U. N. Ekwunye, C. A. Ugoji; Michael Okpara Univ. of Agriculture, Umudike, Umuahia, Nigeria
- 324 Capillary Isoelectric Focusing – Useful Tool for Detection and Identification of the Probiotic Lactic Acid Bacteria**  
F. A. Ruzicka<sup>1</sup>, V. Drab<sup>2</sup>, M. Horka<sup>3</sup>, R. Kadlec<sup>1</sup>; <sup>1</sup>Med. Faculty, Masaryk Univ., Brno, Czech Republic, <sup>2</sup>MILCOM a.s., Prague, Czech Republic, <sup>3</sup>Inst. of Analytical Chemistry, Brno, Czech Republic
- 028 Anion and Cation Transformation (Division Q)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 325 Phosphate Solubilizing and Phytate Mineralizing Bacteria Isolated From Nutrient Enriched Sites in the Chesapeake Bay Watershed**  
L. M. Stout, D. P. Jaisi; University of Delaware, Newark, DE
- 326 Dissimilatory Perchlorate Reduction Linked to Cryptic Aerobic Methane Oxidation Via Chlorite Dismutase**  
L. G. Miller<sup>1</sup>, S. Baesman<sup>1</sup>, J. Semrau<sup>2</sup>, R. S. Oremland<sup>1</sup>; <sup>1</sup>U.S. Geological Survey, Menlo Park, CA, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI
- 327 Perchlorate Reduction by *Pseudomonas aeruginosa* Isolated from a Waste Water Treatment Facility**  
T. Else<sup>1</sup>, D. Hartley<sup>1</sup>, A. Guilbeault<sup>1</sup>, N. Du<sup>1</sup>, J. Batista<sup>2</sup>, P. S. Amy<sup>2</sup>; <sup>1</sup>Touro Univ. Nevada, Henderson, NV, <sup>2</sup>Univ. of Nevada, Las Vegas, NV
- 328 Characterization of Anion Permeases Annotated as Sulfate Permeases in *Desulfovibrio vulgaris* Hildenborough**  
G. M. Zane, J. D. Wall; Univ. of Missouri, Columbia, MO
- 329 Multi Cycle Ion Exchange/Biodegradation Removal of Nitrate from Drinking Water by Using Salt Tolerant Nitrate-Perchlorate Reducing Bacteria**  
S. Ebrahimi, D. J. Roberts; Univ. of British Columbia, Kelowna, BC, Canada
- 330 Autochthonous *Pseudomonas* as Potential Tools for Metal and Pesticide Bioremediation Processes**  
M. J. Alessandrello, M. R. Barrionuevo, M. L. Ferreira, G. Querejeta, J. M. Montserrat, S. A. M. Ramirez, D. L. Vullo; Univ. Natl. Gen. Sarmiento, Los Polvorines, Buenos Aires, Argentina
- 331 Phylogenetic and Functional Analysis of Rhizosphere Microbial Communities During the Phytostabilization of Metalliferous, Acidic Mine Tailings**  
A. Valentin-Vargas, R. A. Root, J. Chorover, R. M. Maier; The Univ. of Arizona, Tucson, AZ
- 332 Field Observation of Sequestration of Uranium in Iron-rich Sediments Under Sequential Reduction-oxidation Conditions**  
W-M. Wu<sup>1</sup>, T. Mehlhorn<sup>2</sup>, B. Li<sup>3</sup>, Y-Q. Chao<sup>3</sup>, S. Kelly<sup>4</sup>, K. Lowe<sup>2</sup>, J. Phillips<sup>2</sup>, J. Earles<sup>5</sup>, G. Tang<sup>2</sup>, J. Luo<sup>6</sup>, Z. Zhang<sup>3</sup>, D. Watson<sup>5</sup>, C. Criddle<sup>1</sup>; <sup>1</sup>Stanford Univ., Stanford, CA, <sup>2</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>3</sup>The Univ. of Hong Kong, Hong Kong, China, <sup>4</sup>EXAFS Analysis, Bolingbrook, IL, <sup>5</sup>Oak Ridge Natl. Lab., Oak Ridge, CA, <sup>6</sup>Georgia Technology of Inst., Atlanta, GA

- 333 Bioleaching Multiple Heavy Metals from Contaminated Alkaline Sediment by Multibatching Heterotrophic Bacteria**  
J. Zhu; Univ. of Tennessee Knoxville, Knoxville, TN
- 334 Copper Resistance, Uptake, Sequestration and Localization in Bacteria Cells and Capsule Material Isolated from the Abandoned Nacimiento Copper Mine, New Mexico**  
D. P. Delgado, R. M. Plunkett; New Mexico Highlands Univ., Las Vegas, NM
- 335 Bench-Scale Treatability Testing for *In situ* Bioremediation of Mining-Influenced Water**  
N. T. Smith<sup>1</sup>, N. Anton<sup>1</sup>, D. Reisman<sup>2</sup>, R. Olsen<sup>1</sup>, M. Nelson<sup>1</sup>, A. Frandsen<sup>3</sup>, W. A. Rosche<sup>4</sup>; <sup>1</sup>CDM Smith, Denver, CO, <sup>2</sup>CDM Smith, Cincinnati, OH, <sup>3</sup>CDM Smith, Helena, MT, <sup>4</sup>Stockton Coll. of New Jersey, Galloway, NJ
- 336 Altering Petrology in Oil Reservoirs Through Microbial Authigenic Mineral Formation**  
H. Zhu<sup>1</sup>, H. Carlson<sup>1</sup>, J. Ajo-Franklin<sup>2</sup>, C. Hubbard<sup>2</sup>, M. Voltolini<sup>2</sup>, J. Coates<sup>1</sup>; <sup>1</sup>UC Berkeley, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 337 Potential Acid Mine Drainage Treatment Utilizing Acidophilic Sulfate Reducing Bacteria in an Upflow Bioreactor**  
E. F. Kittrell, J. G. Burken, M. R. Mormile, M. Fitch; Missouri Univ. of Sci. and Technology, Rolla, MO
- 338 Biosorption of Heavy Metals by Bacteriophage T4**  
Z. Tan, K. A. Weber; Univ. of Nebraska-Lincoln, Lincoln, NE
- 339 The Role Bacteria May Play in the Protection and Remediation of Metal-treated Museum Collections**  
N. M. Mogen, T. M. Roane; Univ. of Colorado Denver, Denver, CO
- 340 Cyanide Biodegradation by Native Alkaliphilic Bacteria Isolated in Mesa Pata Mine Waste – Huaraz – Peru**  
S. Gutierrez, J. Tuya, F. Merino; San Marcos Univ., Lima, Peru
- 029 Microbial Considerations for Water and Waste Treatment (Division Q)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 341 Biosorption on Cadmium(II) by Yeasts from Fruit Peels**  
J. M. Casamolin, R. M. Benet, G. R. Dedeles; Univ. of Santo Tomas, Manila, Philippines
- 342 Cooper and Lead Biosorption by Rhizosperic Filamentous Fungi for Application in Waste Water Treatment**  
L. N. Muñoz-Castellanos, I. P. Grajeda-Urbe, M. Ballinas-Casarrubias, M. Peralta-Pérez, G. Nevárez-Moorillón, F. Solís-Martínez, L. Fernández-Licón; Univ. Autónoma de Chihuahua, Chihuahua, Chihuahua, Mexico
- 343 Copper Resistant *Pseudomonas* sp. from the Nacimiento Copper Mine Pit Lake Combined with Biochar Amendments Immobilize Copper**  
R. Lucero, R. M. Plunkett; New Mexico Highlands Univ., Las Vegas, NM
- 344 Co-cultured *Lactobacillus casei* and *Pichia pastoris* Biofilms for the Removal of Dissolved Copper (Cu+2) from Contaminated Wastewater**  
A. P. Mosier<sup>1</sup>, E. T. Jin<sup>2</sup>, N. C. Cady<sup>1</sup>; <sup>1</sup>Univ. at Albany, Albany, NY, <sup>2</sup>Dartmouth Coll., Hanover, NH
- 345 Microbial Modulation of Acidic Coal Mine Drainage Chemistry: Implications for Passive Treatment of Minewater**  
J. S. Brantner, A. Milsted, J. M. Senko; The Univ. of Akron, Akron, OH
- 346 Bacteriophage-based Biological Control of Acid Mine Drainage**  
Y. Xiao, D. Roberts; Univ. of British Columbia, Kelowna, BC, Canada
- 347 Potential for Recovering Critical Materials from Wastestreams Using Rhamnolipid Biosurfactant**  
D. E. Hogan, R. M. Maier; Univ. of Arizona, Tucson, AZ

- 348 Application of Efficient Bacteria to Soil Buried Swine Carcass and Their Effect on Gas Emission and Pathogen Control**  
A. Jyoti<sup>1</sup>, H-S. Kim<sup>2</sup>, W-W. Jeong<sup>3</sup>, S. Park<sup>3</sup>, M. Kim<sup>4</sup>, J. Bang<sup>5</sup>, S-S. Lee<sup>6</sup>; <sup>1</sup>Dept. of Life Sci., Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Biological Engineering, Kyonggi Univ., Suwon, Republic of Korea, <sup>3</sup>Environmental Infrastructure Res. Dev. Water Supply & Sewage Res. Div., Natl. Inst. of Environmental Res., Republic of Korea, <sup>4</sup>Dept. of Bio & Environmental Technology, Coll. of Natural Sci., Seoul Women's Univ., Seoul, Republic of Korea, <sup>5</sup>Dept. of Environmental, Earth and Geospatial Sci., North Carolina Central Univ., NC, <sup>6</sup>Dept. of Life Sci., Coll. of Natural Sci., Kyonggi Univ., Suwon, Republic of Korea

- 349 A Study on the Effect of Malodor Reduction Emitted from Swine Carcass Degradation In-Vessel Bioreactor Using Air Injection**  
J-H. Her<sup>1</sup>, S-R. Kang<sup>2</sup>, S-S. Lee<sup>1</sup>; <sup>1</sup>Dept. of Life Sci., Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Bio-Engineering, Kyonggi Univ., Suwon, Republic of Korea

- 350 A New Method for Class A Biosolids Production from Organic Waste Utilizing Sodium Metham and High pH: Enteric Virus and Helminth Ova Markers**  
A. D. Badilla, J. Posey, C. P. Gerba, A. Tamimi; Univ. of Arizona, Tucson, AZ

- 351 Rapid Assessment of Humic Acids as a Presumptive Predictor of Microbial Decrease in Stabilized Biosolids**  
J. S. Rosenblum, M. Bisesi, J. Lee; The Ohio State Univ., Columbus, OH

### 030 Microbial Ecology of Natural and Human Influenced Environments (Division Q)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 352 Detecting Nitrous Oxide Reductase (nosZ) Genes in Metagenomes: Method Development and Application to Midwestern Soils**  
L. H. Orellana<sup>1</sup>, S. Higgins<sup>2</sup>, J. Chee-Sanford<sup>3</sup>, R. A. Sanford<sup>4</sup>, F. E. Löffler<sup>2</sup>, K. T. Konstantinidis<sup>1</sup>; <sup>1</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>Univ. of Tennessee, Tennessee, TN, <sup>3</sup>U.S. Dept. of Agriculture, Urbana, IL, <sup>4</sup>Univ. of Illinois, Urbana, IL

- 353 Mapping Soil Chemical and Microbiological Properties to Help Determine Pb-associated Risks at an Abandoned Small-arms Firing Range in Oak Ridge, TN**  
T. S. Sullivan<sup>1</sup>, C. W. Schadt<sup>1</sup>, S. Smith<sup>2</sup>, N. Basta<sup>3</sup>, P. Jardine<sup>4</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Cornell Univ., Ithaca, NY, <sup>3</sup>The Ohio State Univ., Columbus, OH, <sup>4</sup>Univ. of Tennessee, Knoxville, TN

- 354 Microbial Community Analysis of Anthropogenically and Endogenously Metal-Impacted Systems**  
J. Sackett, T. M. Roane; Univ. of Colorado Denver, Denver, CO

- 355 Microbial Community Response to Carbon Substrates Amendment in Mercury Impacted Sediments: Implications on Microbial Methylation of Mercury**  
A. C. Somenahally, J. G. Moberly, R. A. Hurt, M. Podar, S. D. Brown, A. V. Palumbo, D. Elias; Oak Ridge Natl. Lab., Oak Ridge, TN

- 356 Relationship between Land Use and Anthropogenic Factors Influencing Microbial Community Structure in the Upper Mississippi River**  
C. Staley<sup>1</sup>, T. Unno<sup>1</sup>, T. J. Gould<sup>1,2</sup>, B. Jarvis<sup>1,2</sup>, J. Phillips<sup>2</sup>, J. B. Cotner<sup>3</sup>, M. J. Sadowsky<sup>1,4</sup>; <sup>1</sup>BioTechnology Inst., Univ. of Minnesota, Saint Paul, MN, <sup>2</sup>Biol. Program, Univ. of Minnesota, Saint Paul, MN, <sup>3</sup>Dept. of Ecology, Evolution, and Behavior, Univ. of Minnesota, Saint Paul, MN, <sup>4</sup>Dept. of Soil, Water, and Climate, Univ. of Minnesota, Saint Paul, MN

- 357 Differing Nutrient Gradients Capture Distinct Assemblage of Culturable Soil Bacteria**  
M. Kim<sup>1</sup>, B. Seo<sup>2</sup>, J. Chun<sup>2</sup>; <sup>1</sup>Seoul Natl. Univ., Republic of Korea, <sup>2</sup>Seoul Natl. Univ., Seoul, Republic of Korea

- 358 The Effects of Biochar Amendments to Arid Soils (aridisols) on Water Retention and Microbial Abundance**  
R. V. Montañó, R. M. Plunkett; New Mexico Highlands Univ., Las Vegas, NM

- 359 Determination of Microbial Populations in a Synthetic Turf System**  
C. Oberg, J. Bass, K. Nakaoka, D. Hintze; Weber State Univ., Ogden, UT

- 360 Salinity, Boron, and Copper Associations of *Bacillus subtilis-licheniformis* Ecotypes**  
S. Kopac<sup>1</sup>, S. Aracena<sup>1</sup>, M. Koren<sup>1</sup>, J. Wiedenbeck<sup>1</sup>, M. Goodwyn<sup>1</sup>, C. Conway<sup>1</sup>, J. Chabon<sup>1</sup>, A. Rooney<sup>2</sup>, J. Sikorski<sup>3</sup>, F. Cohan<sup>1</sup>; <sup>1</sup>Wesleyan Univ., Middletown, CT, <sup>2</sup>Natl. Ctr. for Agricultural Utilization Res., USDA, Peoria, IL, <sup>3</sup>Leibniz-Inst. DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen, Braunschweig, Germany

- 361 Metagenome Analyses of a Full Scale Tannery Wastewater Treatment process Successfully Bioaugmented with BM-S-1**  
K. Ekpeghere<sup>1</sup>, S-Y. Ha<sup>1</sup>, B-S. Kim<sup>2</sup>, B. Song<sup>3</sup>, S-H. Kim<sup>1</sup>, K-C. Jeong<sup>1</sup>, J-T. Kim<sup>4</sup>, H-G. Kim<sup>4</sup>, J. Chun<sup>5</sup>, I-S. Kim<sup>1</sup>, S-C. Koh<sup>1</sup>; <sup>1</sup>Korea Maritime Univ., Busan, Republic of Korea, <sup>2</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>3</sup>Virginia Inst. of Marine Sci., Gloucester Point, VA, <sup>4</sup>BM, Inc., Busan, Republic of Korea, <sup>5</sup>ChunLab, Inc., Seoul, Republic of Korea

- 362 WITHDRAWN**

- 363 Occurrence and Enhancement of Hemoglobin Expressing Bacteria in Sludge Communities Acclimated to Low Dissolved Oxygen Conditions**  
S. Kunkel; Illinois Inst. of Technology, Chicago, IL

- 364 Cause of *Gordonia amarae*-like Foaming in an Incompletely Nitrifying Plant: 3.5 Year Study**  
P. Asvapathanagul<sup>1</sup>, Z. Huang<sup>2,3</sup>, P. Gedalanga<sup>4</sup>, T. Wallace<sup>5</sup>, J. Pullen<sup>5</sup>, B. H. Olson<sup>6</sup>; <sup>1</sup>California State Univ. Long Beach, Long Beach, CA, <sup>2</sup>Nanjing Univ. of Sci. and Technology, Nanjing, China, <sup>3</sup>Univ. of California at Irvine, Irvine, CA, <sup>4</sup>Univ. of California at Los Angeles, Los Angeles, CA, <sup>5</sup>Santa Margarita Water District, San Juan Capistrano, CA, <sup>6</sup>Univ. of California at Irvine, Irvine, CA

- 365 Quantitative Detection of Syntrophic Fatty-Acid Degrading Bacteria in Anaerobic Environments**  
P. P. Mathai, J. S. Maki; Marquette Univ., Milwaukee, WI

- 366 Resistance of Geopolymer to Microbial Induced Corrosion (MIC)**  
M. S. Badar<sup>1</sup>, M. Carlos<sup>2</sup>, P. L. Hindmarsh<sup>3</sup>, E. N. Allouche<sup>4</sup>; <sup>1</sup>Louisiana Tech Univ., Ruston, LA, <sup>2</sup>Res. Scientist, Louisiana Tech Univ., Ruston, LA, <sup>3</sup>Dept. of Biological Sci., Louisiana Tech Univ., Ruston, LA, <sup>4</sup>Louisiana Tech Univ., Ruston, LA

- 367 Serum Valency to Porcine Reproductive and Respiratory Syndrome Virus in Wild Boar Population on the Territory of Ukraine**  
A. Golovko<sup>1</sup>, S. Nychyk<sup>2</sup>, M. Ivanov<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IVM, NAAS, Kyiv, Ukraine

### 031 Metagenomics & Microbiomes (Division R)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 368 A Single-cell Point of View on the Dasytricha-like Ciliate of the Folivorous Hoatzin Crop**  
F. Godoy-Vitorino<sup>1</sup>, D. Tighe<sup>2</sup>, T. Woyke<sup>2</sup>, S. Malfatti<sup>2</sup>, A. Sczyrba<sup>3</sup>, M. Garcia-Amado<sup>4</sup>, A. Skarshewski<sup>5</sup>, P. Hugenholtz<sup>5</sup>, M. Dominguez-Bello<sup>6</sup>, S. G. Tringe<sup>2</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico – Metropolitan Campus, San Juan, PR, <sup>2</sup>DOE Joint Genome Inst., Walnut Creek, CA, <sup>3</sup>Ctr. for Biotechnology, Bielefeld Univ., Bielefeld, Germany, <sup>4</sup>Inst. Venezolano de Investigaciones Científicas, Caracas, Venezuela, Bolivarian Republic of, <sup>5</sup>Australian Ctr. for Ecogenomics, Sch. of Chemistry and Molecular BioSci. and Inst. for Molecular BioSci., The Univ. of Queensland, St Lucia, Brisbane, Australia, <sup>6</sup>Univ. of Puerto Rico, Rio Piedras Campus, San Juan, PR

- 369 Comparative Metagenomic Analysis of a Decaying Log in El Yunque National Forest**  
R. J. Cano<sup>1,2</sup>, P. Bayman<sup>3</sup>, S. N. Massey<sup>3</sup>; <sup>1</sup>California Polytech. State Univ., San Luis Obispo, CA, <sup>2</sup>Ctr. for Applied Biotechnology, San Luis Obispo, CA, <sup>3</sup>Univ. of Puerto Rico, Rio Piedras, PR
- 370 Accessing the Puerto Rican Cave Resistome: Identifying Multiple Types of Antibiotic Resistant Bioprospects from Cave Soil Metagenomic Libraries**  
F. X. Ferrer-González, G. González, J. Rodríguez, C. Ríos-Velázquez; Univ. of Puerto Rico at Mayagüez, Mayagüez, PR
- 371 Metagenomics Visits Medical Bioremediation: Screening for Clones Capable of Metabolizing Amyloid- $\beta$  from Metagenomic Libraries from Puerto Rican Soils**  
W. D. Rodríguez-Ayala, E. Ferrer-Gonzalez, C. Ríos-Velázquez; Univ. of Puerto Rico at Mayagüez, Mayagüez, PR
- 372 Mining A Large-insert Soil Metagenomic Library For Antimicrobial Discovery And Phylogenetic Diversity**  
M. R. Liles<sup>1</sup>, M. Jacob<sup>2</sup>, K. S. Kadir<sup>1</sup>, S. Nasrin<sup>1</sup>, J. Zhou<sup>1</sup>, R. Ye<sup>3</sup>, S. Jasinovica<sup>3</sup>, M. Niebauer<sup>3</sup>, A. Krowicz<sup>3</sup>, R. Godiska<sup>3</sup>, P. A. Cobine<sup>1</sup>, X. C. Li<sup>2</sup>, D. A. Mead<sup>3</sup>, C. C. Wu<sup>3</sup>; <sup>1</sup>Dept. of Biological Sci., Auburn Univ., AL, <sup>2</sup>Natl. Ctr. for Natural Products Res., Sch. of Pharmacy, Univ. of Mississippi, MS, <sup>3</sup>Lucigen Corp., Middleton, WI
- 373 Metagenomic Exploration of Nitrogen Metabolism in Great Prairie Soils**  
A. Howe<sup>1,2</sup>, J. Fish<sup>2</sup>, J. Jansson<sup>3,4</sup>, S. Malfatti<sup>4</sup>, S. Tringe<sup>4</sup>, J. Cole<sup>2</sup>, C. Brown<sup>2</sup>, J. Tiedje<sup>2</sup>; <sup>1</sup>Argonne Natl. Labs, IL, <sup>2</sup>Michigan State Univ., MI, <sup>3</sup>Lawrence Berkeley Lab., CA, <sup>4</sup>DOE Joint Genome Inst., CA
- 374 Identification of Gene(s) from Clones Capable of Metabolizing N $\epsilon$ -(carboxymethyl)Lysine from Puerto Rico Rain Forest Soil Metagenomic Libraries**  
E. F. Ferrer González, C. Ríos-Velázquez; Univ. of Puerto Rico, Mayagüez, PR
- 375 Comparing the Diversity Present in Ventana Cave Soil Metagenomic Library and the Soil Source Using Denaturing Gradient Gel Electrophoresis**  
S. L. Silva-Del Toro, C. Ríos-Velázquez; Univ. of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico
- 376 Phylogenetic Diversity and Metabolic Versatility in Aquifer Sediment**  
C. J. Castelle<sup>1</sup>, L. A. Hug<sup>1</sup>, K. C. Wrighton<sup>1</sup>, B. C. Thomas<sup>1</sup>, K. H. Williams<sup>2</sup>, D. Wu<sup>3</sup>, S. G. Tringe<sup>4</sup>, S. W. Singer<sup>2</sup>, J. A. Eisen<sup>3</sup>, J. F. Banfield<sup>1</sup>; <sup>1</sup>UC Berkeley, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>UC Davis, Davis, CA, <sup>4</sup>DOE Joint Genome Inst., Walnut Creek, CA
- 377 Generation of Metagenomic Libraries from Water Reservoirs in Puerto Rico**  
L. M. del Valle-Pérez, C. Ríos-Velázquez; Univ. of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico
- 378 Metagenomic Analysis of Pristine Groundwater Suggests Robust Community Capable of Efficient Geochemical Cycling**  
C. L. Hemme<sup>1</sup>, Q. Tu<sup>1</sup>, Z. Shi<sup>1</sup>, Y. Qin<sup>1</sup>, J. D. Van Nostrand<sup>1</sup>, L. Wu<sup>1</sup>, Z. He<sup>1</sup>, M. W. Fields<sup>2</sup>, T. C. Hazen<sup>3</sup>, J. M. Tiedje<sup>4</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Montana State Univ., Bozeman, MT, <sup>3</sup>Univ. of Tennessee, Knoxville, TN, <sup>4</sup>Michigan State Univ., East Lansing, MI
- 379 Metabolic Capabilities of the Puerto Rico Trench, One Cell at a Time**  
R. I. Leon-Zayas<sup>1</sup>, S. Nikolenko<sup>2</sup>, M. Novotny<sup>3</sup>, P. Pevzner<sup>1,2</sup>, R. Lasken<sup>3</sup>, D. Bartlett<sup>1</sup>; <sup>1</sup>Scripps Inst. of Oceanography, UCSD, San Diego, CA, <sup>2</sup>St. Petersburg Academic Univ., St. Petersburg, Russian Federation, <sup>3</sup>J. Craig Venter Inst., San Diego, CA, <sup>4</sup>NIH Ctr. for Computational Mass Spectrometry, UCSD, San Diego, CA
- 380 Relevance of Geochemistry to Unique Metagenomic Read Clusters in the Red Sea Atlantis II and Discovery Deep Brine Pools**  
M. A. Ahmed<sup>1</sup>, A. Sayed<sup>1</sup>, A. Ouf<sup>1</sup>, H. El-Dorry<sup>1,2</sup>, R. Siam<sup>1,2</sup>; <sup>1</sup>Biol. Dept., American Univ. in Cairo, Cairo, Egypt, <sup>2</sup>The Sci. and Technology Res. Ctr., American Univ. in Cairo, Cairo, Egypt
- 381 The Microbiome of Human Decomposition**  
J. Baker; Sam Houston State Univ., Huntsville, TX
- 382 Analysis of the Salivary Microbiome of 1465 Individuals Using Short Read Sequencing**  
B. A. Demmitt, S. S. Stahnger, J. C. Clemente, G. Ackermann, W. Van Treuren, R. Knight, M. B. McQueen, K. S. Krauter; Univ. of Colorado, Boulder, CO
- 383 Primary Immunodeficiencies Alter The Landscape Of The Human Skin Microbiome**  
J. Oh, S. Conlan, A. F. Freeman, N. Comparative Sequencing Program, M. Park, F. Candotti, S. M. Holland, J. A. Segre, H. H. Kong; NIH, Bethesda, MD
- 384 Analysis of Changes in Diversity and Abundance of the Microbial Community in a Cystic Fibrosis Patient Over a Multi-Year Period**  
J. R. Stokell, T. J. Hamp, M. J. Zapata, A. A. Fodor, T. R. Steck; Univ. of North Carolina at Charlotte, Charlotte, NC
- 385 Detection of Picrogram Quantities of Microbial Populations using Next Generation Sequencing: A Possible Application for Sepsis**  
C. C. Lee<sup>1</sup>, J. Kelliher<sup>1</sup>, J. A. O'Neil<sup>1</sup>, E. C. Levandowsky<sup>1</sup>, S. McLaughlin<sup>1</sup>, P. Brzoska<sup>2</sup>, T. T. Harkins<sup>1</sup>; <sup>1</sup>Life Technologies, Beverly, MA, <sup>2</sup>Life Technologies, Foster City, CA
- 386 Host-intestinal Microbiota Coevolution In The House Mice**  
J. Wang, J. F. Baines; Max-Planck-Inst. for Evolutionary Biol., Ploen, Germany
- 387 Novel Lactose Metabolism Genes Identified By Functional Metagenomics**  
T. C. Charles, J. Cheng, T. Romantsov, K. Engel, D. R. Rose, J. D. Neufeld; Univ. of Waterloo, Waterloo, ON, Canada
- 388 Method to Characterize Viral Metagenome and Sequencing Depth Required to Cover Maximum Diversity**  
J. D. Shah, Y. Zhang, C. Cardona; UMN, St. Paul, MN
- 389 Single-cell Analysis Platforms for Uncultivable Microorganisms**  
S. Yilmaz<sup>1</sup>, Y. K. Light<sup>1</sup>, R. J. Meagher<sup>1</sup>, T. C. Hazen<sup>2</sup>, A. P. Arkin<sup>3</sup>, A. K. Singh<sup>1</sup>; <sup>1</sup>Sandia Natl. Lab., Livermore, CA, <sup>2</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 390 Analysis of Full-Length Metagenomic 16S Genes by SMRT® Sequencing**  
B. Bowman<sup>1</sup>, Y.-J. Cho<sup>2,3</sup>, J. Chun<sup>2,3</sup>; <sup>1</sup>Pacific BioSci., Inc., Menlo Park, CA, <sup>2</sup>ChunLab, Inc., Seoul, Republic of Korea, <sup>3</sup>Seoul Natl. Univ., Seoul, Republic of Korea
- 391 High-throughput Prediction of Metagenomes from 16S rRNA Data**  
J. R. R. Zaneveld<sup>1</sup>, M. G. I. Langille<sup>2</sup>, J. G. Caporaso<sup>3</sup>, D. McDonald<sup>4,5</sup>, D. Knights<sup>6,7</sup>, J. A. Reyes<sup>8</sup>, J. C. Clemente<sup>4</sup>, R. Vega Thurber<sup>1</sup>, R. Knight<sup>4,9</sup>, R. G. Beiko<sup>2</sup>, C. Huttenhower<sup>8</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Dalhousie Univ., Halifax, NS, Canada, <sup>3</sup>Northern Arizona Univ., Flagstaff, AZ, <sup>4</sup>Univ. of Colorado, Boulder, CO, <sup>5</sup>Biofrontiers Inst., Univ. of Colorado, Boulder, CO, <sup>6</sup>Univ. of Minnesota, Minneapolis, MN, <sup>7</sup>Biotechnology Inst., Univ. of Minnesota, Saint Paul, MN, <sup>8</sup>Harvard Sch. of Publ. Hlth., Boston, MA, <sup>9</sup>Howard Hughes Med. Inst., Boulder, CO
- 392 Profiling Metagenomes with Taxonomic Rank-Specific Signatures**  
T. K. Freitas, M. Scholz, P. Chain; Los Alamos Natl. Lab., Los Alamos, NM



### 032 Virus-Host Interactions of DNA Viruses: Structure, Function, and Evolution (Division S)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 393 Correlation of Histopathologic Examination of Gastrointestinal Biopsies for Cytomegalovirus (CMV) Infection with Viral Culture and Molecular Methods Performed on Corresponding Clinical Specimens**  
M. H. McCoy, K. Post, J. D. Sen, H. Y. Chang, Z. Zhao, D. Leland, J. Lin; Indiana Univ. Dept. of Pathology and Lab. Med., Indianapolis, IN
- 394 Primary Epstein-Barr Virus (EBV) Infection and Parvovirus B19 Reactivation resulting in Fulminant Hepatitis and Hemophagocytic Lymphohistiocytosis (HLH)**  
M. Karrasch<sup>1</sup>, J. Felber<sup>2</sup>, P. M. Keller<sup>1</sup>, C. Kletta<sup>3</sup>, R. Egerer<sup>1</sup>, J. Bohnert<sup>1</sup>, B. Hermann<sup>1</sup>, W. Pfister<sup>1</sup>, B. Theis<sup>4</sup>, I. Petersen<sup>4</sup>, A. Stallmach<sup>2</sup>, M. Baier<sup>1</sup>; <sup>1</sup>Inst. for Med. Microbiol., Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany, <sup>2</sup>Dept. of Internal Med., Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany, <sup>3</sup>Emergency Room, Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany, <sup>4</sup>Inst. of Pathology, Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany
- 395 Gammaherpesvirus Regulation of the 3' Untranslated Region of the Immediate Early Transactivator, Rta**  
D. P. Merriam, D. Hawman, K. W. Diebel, L. van Dyk; Univ. of Colorado, Denver, Aurora, CO
- 396 The Role of Murine Gammaherpesvirus 68 Open Reading Frames 40 and M1 in Modulating the Unfolded Protein Response**  
J. Wang, J. Feng, J. Chang, R. Sun; UCLA, Los Angeles, CA
- 397 An Internal Region of HSV-1 ICP0 Is Required for Efficient Viral Gene Expression in the Presence of Interferon-Beta**  
P. T. O'Neil, M. P. Lanfranca, D. J. Davido; Univ. of Kansas, Lawrence, KS
- 398 A Novel Mechanism for RNA-DNA Recombination in Virus Evolution**  
K. Stedman, G. S. Diemer, J. Filip; Portland State Univ., Portland, OR
- 399 WITHDRAWN**
- 033 Viral Diagnostics, Vaccines, and Inhibitors (Division T)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 400 Rapid and Simple Procedure to Detect the Presence of Viruses And Mycoplasma In Cell Cultures Used In The Manufacture of Biotherapeutics**  
F. Marc<sup>1</sup>, M. Aysola<sup>2</sup>, J. Broe<sup>2</sup>, K. Souza<sup>2</sup>, C. Rofel<sup>1</sup>, N. Marques<sup>1</sup>, B. Holtkamp<sup>3</sup>; <sup>1</sup>Merck Group, Molsheim, France, <sup>2</sup>Merck Group, Bedford, MA, <sup>3</sup>Merck Group, Darmstadt, Germany
- 401 A Viromics Approach in the Identification of RNA/DNA Viral particles in *Tursiops truncatus* (Bottlenose Dolphin) Serum and Blowhole Swabs**  
C. D. Russo, D. J. Grimes; Univ. of Southern Mississippi – Gulf Coast Res. Lab., Ocean Springs, MS
- 402 Quantitative Estimation of Interleukin-17 in Patients with Chronic Liver Disorders**  
S. M. Ahmed, H. Okasha, E. Abdelmaksoud, M. Morsi, N. Ghazy; Faculty of Med. Alexandria Univ., Alexandria, Egypt
- 403 Production of Enterovirus 71 Virus-Like Particles in the Transgenic Enoki Mushroom *Flammulina velutipes* Using Polycytronic Expression Strategy**  
Y.-J. Lin, C.-T. Huang; Natl. Taiwan Univ., Taipei, Taiwan
- 404 Development of pHEMA-Chitosan Nanospheres as a Unique DNA Vaccine Delivery Vehicle *In vitro* and *In vivo***  
E. Eroglu<sup>1</sup>, P. M. Tiwari<sup>1</sup>, A. B. Waffo<sup>1</sup>, M. E. Miller<sup>2</sup>, K. Vig<sup>1</sup>, V. A. Dennis<sup>1</sup>, S. R. Singh<sup>1</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Auburn Univ., Auburn, AL

### 405 Evolutionary RNA Coliphage Q $\beta$ Display Functional Peptides: Advantages and Limits

R. Singleton<sup>1</sup>, V. Dennis<sup>1</sup>, S. Shree<sup>1</sup>, C. Skamel<sup>2</sup>, A. Bopda Waffo<sup>1</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Campus of Technology Freiburg (CTF), Freiburg, Germany

### 406 In Silico Study of the Surface Proteins VP4 and VP7 of Human Rotavirus

A. E. Montes-Gómez<sup>1</sup>, G. Erosa-de la Vega<sup>1</sup>, F. J. Zavala<sup>1</sup>, T. Siqueiros-Cendón<sup>1</sup>, M. De la O-Contreras<sup>1</sup>, C. E. Delgado<sup>1</sup>, N. Valdiviezo<sup>1</sup>, J. G. Moreno-Gonzalez<sup>1</sup>, J. F. Contreras<sup>2</sup>, C. I. Romo-Saenz<sup>3</sup>, R. Infante-Ramirez<sup>1</sup>; <sup>1</sup>Univ. Autonoma de Chihuahua, Chihuahua, Mexico, <sup>2</sup>Univ. Autonoma de Nuevo Leon, Monterrey, Mexico, <sup>3</sup>Univ. Autonoma de Nuevo Leon, Monterrey, Mexico

### 407 Molecular Characterization of Rotavirus Detected in Diarrhoeic Children Less Than Five Years of Age in Kano State, Nigeria

A. Wada-Kura; Natl. Biotechnology Dev. Agency Abuja, Abuja, Nigeria

### 408 Emergence and Accumulation of Mutations Associated with Protease Inhibitor Drug Resistance Among HIV-2-infected Senegalese Subjects Failing Antiretroviral Therapy

A. N. Montano<sup>1</sup>, D. N. Raugi<sup>1</sup>, S. Ba<sup>2</sup>, L. Blankenship<sup>1</sup>, B. P. Church<sup>1</sup>, R. A. Smith<sup>1</sup>, M. Toure<sup>2</sup>, P. S. Sow<sup>2</sup>, G. S. Gottlieb<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Univ. Cheikh Anta Diop de Dakar, Dakar, Senegal

### 409 Assessment of the Effects of Antiretroviral Therapy on the Renal Function Activities of Patients with HIV-1 in Rural Setting of South Eastern Nigeria

M. N. Alo<sup>1</sup>, O. Ogbu<sup>2</sup>; <sup>1</sup>Federal Univ. Ndufu-Alike, Abakaliki, Nigeria, <sup>2</sup>Ebonyi State Univ., Abakaliki, Abakaliki, Nigeria

### 410 GBV-C Infection Upregulates HIV-1 Homologous microRNAs and Induces Resistance to HIV-1

O. Bagasra, M. Sheraz, P. Dave, M. Kanak, Z. Golkar; Claflin Univ., Orangeburg, SC

### 411 Development of Anti-CCR5 Tropic HIV DNA Aptamer Using Cell-SELEX

X. Zhang; The Univ. of HongKong, HongKong, Hong Kong

### 412 Raltegravir (RAL) Does Not Contribute to the Induction of Apoptosis in Acutely HIV Infected Jurkat Cells

D. M. Baxa<sup>1</sup>, M. Golembieski<sup>1</sup>, A. Krishnan-Sekaran<sup>1</sup>, M. Golembieski<sup>1</sup>, L. Shetron-Rama<sup>2</sup>, N. Markowitz<sup>1</sup>; <sup>1</sup>Henry Ford Hospital, Detroit, MI, <sup>2</sup>Eastern Michigan Univ., Ypsilanti, MI

### 413 Intranasal Delivery of siRNA Controls West Nile Virus Encephalitis in Mice

N. E. Maes<sup>1</sup>, J. Beloor<sup>2</sup>, S.-K. Lee<sup>2</sup>, P. Kumar<sup>1</sup>; <sup>1</sup>Yale Univ., New Haven, CT, <sup>2</sup>Hanyang Univ., Seoul, Republic of Korea

### 414 Evaluation of Anti-Rotavirus Activity of Natural Extracts of *Waltheria americana* L.

J. F. Contreras, V. L. Loaiza, G. E. Menchaca, C. E. Hernández, L. Villarreal, C. Rodríguez, R. S. Tamez; Univ. Autónoma de Nuevo León, San Nicolás de los Garza, Nuevo León, Mexico

### 415 *Pseudomonas* sp. Pigments as Anti-La Crosse Virus and Anti-Mosquito Larvae Compounds

J. R. Anderson, A. Cheeseman, M. Queen; Radford Univ., Radford, VA

### 416 Inhibition of Influenza: A Viral Replication Using a Chimeric Cell-Penetrating Protein

K. A. Mwawasi, D. C. Bulir, D. A. Waltho, J. B. Mahony; McMaster Univ., Hamilton, ON, Canada

### 417 Novel Colorimetric Detection Method for the Cost-Effective Identification of Influenza on a Low-Density Microarray

A. Taylor, E. Dawson, K. Moulton; InDevR, Inc, Boulder, CO

### 418 Silencing the Respiratory Syncytial Virus Genes Activity by using siRNAs Conjugated to Carbon Nanotubes

B. B. Barlow; Alabama State Univ., Montgomery, AL



- 419 Quantitative Proteomics Analysis of a Novel Antiviral RbFTL-3 against Viral Hemorrhagic Septicemia Virus**  
J. Kwon<sup>1</sup>, S.-Y. Cho<sup>2</sup>, S. Park<sup>1</sup>, M.-J. Oh<sup>2</sup>, K. Baik<sup>1</sup>, J. Choi<sup>3</sup>, D. Kim<sup>2</sup>;  
<sup>1</sup>Korea Basic Sci. Inst., Gwangju, Republic of Korea, <sup>2</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>3</sup>Korea Basic Sci. Inst., Daejeon, Republic of Korea
- 420 Recovery and Persistence of MS2 Virus Spiked to *Nannochloropsis salina* Grown in Wastewater**  
V. Unnithan, V. Joe, A. Unc, G. Smith; New Mexico State Univ., Las Cruces, NM
- 034 Improving and Expanding Microbiological Education (Division W)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 421 Developing Interest in Graduate Studies by Increasing Interactions Between Undergraduate Students and Experienced Research Scientists**  
M. S. Davis; Univ. of Evansville, Evansville, IN
- 422 How Effective is a Lab Curriculum Based on Soil Bacterial Diversity Research in an Undergraduate Microbiology Course?**  
A. Shanmuganathan; Washington & Jefferson Coll., Washington, PA
- 423 A Miniaturized System Illustrating Microbial Growth for an Introductory Microbiology Class**  
K. Baker, H. C. Bloss; Penn State Harrisburg, Middletown, PA
- 424 Quenching a Thirst for Citizen Microbiology: The Microbiota of Reusable Water Bottles as a Testbed for Teaching Microbiology to Undergraduate Students**  
M. O. Martin; Univ. of Puget Sound, Tacoma, WA
- 425 A Sustained University and K-12 Educator Professional Development Partnership Enhancing Knowledge, Confidence, and Skills for Active Classroom Inquiry**  
G. Fletcher, K. D. Moulton, V. M. Serio, Jr., A. Hatch, M. Movassaghi, A.-K. Ng, S. M. Duboise; Univ. of Southern Maine, Portland, ME
- 426 "Meet the Expert", an Integrative Learning Experience for Microbiology and Anatomy and Physiology Undergraduate Students**  
B. D. Davis<sup>1</sup>, M. Flannery<sup>1</sup>, M. Lowe<sup>1</sup>, J. Payne<sup>1</sup>, Y. A. Lue<sup>2</sup>; <sup>1</sup>Bergen Community Coll., Paramus, NJ, <sup>2</sup>Enzo Clinical Labs, Farmingdale, NY
- 427 Design of a Three Weeks Laboratory Practice to Effectively Teach Introductory Geomicrobiology Concepts to Non-Geology Majors**  
L. Casillas-Martinez<sup>1</sup>, Y. C. Davila-Vazquez<sup>1</sup>, M. Marvasi<sup>2</sup>; <sup>1</sup>UPR-Humacao, Humacao, Puerto Rico, <sup>2</sup>Univ. of Gainesville, Gainesville, FL
- 428 Teaching Research Laboratory Skills to Community College Students within the Framework of Phage Hunting**  
M. L. Burleson, R. H. Hale, L. E. Hughes; Univ. of North Texas, Denton, TX
- 429 Using the EcoCyc *Escherichia coli* Model Organism Database in Undergraduate Introductory Microbiology Classes**  
R. P. Gunsalus, R. van der Oost, I. Schroeder; Univ. of California, Los Angeles, CA
- 430 How Can the Activities in Lab Courses Improve the Student Learning in Introductory Microbiology Courses?**  
N. J. Rodriguez; Univ. Interamericana de Puerto Rico, Recinto de Guayama, Puerto Rico
- 431 Enhanced Undergraduate Teaching and Research Using the BIOLOG GEN III Microbial Identification System and Eco-plate Physiological Profiles**  
T. C. Gsell; Governors State Univ., University Park, IL
- 432 A Phylogeny Module for Introductory Microbiology Laboratory**  
R. Whittington, J. P. Davidson; Tuskegee Univ., Tuskegee, AL

- 433 Case Presentation Exercises in Immunology Enhance Relevance and Improve Student Satisfaction with the Course**  
M. K. Stuart, N. R. Chamberlain, V. K. Singh, N. J. Sargentini; ATSU-KCOM, Kirksville, MO

- 434 Bioprospecting for Bioenergy: A Discovery-Based Learning Approach**  
J. García-Díaz, Y. Bernier-Casillas, J. R. Pérez-Jiménez; Univ. del Turabo, Gurabo, PR

## Sunday, May 19

1:00 p.m. – 2:45 p.m.

### 039 Mechanisms of Resistance (Division A)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 435 Multidrug-Resistant Isolates of *Bacteroides fragilis* Carry a Novel Metronidazole Resistance *Nim* Gene, *Nimj*, that Is Not Recognized by the "Universal" *Nim* Primers**  
F. Husain<sup>1</sup>, V. Yaligara<sup>2</sup>, J. Hsi<sup>3</sup>, R. Meggersee<sup>4</sup>, V. R. Abratt<sup>1</sup>, H. M. Wexler<sup>2</sup>; <sup>1</sup>GLAVAHCS, Los Angeles, CA, <sup>2</sup>GLAVAHCS and UCLA Sch. of Med., Los Angeles, CA, <sup>3</sup>UCLA Dept. of Microbiol., Immunology and Molecular Genetics, Los Angeles, CA, <sup>4</sup>Univ. of Cape Town, Cape Town, South Africa
- 436 *vanG*-type Vancomycin Resistance in *Streptococcus agalactiae* and *Streptococcus anginosus***  
V. Srinivasan<sup>1</sup>, P. L. Shewmaker<sup>1</sup>, L. McGee<sup>1</sup>, M. Brimmage<sup>2</sup>, L. Lee<sup>3</sup>, M. King<sup>3</sup>, A. Glennen<sup>4</sup>, M. Nichols<sup>5</sup>, J. Bareta<sup>6</sup>, C. Park<sup>2</sup>, L. Onischuk<sup>2</sup>, C. Harris<sup>2</sup>, K. Musser<sup>2</sup>, D. Weiss<sup>7</sup>, S. Schrag<sup>1</sup>, B. Beall<sup>1</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>Montefiore Med. Ctr., New York, NY, <sup>3</sup>NYC DOHMH Publ. Hlth. Lab, New York, NY, <sup>4</sup>Minnesota Publ. Hlth. Dept., St. Paul, MN, <sup>5</sup>New Mexico Dept. of Hlth., Santa Fe, NM, <sup>6</sup>NY State Dept. of Hlth., New York, NY, <sup>7</sup>NYC Dept. of Hlth., New York, NY
- 437 Fitness Cost of Rifamycin Resistance in *Clostridium difficile***  
T.-U. Dang, I. Zamora, X. Wu, J. G. Hurdle; Dept. of Biol., Univ. of Texas at Arlington, Arlington, TX
- 438 Mutations in the *feo* (ferrous Iron Transporter) Gene Contributes to Metronidazole Resistance in *Bacteroides fragilis***  
V. Yaligara<sup>1</sup>, F. Husain<sup>2</sup>, H. M. Wexler<sup>1</sup>; <sup>1</sup>Greater Los Angeles VA Med. Ctr. and UCLA Sch. of Med., Los Angeles, CA, <sup>2</sup>Greater Los Angeles VA Med. Ctr., Los Angeles, CA
- 439 Role of MutY and Nth in Defense against Oxidative Stress and in the Emergence of Antibiotic Resistant Mutants in *Campylobacter***  
L. Dai, W. T. Muraoka, Q. Zhang; Iowa State Univ., Ames, IA
- 440 Insights Into Inhibitor-resistance of SHV-1  $\beta$ -Lactamase K234R Variant**  
F. van den Akker<sup>1</sup>, E. E. Rodkey<sup>1</sup>, M. L. Winkler<sup>1</sup>, C. R. Bethel<sup>2</sup>, J. D. Buynak<sup>3</sup>, R. A. Bonomo<sup>2</sup>; <sup>1</sup>Case Western Reserve Univ. Sch. of Med., Cleveland, OH, <sup>2</sup>Louis Stokes Cleveland Dept. VA Med. Ctr., Cleveland, OH, <sup>3</sup>Southern Methodist Univ., Dallas, TX
- 441 Whole Genome Sequencing of a Wound Isolated *Pseudomonas aeruginosa* Strain PA312 to Identify Genetic Mechanisms of Antibiotic-Resistance**  
J. L. Oates<sup>1,2</sup>, E. Rees<sup>2</sup>, Y. Sun<sup>2</sup>, S. Cox<sup>2</sup>; <sup>1</sup>The Inst. of Environmental and Human Hlth. (TIEHH), Dept. of Environmental Toxicology, Texas Tech Univ., Lubbock, TX, <sup>2</sup>Res. and Testing Lab., Lubbock, TX
- 442 Genomic Insights Into the Fate of Colistin Resistance and *Acinetobacter baumannii* During Patient Treatment**  
E. Snitkin, A. Zelazny, J. Gupta, NISC Comparative Sequencing, T. Palmore, P. Murray, J. Segre; NIH, Bethesda, MD
- 443 Molecular Analysis of Incompatibility Groups from Conjugally-Transferrable *Salmonella* Plasmids**  
H. J. Hulsebus, A. J. Kempf, S. Akbar; Des Moines Univ., Des Moines, IA

- 444 Phenotypes Caused by Certain Beta-Lactams Correspond with Expression of *blaA* in *Shewanella oneidensis***  
J. Yin, L. Sun, Y. Dong, H. Gao; Zhejiang Univ., Hangzhou, China
- 445 The Emergence of *Enterobacter cloacae* producing the IMI-1 Carbapenemase in Taiwan**  
H.-M. Chen, J.-J. Yan, L.-H. Tsai; Natl. Cheng Kung Univ. Hosp., Tainan, Taiwan
- 446 Changes in the Peptidoglycan-Remodeling Enzyme Repertoire Modulate *Pseudomonas aeruginosa* Beta-Lactam Resistance**  
R. P. Lamers, J. F. Cavallari, E. M. Scheurwater, A. L. Matos, L. L. Burrows; Michael G. DeGroote Inst. for Infectious Disease Res., McMaster Univ., Hamilton, ON, Canada
- 447 Cloning And Characterization of an Unusual AmpC Cephalosporinase In *Cronobacter sakazakii***  
A. Mueller, H. Haechler, R. Stephan, A. Lehner; Inst. of Food Safety and Hygiene, Zurich, Switzerland
- 448 Mutational Activation of the AmgRS Two-Component System in Aminoglycoside-Resistant *Pseudomonas aeruginosa***  
C. H. Lau, K. Poole; Queen's Univ., Kingston, ON, Canada
- 449 Mechanism of Resistance and Molecular Epidemiology in Imipenem-resistant *Pseudomonas aeruginosa* Isolates from Hanzhong 3201 Hospital**  
Y. Zhang<sup>1</sup>, Y. Gu<sup>2</sup>, Y. Lin<sup>3</sup>, K. Wang<sup>2</sup>, T. Qu<sup>4</sup>, Y. Chai<sup>2</sup>, X. Li<sup>2</sup>; <sup>1</sup>Dept. of Microbiol., Chinese PLA Gen. Hosp., Beijing, China, <sup>2</sup>Dept. of Clinical Laboratory, Hanzhong, China, <sup>3</sup>Dept. of Infectious Disease, Hosp., Hanzhong, China, <sup>4</sup>Dept. of Infectious Disease, First Affiliated Hosp., Coll. of Med., Zhejiang Univ., Hangzhou, China
- 450 Discovery of the *erm(T)* Gene in Inducibly Clindamycin Resistant Human *Staphylococcus aureus* Isolates**  
L. P. DiPersio, J. R. DiPersio, J. A. Beach, L. DeFine; Summa Hlth. System, Akron, OH
- 451 SbcCD-mediated Processing of Stabilized Gyrase-DNA Complexes**  
S. Aedo<sup>1</sup>, Y.-C. Tse-Dinh<sup>2</sup>; <sup>1</sup>New York Med. Coll., Valhalla, NY, <sup>2</sup>Florida Intl. Univ., Miami, FL
- 452 Identification of a Putative Lytic Transglycosylase, Cj0843, Involved in  $\beta$ -Lactam Resistance in *Campylobacter jejuni***  
X. Zeng, S. Brown, B. Gillespie, J. Lin; Univ. of Tennessee, Knoxville, TN
- 453 Characterization of the Role of *msa* in Vancomycin Resistance in *Staphylococcus aureus***  
D. Samanta, M. O. Elasi; The Univ. of Southern Mississippi, Hattiesburg, MS
- 454 *In vitro* Selection and Characterization of Antimicrobial Peptide Resistant *Staphylococcus aureus***  
T. Shireen, K. Mukhopadhyay; Jawaharlal Nehru Univ., New Delhi, India
- 455 *bla*TEM-1 Mediated Beta-lactam/Beta-Lactamase Inhibitor Resistance in *Escherichia coli***  
C. D. Garner<sup>1</sup>, D. P. Creely<sup>1</sup>, A. van Belkum<sup>2</sup>, W. M. Dunne, Jr.<sup>3</sup>, D. Shortridge<sup>1</sup>; <sup>1</sup>bioMérieux, Inc., Hazelwood, MO, <sup>2</sup>bioMérieux SA, La Balme les Grottes, France, <sup>3</sup>bioMérieux, Inc., Durham, NC
- 456 PrpA Is Involved in Resistance to Killing by Polymyxins and Innate Immune Antimicrobials in *A. baumannii***  
X. Liu, B. A. Napier, T. R. Sampson, D. S. Weiss; Emory Univ., Atlanta, GA
- 457 Group A Streptococci Are Protected from Killing by OMV Containing B-Lactamase from Other Non-typeable Haemophilus Influenzae and *Moraxella catarrhalis***  
V. Schaar, I. Uddback, T. Nordström, K. Riesbeck; Lund Univ., Malmö, Sweden
- 458 Prevalence Of *Bla*<sub>Ndm-1</sub> Producing Gram-Negative Bacilli In Urinary Tract Infection**  
S. Rehman, M. Qamar, R. Zahra; Quaid-I-Azam Univ., Islamabad, Pakistan

- 459 High Sensitivity to Evaluate Clarithromycin Resistance In *Helicobacter pylori* and Host Genotype Polymorphism Simultaneously From Gastric Juice**  
L.-L. Chang<sup>1</sup>, G.-Y. Yang<sup>2</sup>; <sup>1</sup>Kaohsiung Med. Unoversity, Kaohsiung, Taiwan, <sup>2</sup>Kaohsiung Med. Univ., Kaohsiung, Taiwan
- 460 Bacterial Resistance to Microbicides: Development of a Predictive Protocol**  
L. Knapp<sup>1</sup>, J.-Y. Maillard<sup>1</sup>, S. Stewart<sup>2</sup>, A. Amezcua<sup>2</sup>, P. McClure<sup>2</sup>; <sup>1</sup>Cardiff Univ., Cardiff, United Kingdom, <sup>2</sup>Unilever SEAC, Bedford, United Kingdom
- 461 Carbapenem-Resistant *Enterobacteriaceae* (CRE) Encoding KPC and VIM Carbapenemases from Indiana**  
H. Li<sup>1</sup>, V. Abbott-Ozug<sup>1</sup>, M. A. Estabrook<sup>1</sup>, G. Denys<sup>2</sup>, M. Dunn<sup>1</sup>, K. Bush<sup>1</sup>; <sup>1</sup>Indiana Univ., Bloomington, IN, <sup>2</sup>Indiana Univ. Hlth., Indianapolis, IN
- 040 Genetics and Genomics of Pathogens – II (Division B)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 462 Detection of Shiga Toxin Variants, Virulence Genes and the Relationship to Cytotoxicity of Shiga Toxin-Producing *Escherichia coli* (STEC) from Domestic Farm Animals**  
B. A. Amézquita-López<sup>1</sup>, B. Quiñones<sup>2</sup>, J. León-Félix<sup>1</sup>, N. Castro-del Campo<sup>1</sup>, C. Martínez<sup>1</sup>, C. Chaidez<sup>1</sup>; <sup>1</sup>Ctr. de Investigación en Alimentación y Desarrollo, Culiacán, Mexico, <sup>2</sup>USDA, Agricultural Res. Service, Western Regional Res. Ctr., Produce Safety and Microbiol. Res. Unit., Albany, CA
- 463 Novel Virulence Determinants of *Salmonella enterica* Serotype Typhimurium Identified in Bovine Enteric Infection**  
J. Elfenbein<sup>1</sup>, T. Endicott-Yazdani<sup>2</sup>, L. Bogomolnaya<sup>2</sup>, Y. Zheng<sup>2</sup>, H.-J. Yang<sup>2</sup>, M. Talamantes<sup>1</sup>, J. Guo<sup>1</sup>, C. Shields<sup>1</sup>, K. Andrews<sup>1</sup>, K. DeAtley<sup>1</sup>, S. Porwollik<sup>3</sup>, M. McClelland<sup>3</sup>, S. D. Lawhon<sup>1</sup>, H. Andrews-Polymenis<sup>2</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>Texas A&M Univ. Hlth. Sci. Ctr., College Station, TX, <sup>3</sup>Univ. of California at Irvine, Irvine, CA
- 464 Genes and Virulence Factors in the Complete Genome Sequence of *Salmonella enterica* Serotype Saintpaul Isolated from Aquatic Environment**  
M. Estrada-Acosta<sup>1</sup>, C. Chaidez<sup>1</sup>, M. Jiménez<sup>2</sup>, B. Gomez-Gil<sup>3</sup>, J. Martínez-Urtaza<sup>4</sup>, J. León-Félix<sup>1</sup>, N. Castro-del Campo<sup>1</sup>, C. Martínez<sup>1</sup>; <sup>1</sup>CIAD A.C., Culiacán, Mexico, <sup>2</sup>Univ. Autónoma de Sinaloa, Culiacán, Mexico, <sup>3</sup>CIAD A.C., Mazatlán, Mexico, <sup>4</sup>European Ctr. for Disease Prevention and Control, Stockholm, Sweden
- 465 Emergence of Transferable Hybrid Plasmids Encoding Colicin and Extended-Spectrum Beta-Lactamases in ExPEC Isolated From Human and Animals**  
J. Sun, X.-P. Liao, Y.-H. Liu; South China Agricultural Univ., Guangzhou, China
- 466 Processing of the Replication Initiation Protein PrgW in *Enterococcus faecalis* is Necessary for Activity and Stable Maintenance of pCF10**  
E. Massie-Schuh, J. Cutrera, B. A. Buttaró; Temple Univ. Sch. of Med., Philadelphia, PA
- 467 Effectorfam: Accurate Annotation of Type III Secretion System Effectors in Whole Bacterial Genomes**  
N. L. Bachmann, S. A. Beatson; Univ. of Queensland, Brisbane, Australia
- 468 Spread of *oqxAB* in *Salmonella enterica* Serotype Typhimurium by Conjugative Plasmids**  
X.-P. Liao, L. Li, J. Sun, Y.-H. Liu; South China Agricultural Univ., Guangzhou, China
- 469 Structural Genomics of Microbial Pathogens: Another Five Years**  
P. J. Myler<sup>1,2</sup>, W. C. Van Voorhis<sup>2</sup>, T. Edwards<sup>3</sup>, G. Varani<sup>2</sup>, G. Buchko<sup>4</sup>, R. Stacy<sup>1</sup>; Seattle Structural Genomics Center for Infectious Disease; <sup>1</sup>Seattle BioMed. Res. Inst., Seattle, WA, <sup>2</sup>Univ. of Washington, Seattle, WA, <sup>3</sup>Emerald Bio, Bainbridge Island, WA, <sup>4</sup>Pacific Northwest Natl. Lab., Richland, WA

- 470 The CRISPR-Associated Gene *cas2* of *Legionella pneumophila* is Required for Intracellular Infection of *Acanthamoeba***  
F. Gunderson, N. Cianciotto; Northwestern Univ. Med. Sch., Chicago, IL
- 471 Genetic Characterization of an Atypical *Vibrio cholerae* Isolate from Iraq**  
M. Turnsek<sup>1</sup>, L. S. Katz<sup>1</sup>, L. Hon<sup>2</sup>, E. E. Paxinos<sup>2</sup>, Y. Guo<sup>2</sup>, S. Wang<sup>2</sup>, M. Frace<sup>1</sup>, M. M. Al-Shemri<sup>3</sup>, J. D. Klena<sup>4</sup>, C. L. Tarr<sup>1</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>Pacific BioSci., San Francisco, CA, <sup>3</sup>Central Publ. Hlth. Lab., Baghdad, IRAQ, <sup>4</sup>U.S. Naval Med. Res. Unit No. 3, Cairo, Egypt
- 472 Identification of Putative Plant Pathogenic Determinants from a Draft Genome Sequence of an Opportunistic *Klebsiella pneumoniae* Strain**  
E. G. Medrano, A. A. Bell, A. A. Purgason; USDA-ARS-SPARC, College Station, TX
- 473 Construction of an Insertion Mutant Library of Regulatory Genes of *Streptococcus mutans* UA159: A Cariogenic Dental Pathogen**  
Y. Li, X. Cheng, X. Xu, X. Zhou; State Key Lab. of Oral Diseases, West China Hosp. of Stomatology, Sichuan Univ., Chengdu, China
- 474 Molecular Risk Assessment of non-O157 Shiga Toxin-Producing *Escherichia coli* using DNA Microarrays**  
A. S. Motiwala<sup>1</sup>, S. A. Jackson<sup>2</sup>, C. R. Coronado<sup>3</sup>, J. A. Kase<sup>1</sup>; <sup>1</sup>FDA, College Park, MD, <sup>2</sup>FDA, Laurel, MD, <sup>3</sup>The George Washington Univ., Washington, DC
- 475 Anti- $\sigma$ 70 Factors Induces Mucoid Conversion in AlgU-suppressed Non-mucoid *Pseudomonas aeruginosa* Strain CF149**  
Y. Yin<sup>1,2</sup>, T. R. Withers<sup>1</sup>, X. Wang<sup>2</sup>, H. D. Yu<sup>1,3,4</sup>; <sup>1</sup>Dept. of Biochemistry and Microbiol., Marshall Univ., Huntington, WV, <sup>2</sup>Inst. of Plant Protection and Microbiol., Zhejiang Academy of Agricultural Sci., Hangzhou, China, <sup>3</sup>Pediatrics, Joan C. Edwards Sch. of Med. at Marshall Univ., Huntington, WV, <sup>4</sup>Progenesis Technologies, LLC, Huntington, WV
- 476 Characterization of Regulatory Sequences and Factors Governing Expression of the *Burkholderia pseudomallei* BpeEF-OprC Multidrug Efflux Pump**  
K. A. Rhodes, N. L. Podnecky, H. P. Schweizer; Colorado State Univ., Fort Collins, CO
- 477 Comparative Epigenetics of Enterohemorrhagic *Escherichia coli***  
K. K. Cooper<sup>1</sup>, J. Korlach<sup>2</sup>, T. A. Clark<sup>2</sup>, K. Luong<sup>2</sup>, S. Huynh<sup>1</sup>, C. T. Parker<sup>1</sup>, R. E. Mandrell<sup>1</sup>, M. Q. Carter<sup>1</sup>; <sup>1</sup>Produce Safety and Microbiol. Res. Unit, Western Regional Res. Ctr., Agricultural Res. Service, U.S. Dept. of Agriculture, Albany, CA, <sup>2</sup>Pacific BioSci., Menlo Park, CA
- 478 Identification of *Vibrio cholerae* Infection-Induced Gene Regulators by a High Throughput Genetic Selection**  
E. McDonough, D. Lazinski, A. Camilli; Howard Hughes Med. Inst. and Tufts Univ., Sch. of Med., Boston, MA
- 479 Design and Validation of a Bacterial Antibiotic-Resistance Resequencing Microarray Targeting More Than One Thousand Resistance-Associated Loci**  
U. Karaoz<sup>1</sup>, R. Srinivasan<sup>2</sup>, H. Lim<sup>1</sup>, M. Volegova<sup>3</sup>, S. Miller<sup>2</sup>, A. Purkayastha<sup>4</sup>, C. Tibbetts<sup>4</sup>, M. Lorence<sup>4</sup>, S. V. Lynch<sup>2</sup>, E. L. Brodie<sup>1</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>2</sup>Univ. of California, San Francisco, CA, <sup>3</sup>Univ. of California, Berkeley, CA, <sup>4</sup>TessArae, Potomac Falls, VA
- 480 Comparative Transcriptome Analysis Using RNA-seq Reveals Differences in Global Gene Expression Profiles Between High-pathogenic and Low-pathogenic *Salmonella enteritidis* Strains**  
D. H. Shah; Washington State Univ., Pullman, WA
- 481 Characterization of New *apo*-Fur Regulated Targets in *Helicobacter pylori***  
B. M. Carpenter, J. J. Gilbreath, O. Q. Pich, A. McKelvey, E. L. Maynard, Z. Li, D. S. Merrell; Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD
- 482 Iral is an RssB Anti-adaptor that Stabilizes RpoS during Logarithmic Phase Growth in *Escherichia coli* and *Shigella***  
A. J. Hryckowian, J. M. Kaye, Z. C. Myer, K. J. Schwartz, R. A. Welch; Univ. of Wisconsin-Madison, Madison, WI
- 483 Identification and Characterization of Small RNAs Regulated by the Ferric Uptake Regulator in *Helicobacter pylori***  
R. C. Johnson<sup>1</sup>, E. S. Bradley<sup>2</sup>, A. Camilli<sup>2</sup>, D. S. Merrell<sup>1</sup>; <sup>1</sup>Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD, <sup>2</sup>Tufts Univ. Sch. of Med., Boston, MA
- 484 Phylogenetic Classification of *Escherichia coli* O26 Strains from Human, Animal and Environmental Origins using Nucleotide Polymorphisms**  
K. N. Norman<sup>1</sup>, M. L. Clawson<sup>1</sup>, N. A. Strockbine<sup>2</sup>, R. E. Mandrell<sup>3</sup>, R. Johnson<sup>4</sup>, K. Ziebell<sup>4</sup>, S. Zhao<sup>5</sup>, P. Fratamico<sup>6</sup>, R. Stones<sup>7</sup>, M. W. Allard<sup>8</sup>, J. L. Bono<sup>1</sup>; <sup>1</sup>USDA, ARS, US Meat Animal Res. Ctr., Clay Center, NE, <sup>2</sup>CDC, OI, NCEZID, Div. of Foodborne, Bacterial and Mycotic Diseases, Atlanta, GA, <sup>3</sup>USDA, ARS, Western Regional Res. Ctr., Albany, CA, <sup>4</sup>Publ. Hlth. Agency of Canada, Guelph, ON, Canada, <sup>5</sup>FDA, Ctr. for Vet. Med., Laurel, MD, <sup>6</sup>USDA, ARS, Eastern Regional Res. Ctr., Wyndmoor, PA, <sup>7</sup>Food and Environmental Res. Agency, York, United Kingdom, <sup>8</sup>Ctr. for Food Safety & Applied Nutrition, FDA, College Park, MD
- 485 The Cpx Two-Component System is Involved in the Biogenesis of the *Escherichia coli* Common Pilus**  
R. L. Guest, A-M. Bosonea, T. L. Raivio; Univ. of Alberta, Edmonton, AB, Canada
- 486 Irr is the Main Iron-Responsive Transcriptional Regulator in *Brucella abortus* 2308 and Its Activity is Controlled by Iron Dependent Degradation**  
D. A. Martinson, R. M. Roop II; Brody Sch. of Med., East Carolina Univ., Greenville, NC
- 487 Resistance to Antimicrobial Peptide Genes Contribute to the Initialization and Maintenance of *Salmonella enterica* Enteritidis Infection in Chicken Cells**  
J. McKelvey, M. Yang, S. Zhang; Texas A&M Univ., College Station, TX
- 488 Recombination and Diversity in the *blp* Locus of *Streptococcus pneumoniae***  
N. LaCross, M. Abu-Khdeir, M. Pinchas, S. Dawid; Univ. of Michigan, Ann Arbor, MI

## 041 Pathogen Physiology and Metabolism – II (Division B)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 489 *Clostridium difficile* Spore Germination and Vegetative Growth Are Inhibited by Muricholic Acids**  
M. B. Francis, C. A. Allen, J. A. Sorg; Texas A&M, College Station, TX
- 490 Characterization of the Nitrite Reductase Operon, *nrfABCD* in *Haemophilus influenzae***  
S. M. Shakir, R. J. Hempel, S. Parkunan, D. J. Morton, T. W. Seale, P. W. Whitby, T. L. Stull; Univ. of Oklahoma Hlth. Sci. Ctr., Oklahoma City, OK
- 491 An Ef-hand Protein EfhP Modulates Resistance and Virulence in *Pseudomonas aeruginosa* at High Calcium**  
M. A. Patrauchan<sup>1</sup>, S. A. Sarkisova<sup>1</sup>, S. R. Lotlikar<sup>1</sup>, R. Kubat<sup>1</sup>, M. J. Franklin<sup>2</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Montana State Univ., Bozeman, MT
- 492 Calcium Induces Motility in *Pseudomonas aeruginosa***  
E. K. Best, D. L. Lenaburg, K. Hollingsworth, M. A. Patrauchan; Oklahoma State Univ., Stillwater, OK
- 493 Understanding the Role of the Highly Conserved Protein Lmo2473 During *Listeria monocytogenes* Infection**  
D. Pensinger, K. Sherman, J-D. Sauer; UW Madison, Madison, WI



- 494 Clinical Strains of *Pseudomonas aeruginosa* with Fluoroquinolone Resistance-Confering *parC* Mutation Exhibit Enhanced Metabolic Fitness and Virulence**  
M. Agnello<sup>1</sup>, J. Brondani<sup>2</sup>, A. Wong-Beringer<sup>1</sup>; <sup>1</sup>Univ. of Southern California, Los Angeles, CA, <sup>2</sup>Univ. Federal de Santa Maria, Santa Maria, Brazil
- 495 The Germinant Receptor, GerKC, Localizes in the Spore Inner Membrane and is Essential for Germination and Viability of *C. perfringens* Spore**  
S. S. Banawas<sup>1,2</sup>, D. Paredes-Sabja<sup>3,1</sup>, G. Korza<sup>4</sup>, B. Hao<sup>4</sup>, P. Setlow<sup>4</sup>, M. R. Sarker<sup>1</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Majmaah Univ., Al-Majmaah, Saudi Arabia, <sup>3</sup>Univ. Andres Bello, Santiago, Chile, <sup>4</sup>Univ. of Connecticut Hlth. Ctr., Farmington, CT
- 496 The Characterization of the Periplasmic Nitrate Reductase of *Haemophilus influenzae***  
R. J. Hempel, S. Potts, S. Shakir, D. Morton, P. Whitby, T. Seale, T. Stull; Univ. of Oklahoma Hlth. Sci. Ctr., Oklahoma City, OK
- 497 Metabolic and Physiological differences between Mucoid and Nonmucoid *P. aeruginosa* Revealed by Phenotype Microarray Analysis**  
K. Min, S. Yoon; Yonsei Univ. Coll. of Med., Seoul, Republic of Korea
- 498 High-Throughput Insertion Tracking to Identify Genes Important in *Burkholderia* Drug Tolerance**  
A. E. Zweifel, C. Austin, J. Jones-Carson, M. I. Voskuil, A. Vazquez-Torres; Univ. of Colorado-Denver, Aurora, CO
- 499 *Proteus mirabilis* Swarming Occurs in Response to Factors Present in Urine and Requires Excess L-glutamine**  
C. E. Armbruster, S. A. Hodges, H. L. T. Mobley; Univ. of Michigan Med. Sch., Ann Arbor, MI
- 500 Biochemical and Genetic Characterization of the Vitamin B6 Biosynthesis Pathway in *Streptococcus pneumoniae***  
S. El Qaidi, J. Yang, J.-R. Zhang, D. W. Metzger, G. Bai; Albany Med. Coll., Albany, NY
- 501 Double Duty: NAD Transport via the Chlamydia trachomatis Npt1Ct ATP/ADP Translocase**  
D. J. Fisher<sup>1</sup>, R. E. Fernandez<sup>2</sup>, A. T. Maurelli<sup>2</sup>; <sup>1</sup>Southern Illinois Univ., Carbondale, IL, <sup>2</sup>Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD
- 502 Analysis of the Function of PerR in Oxidative Stress Response in *Clostridium difficile***  
W. A. Alhazmi, A. Cockayne, N. Minton; Univ. of Nottingham, Nottingham, United Kingdom
- 503 Role of Staphylococcal Nitric Oxide Synthase in Oxidative Stress Tolerance**  
M. Vaish, V. Singh; A.T. Still Univ., Kirksville, MO
- 504 Identification of a Potential *Escherichia coli* K1 Virulence Factor Involved in Neonatal Gut Translocation**  
S. M. Shakir, J. M. Goldbeck, K. M. Thompson, D. J. Morton, P. W. Whitby, S. Chavez-Bueno; Univ. of Oklahoma HSC, Oklahoma City, OK
- 505 A Putative Sulfate Transporter on the Surface of *Moraxella catarrhalis***  
C. Kirkham<sup>1</sup>, M. E. Rosenblum<sup>2</sup>, M. G. Malkowski<sup>2</sup>, T. F. Murphy<sup>1</sup>; <sup>1</sup>Univ. at Buffalo, the State Univ. of New York, Buffalo, NY, <sup>2</sup>Hauptman Woodward Res. Inst., Buffalo, NY
- 042 Regulation of Virulence – II (Division B)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 506 Re-purposing a Gout Drug To Target *Staphylococcus aureus* Skin Infections**  
B. M. Gray<sup>1</sup>, E. Sully<sup>2</sup>, M. Lewis<sup>2</sup>, S. Delgado<sup>2</sup>, S. Alexander<sup>2</sup>, P. Hall<sup>1</sup>, H. Gresham<sup>2</sup>; <sup>1</sup>Univ. of New Mexico, Albuquerque, NM, <sup>2</sup>Veteran's Admin. Med. Ctr., Albuquerque, NM

- 507 Regulation of *pilE* Gene Expression in *Neisseria gonorrhoeae***  
T. Le, S. Hill; Northern Illinois Univ., DeKalb, IL
- 508 A 12-amino acid fragment of LL-37 Dissociates Cell Toxicity from CsrRS Signaling in Group A *Streptococcus***  
J. J. Velarde, M. Ashbaugh, M. R. Wessels; Boston Children's Hosp., Boston, MA
- 509 An Investigation of *Pseudomonas chlororaphis* Virulence in the Absence and Presence of Phenazine Production**  
S. Kitara<sup>1,2</sup>, S. Strand<sup>1</sup>; <sup>1</sup>Coll. of Wooster, Wooster, OH, <sup>2</sup>American Society for Microbiol., Undergraduate Res. Fellowship, Washington, DC
- 510 Role of C-di-gmp in Stress Response Regulation in *Klebsiella pneumoniae* Cg43 Stress Response**  
C.-J. Huang, H.-L. Peng; Inst. of Molecular Med. and Biological Engineering, Coll. of Biological Sci. and Techno, Hsin Chu, Taiwan
- 511 PecS and PecM Regulate the Expression of Type 3 Fimbriae in *Klebsiella pneumoniae* CG43**  
H.-L. Peng<sup>1,2</sup>; <sup>1</sup>Dept. of Biological Sci. and Technology, <sup>2</sup>Inst. of Molecular Med. and Biological Engineering, Natl. Chiao Tung Univ., Hsin Chu, Taiwan
- 512 Effect of *cis*-2-decenoic Acid on Virulence of *S. aureus* Persister Cells**  
E. G. Mina, C. N. H. Marques; Binghamton Univ., Binghamton, NY
- 513 *Yersinia enterocolitica* CsrA Regulates Expression of the Flagellar Type 3 Secretion System and Affects Environmental Survival**  
K. LeGrand, Y. Zheng, S. Petersen, K. Liu, G. M. Young; Univ. of California, Davis, CA
- 514 WITHDRAWN**
- 515 *Burkholderia mallei* and *Burkholderia pseudomallei* T6SS-1 Gene Expression is Negatively Regulated by Divalent Cations**  
M. N. Burtnick, P. J. Brett; Univ. of South Alabama, Mobile, AL
- 516 Transcription of the Small RNA *ryhB* Involved in the Regulation of Various Genes is Modulated by Iron and the Quorum Sensing Master Regulator SmcR in *Vibrio vulnificus***  
Y. Wen, I. Kim, J.-S. Son, H.-R. Lee, K.-S. Kim; Sogang University, Seoul, Republic of Korea
- 517 Influence of Tagatose-1,6-diphosphate Aldolase on the Virulence of *Streptococcus pneumoniae***  
S. Lee<sup>1,2</sup>, J.-H. Kim<sup>1</sup>, S.-H. Kim<sup>1</sup>, M. Kim<sup>1</sup>, S. Bae<sup>1</sup>; <sup>1</sup>Korea NIH, Republic of Korea, <sup>2</sup>Seoul Natl. Univ., Seoul, Republic of Korea
- 518 Cyclic(phe-pro) Enhances the Expression of Genes Encoding Ribosomal Proteins by Inducing the Expression of Positive Regulator Ctdr and also by Repressing the Expression of Negative Regulator Dksa in *Vibrio vulnificus***  
G.-Y. Min, N.-Y. Park, I. Kim, Y. Wen, J.-s. Son, S.-M. Jeong, K.-S. Kim; Sogang Univ., Seoul, Republic of Korea
- 519 Cyclic(phe-pro) (cFP) Modulates The Expression Of A *LeuO* Homolog, *ctdR*, Through The Membrane-bound Activator ToxR In *Vibrio vulnificus***  
N.-Y. Park, G.-Y. Min, I. Kim, Y. Wen, J.-S. Son, K. Lee, K.-S. Kim; Sogang Univ., Republic of Korea
- 520 A Molecular Basis for Group A Streptococcal Hyper-encapsulation**  
N. N. Lynskey<sup>1</sup>, D. Goulding<sup>2</sup>, M. Gierula<sup>1</sup>, C. E. Turner<sup>1</sup>, G. Dougan<sup>2</sup>, R. J. Edwards<sup>1</sup>, S. Sriskandan<sup>1</sup>; <sup>1</sup>Imperial Coll. London, London, United Kingdom, <sup>2</sup>Wellcome Trust Sanger Inst., Cambridge, United Kingdom
- 521 Molecular Biological Characterization of Three TonB Systems of *Vibrio vulnificus***  
H. V. Ngo<sup>1</sup>, C. M. Kim<sup>1</sup>, S. Y. Kim<sup>1</sup>, K. Jeong<sup>2</sup>, S. E. Lee<sup>1,3</sup>, J. H. Rhee<sup>1,2</sup>; <sup>1</sup>Clinical Vaccine R&D Ctr., Hwasun, Republic of Korea, <sup>2</sup>Chonnam Natl. Univ. Med. Sch., Gwangju, Republic of Korea, <sup>3</sup>Chonnam Natl. Univ. Sch. of Dentistry, Gwangju, Republic of Korea



- 522 Characterization of a Novel Regulatory System Required for Pathogenicity of *Pectobacterium carotovorum* subsp. *carotovorum***  
D. Lee, J.-A. Lim, L.-H. Quan, J.-B. Kim, E. Roh, K. Jung, J. Yun, S. Heu; Natl. Academy of Agricultural Sci., Rural Dev. Admin., Suwon, Republic of Korea
- 523 Identification of Factors that Bind the *pqsR* Promoter Region in *Pseudomonas aeruginosa***  
J. M. Farrow, III<sup>1</sup>, M. L. Ellison<sup>2</sup>, E. C. Pesci<sup>1</sup>; <sup>1</sup>East Carolina Univ., Greenville, NC, <sup>2</sup>Morehead State Univ., Morehead, KY
- 524 Genes Required and Effects of Induction of Alginate Overproduction in the Cystic Fibrosis Respiratory Pathogen, *Pseudomonas aeruginosa***  
F. H. Damron<sup>1</sup>, M. Barbier<sup>1</sup>, E. S. McKenney<sup>1</sup>, M. J. Schurr<sup>2</sup>, J. B. Goldberg<sup>1</sup>; <sup>1</sup>Univ. of Virginia, Charlottesville, VA, <sup>2</sup>Univ. of Colorado, Sch. of Med., Aurora, CO
- 525 Frequent Occurrence and Prevention of Undesired Additional Mutations that Down-Regulate M Protein Production during Targeted Gene Inactivation of Group A *Streptococcus***  
Y. Zhou, J. Li, W. Feng, M. Liu, B. Lei; Montana State Univ., Bozeman, MT
- 526 It Takes Two to Infect: The Role of Innate Immunity in Promoting SaeR/S-mediated Virulence in *Staphylococcus aureus***  
O. W. Zurek<sup>1</sup>, T. K. Nygaard<sup>1</sup>, R. L. Watkins<sup>1</sup>, K. B. Pallister<sup>1</sup>, V. J. Torres<sup>2</sup>, A. R. Horswill<sup>3</sup>, J. M. Voyich<sup>1</sup>; <sup>1</sup>Montana State Univ. Bozeman, MT, <sup>2</sup>New York Univ. Sch. of Med., New York, NY, <sup>3</sup>Univ. of Iowa, Iowa City, IA
- 527 Expression of the Adhesin SabA in *Helicobacter pylori* is Affected by Transcriptional Phase Variation and ArsR Repression**  
V. K. Cooper, L. Zhu, A. K. Bredehoft, M. H. Forsyth; Coll. of William & Mary, Williamsburg, VA
- 528 A Sigma-54 Activator Sfa2 Regulates the Type VI Secretion System-II Expression in *Pseudomonas aeruginosa* PAO1**  
H. Chang, C. Chang, C. Tseng; Natl. Tsing Hua Univ., Hsin Chu, Taiwan
- 043 Diagnostic Virology (Division C)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 529 Clinical and Demographic Investigation of 2010 Dengue Fever Outbreak in Pakistan**  
A. Khan<sup>1</sup>, T. Ijaz<sup>2</sup>; <sup>1</sup>Dept. of Microbiol., Univ. of Karachi, Karachi, Pakistan, <sup>2</sup>King Edward Med. Univ., Lahore, Pakistan
- 530 One-step Multiplex Ligation-dependent Probe Amplification Method For Simultaneous Detection of Respiratory Pathogens in Children with Acute Respiratory Tract Infection**  
H.-L. Eng<sup>1</sup>, H.-L. You<sup>2</sup>, Y.-H. Chiao<sup>2</sup>, L.-H. Hung<sup>2</sup>, J.-T. Wang<sup>2</sup>, T.-M. Lin<sup>3</sup>; <sup>1</sup>Dept. of Pathology and Lab. Med., Kaohsiung Chang Gung Mem. Hosp., Kaohsiung, Taiwan, <sup>2</sup>Dept. of Laboratory Med., Kaohsiung Chang Gung Mem. Hosp., Kaohsiung, Taiwan, <sup>3</sup>Dept. of Laboratory Med., E-DA Hosp., I-Shou Univ., Kaohsiung, Taiwan
- 531 Study of Occult Hepatitis B Virus Infection in Patients with Chronic Hepatitis C**  
S. Ahmed, A. Elkady, A. Hanno, M. Dief; Faculty of Med. Alexandria Univ., Alexandria, Egypt
- 532 Rapid Influenza Testing Practices in Clinical Laboratories: Results of 2010 Survey**  
L. O. Williams<sup>1</sup>, N. Kupka<sup>2</sup>, S. Barrett<sup>2</sup>, S. Schmaltz<sup>2</sup>, D. B. Jernigan<sup>3</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>The Joint Commission, Oakbrook Terrace, IL, <sup>3</sup>CDC, Atlanta, GA
- 533 Development of a Real-Time PCR Assay for the Detection and Monitoring of Human Herpesvirus 6 in Clinical Specimens**  
S. Yang<sup>1</sup>, G. M. Aldrovandi<sup>2</sup>, J. Dien Bard<sup>2</sup>; <sup>1</sup>Children's Hosp. Los Angeles, Los Angeles, CA, <sup>2</sup>Children's Hosp. Los Angeles, Univ. of Southern California, Los Angeles, CA

- 534 Rapid Detection of Noroviruses by Fully Automated Real-Time PCR**  
M. Hug, M. Altwegg; Bioanalytica, Luzern, Switzerland
- 535 Pre-analytical Considerations Related to High-risk Human Papillomavirus Detection via APTIMA HPV**  
A. Harkins<sup>1</sup>, E. Schroeder<sup>2</sup>, K. C. Ross<sup>2</sup>, C. Yauck<sup>2</sup>, T. Bieganski<sup>2</sup>, R. Amrhein<sup>2</sup>, P. Patel<sup>2</sup>, M. Napierala<sup>2</sup>, E. Munson<sup>2</sup>; <sup>1</sup>Marquette Univ., Milwaukee, WI, <sup>2</sup>Wheaton Franciscan Lab., Milwaukee, WI
- 536 Transcription-mediated Amplification-based High-risk Human Papillomavirus Screening Assays and Genotyping Assays Potentiate Fewer Patient Follow-up Encounters**  
M. Napierala, K. L. Munson, R. Amrhein, J. Czarnecka, J. Griep, E. Munson; Wheaton Franciscan Lab., Milwaukee, WI
- 537 Evaluation of a Fully-automated PCR Test for Detection of Herpes Simplex Viruses 1 and 2 from anogenital Lesion Swab Samples on the cobas® 4800 System**  
K. Y. Ding, S. Igdari, M. Nagarajan, R. Mababangloob, S. Yuen, H. Cossentine, D. Kosarikov, M. Lewinski, J. Os; Roche Molecular Systems, Inc., Pleasanton, CA
- 538 Single-Reaction, Multiplex, Real-Time RT-PCR for the Detection, Quantitation, and Serotyping of Dengue Viruses**  
J. Waggoner<sup>1</sup>, J. Abeynayake<sup>1</sup>, M. Sahoo<sup>1</sup>, L. Gresh<sup>2</sup>, Y. Tellez<sup>2</sup>, K. Gonzalez<sup>2</sup>, G. Ballesteros<sup>2</sup>, A. M. Piarro<sup>3</sup>, P. Gaibani<sup>3</sup>, F. P. Guo<sup>1</sup>, V. Sambri<sup>3</sup>, A. Balmaseda<sup>2</sup>, K. Karunaratne<sup>4</sup>, E. Harris<sup>5</sup>, B. Pinsky<sup>1</sup>; <sup>1</sup>Stanford Univ., Palo Alto, CA, <sup>2</sup>Ministry of Hlth., Managua, Nicaragua, <sup>3</sup>St. Orsola-Malpighi Univ. Hosp., Bologna, Italy, <sup>4</sup>Lady Ridgeway Hosp., Colombo, Sri Lanka, <sup>5</sup>Univ. of California, Berkeley, Berkeley, CA
- 539 Correlation of High Risk Human Papilloma Virus (HPV) Testing on Anal Pap Specimens with Cytology Results**  
M. H. McCoy, M. L. Randolph, D. D. Davidson, T. E. Davis; Indiana Univ. Sch. of Med., Indianapolis, IN
- 540 Respiratory Tract Illness Surveillance in Patients at a Community Clinic During the 2010 Influenza Season**  
A. Atkinson<sup>1</sup>, J. D. Kriesel<sup>2</sup>, J. L. Lyon<sup>2</sup>, L. H. Gren<sup>2</sup>; <sup>1</sup>Utah Unified State Lab., Publ. Hlth., Taylorsville, UT, <sup>2</sup>Univ. of Utah, Salt Lake City, UT
- 541 Molecular Genotyping and Quantification to Monitor Regional and Temporal Diversity for Rotavirus Surveillance**  
J. Liu<sup>1</sup>, K. Lurain<sup>1</sup>, S. U. Sobuz<sup>2</sup>, S. Begum<sup>2</sup>, R. Haque<sup>2</sup>, H. Kumburu<sup>3</sup>, J. Gratz<sup>3</sup>, G. Kibiki<sup>3</sup>, D. Toney<sup>4</sup>, E. R. Houpt<sup>1</sup>; <sup>1</sup>Univ. of Virginia, Charlottesville, VA, <sup>2</sup>Intl. Ctr. for Diarrhoeal Disease Res., Dhaka, Bangladesh, <sup>3</sup>Kilimanjaro Clinical Res. Inst., Moshi, Tanzania, United Republic of, <sup>4</sup>Div. of Consolidated Lab. Services, Richmond, VA
- 542 Detecting Norovirus Using the Bdmax: A Fast, Simple and Sensitive Approach to Help Reduce the Burden it Exerts on Healthcare Settings**  
J. E. M. Kenicer, J. White, P. McCulloch, K. E. Templeton; Royal Infirmary of Edinburgh, Edinburgh, United Kingdom
- 543 Paired Analysis of Clinical Specimens between the Roche Cobas®, Hologic Cervista HTA and Qiagen Hybrid Capture 2 (HC2) High Risk Human Papillomavirus Screening Assays**  
J. A. Mancini, A. Stout, A. Raines, J. Birlew, D. Nault, D. A. Payne; American Pathology Partners, Denver, CO
- 544 Comparison of Four Assays for the Detection and Quantitation of Adenovirus in Plasma Specimens**  
M. J. Espy, M. J. Binnicker; Mayo Clinic, Rochester, MN
- 545 Design of Experiment on the Bd Max™ System for the Optimization of a Multiplex Reaction Detecting Adenovirus Dna and Hcv Rna Targets in Nasopharyngeal Swabs**  
C. Lippé, D. Dugourd, P.-L. Larouche, B. Leclerc, V. Jean, S. Champetier, D. Beaulieu, J. Pinard-Lachapelle, J. Cormier, S. Morasse, C. Ménard, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada
- 546 Automated HIV-1 Extraction and Detection Using Magnetic Particles From Dried Blood Spot (DBS)**  
S. Godichaud<sup>1</sup>, F. Freund<sup>1</sup>, O. Robert<sup>1</sup>, H. Fleury<sup>2</sup>, M. Gaboyard<sup>1</sup>; <sup>1</sup>Ademtech, Pessac, France, <sup>2</sup>CHU Pellegrin – UMR CNRS, Bordeaux, France

**547 RNA Purification for the Development of a Paper-Based Diagnostic Platform**

I. Rockafellow<sup>1</sup>, S. Byrnes<sup>2</sup>, P. Yager<sup>2</sup>; <sup>1</sup>Univ. of Iowa, Iowa City, IA, <sup>2</sup>Univ. of Washington, Seattle, WA

**548 Increased Percentage of Neuroinvasive Disease Due to West Nile Virus in Dallas, Texas in 2012**

L. D. Racska, S. Beal, A. Alatoom; UT Southwestern Med. Ctr., Dallas, TX

**549 Molecular Epidemiology of Human Norovirus Infections, in Taiwan, 2011-2012**

C.-P. Yu<sup>1</sup>, C.-H. Chen<sup>1</sup>, M.-B. Tang<sup>2</sup>, Y.-C. Chou<sup>3</sup>, S.-C. Chen<sup>4</sup>; <sup>1</sup>Dept. of Bioengineering, Tatung Univ., Taipei, Taiwan, <sup>2</sup>Dept. of Family Med., Wei-Gong Mem. Hosp., Miaoli County, Taiwan, <sup>3</sup>Sch. of Publ. Hlth., Natl. Defense Med. Ctr., Taipei, Taiwan, <sup>4</sup>Dept. of Family Med., Dai-Chien Gen. Hosp., Miaoli County, Taiwan

**044 Gram-Negative AST (Division C)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**550 Identification of Family-Specific Plasmid Mediated AmpC  $\beta$ -Lactamase (pmAmpC) Genes Using Multiplex PCR and High Resolution Melt (HRM) Analysis**

C. Geyer, N. D. Hanson; Creighton Univ., Omaha, NE

**551 Performance of Phenotypic Tests for Characterization of Carbapenem Resistance in *Enterobacteriaceae***

A. N. Schuetz<sup>1</sup>, K. Fauntleroy<sup>2</sup>, J. Francois<sup>2</sup>, L. Chen<sup>3</sup>, B. N. Kreiswirth<sup>3</sup>, S. G. Jenkins<sup>1</sup>; <sup>1</sup>Weill Cornell Med. Coll. and NewYork-Presbyterian Hosp., New York, NY, <sup>2</sup>NewYork-Presbyterian Hosp., New York, NY, <sup>3</sup>Publ. Hlth. Res. Inst. Ctr., Univ. of Med. and Dentistry of New Jersey, Newark, NJ

**552 Detection of Clarithromycin Resistant *Helicobacter pylori* from CLO<sup>®</sup> Test Fresh Gastric Biopsies by Real-Time PCR with Melt Curve Analysis**

D. Shibibi<sup>1,2</sup>, M. Regner<sup>1</sup>, K. A. Mangold<sup>1,2</sup>, Z. L. Smith<sup>3,2</sup>, J. L. Goldstein<sup>4</sup>, R. B. Thomson<sup>1,2</sup>, K. Kaul<sup>1,2</sup>; <sup>1</sup>Dept. of Pathology and Lab. Med., NorthShore Univ. Hlth. System, Evanston, IL, <sup>2</sup>The Univ. of Chicago Pritzker Sch. of Med., Chicago, IL, <sup>3</sup>Dept. of Med., NorthShore Univ. Hlth. System, Evanston, IL, <sup>4</sup>Div. of Gastroenterology, Dept. of Med., NorthShore Univ. Hlth. System, Evanston, IL

**553 Clinical Evaluation of an IUO Multiplexed PCR Assay for Detection and Differentiation of *Salmonella*, *Shigella*, *Campylobacter jejuni/coli* and *stx-1* and *-2* in Pediatric Stool Specimens**

W. Cullen<sup>1</sup>, J. Madison<sup>1</sup>, K. Everhart<sup>1</sup>, M. J. Marcon<sup>2</sup>; <sup>1</sup>Nationwide Children's Hosp., Columbus, OH, <sup>2</sup>Retired, Westerville, OH

**554 Screening for KPC Carrier Status Using a Modified BioMérieux NASBA Protocol to Enrich Bacterial RNA Isolation from Stool Samples**

E. Loo, P. Ward, C.-Y. Lin, R. C. She; Univ. of Southern California, LAC, USC Med. Ctr., Los Angeles, CA

**555 Results of Molecular Screening for Detection of Carbapenemase genes KPC, NDM, VIM, IMP, and OXA-48 in Broth Cultured Rectal Swabs**

A. van der Zee, L. Roorda, G. Bosman, J. Ossewaarde; Maasstad Hosp., Rotterdam, Netherlands

**556 Ampc Beta-Lactamase Production among *Pseudomonas aeruginosa* and *Proteus mirabilis* at the Komfo Anokye Teaching Hospital in Kumasi Ghana**

S. Opoku; Kwame Nkrumah Univ. of Sci. and Technology, Kumasi, Ghana

**557 Rapid Identification and Susceptibility Testing of *Enterobacteriaceae* Isolated from Positive Blood Culture Samples Using a Shortened Culture**

K. Magerman<sup>1</sup>, S. Nys<sup>2</sup>, E. Willems<sup>2</sup>, R. Cartuyvels<sup>2</sup>, L. Waumans<sup>2</sup>; <sup>1</sup>Univ. Hasselt, Hasselt, Belgium, <sup>2</sup>Jessa Hosp. Hasselt, Hasselt, Belgium

**558 Multicenter Evaluation of a MicroScan<sup>®</sup> Overnight Gram-Negative Panel for Susceptibility testing of *Enterobacteriaceae* with Ertapenem, Imipenem, and Meropenem using FDA Interpretive Breakpoints**

S. Wood<sup>1</sup>, P. Schreckenberger<sup>2</sup>, J. Tjho<sup>2</sup>, J. Hindler<sup>3</sup>, M. Lewinski<sup>3</sup>, F. Sooudipour<sup>3</sup>, M. Weinstein<sup>4</sup>, G. DiVinagracia<sup>4</sup>, K. Burtner<sup>1</sup>, A. Kassam<sup>1</sup>, K. Sei<sup>1</sup>; <sup>1</sup>Siemens Healthcare Diagnostics, West Sacramento, CA, <sup>2</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>3</sup>UCLA Med. Ctr., Los Angeles, CA, <sup>4</sup>Robert Wood Johnson Med. Sch., New Brunswick, NJ

**559 Importance of Continued ESBL Confirmatory Testing for *Klebsiella pneumoniae***

C. S. McWilliams<sup>1</sup>, S. Condon<sup>2</sup>, R. M. Schwartz<sup>3</sup>, C. C. Ginocchio<sup>2</sup>; <sup>1</sup>North Shore Univ. Hosp., Manhasset, NY, <sup>2</sup>North Shore-LIJ Hlth. System Lab., New Hyde Park, NY, <sup>3</sup>North Shore-LIJ Hlth. System, Great Neck, NY

**560 Antimicrobial susceptibility profile of *Pseudomonas aeruginosa* Isolates From Blood Stream Infections in Japan, 2005 to 2012**

K. Matsuzaki<sup>1</sup>, M. Suzuki<sup>1</sup>, M. Kaneoka<sup>1</sup>, H. Koyama<sup>1</sup>, E. Fujihara<sup>1</sup>, A. Amano<sup>1</sup>, M. Hasegawa<sup>1</sup>, F. Ikeda<sup>1</sup>, A. Kanayama<sup>2</sup>, I. Kobayashi<sup>2</sup>; <sup>1</sup>Mitsubishi Chemical Medicine Corp., Tokyo, Japan, <sup>2</sup>Faculty of Med., Toho Univ., Tokyo, Japan

**561 Evaluation by Fluctuation Analysis of a Disk Diffusion Method for Identifying *Pseudomonas aeruginosa* Hypermutators in the CF Lung**

E. C. Dunham<sup>1</sup>, C. Boulianne-Larsen<sup>1</sup>, L. Hoffman<sup>2,3</sup>, F. Rosenzweig<sup>1</sup>; <sup>1</sup>Univ. of Montana, Missoula, MT, <sup>2</sup>Univ. of Washington, Seattle, WA, <sup>3</sup>Seattle Children's Hosp., Seattle, WA

**562 Evaluation of VITEK<sup>®</sup> 2 for Antimicrobial Susceptibility Testing of *Enterobacteriaceae***

A. M. Bobenchik, J. A. Hindler, M. Maldonado, E. Deak, C. L. Giltner, R. M. Humphries; UCLA, Los Angeles, CA

**563 Comparison of 7 Commercially Prepared Media for Detection of KPC-producing Bacteria**

G. K. Thomson<sup>1</sup>, I. Robledo<sup>2</sup>, G. Vazquez<sup>2</sup>, J. W. Snyder<sup>3</sup>, K. S. Thomson<sup>4</sup>; <sup>1</sup>Univ. of Louisville Hosp., Louisville, KY, <sup>2</sup>Univ. Puerto Rico, Puerto Rico, <sup>3</sup>Univ. of Louisville, Louisville, KY, <sup>4</sup>Creighton Univ. Sch. of Med., Omaha, NE

**564 VITEK<sup>®</sup> 2 Reliability for Antimicrobial Susceptibility Testing of Non-*Enterobacteriaceae***

E. Deak, A. Bobenchik, J. A. Hindler, M. Maldonado, R. Humphries; UCLA, Los Angeles, CA

**565 MALDI Biotyper Mass Spectrometric  $\beta$ -Lactamase Assay for Detection of Ampicillin-resistant *E. coli* Directly from Positive Blood Cultures**

J. Jung<sup>1</sup>, C. Popp<sup>2</sup>, K. Sparbier<sup>3</sup>, C. Lange<sup>3</sup>, M. Kostrzewa<sup>3</sup>, S. Schubert<sup>1</sup>; <sup>1</sup>Max von Pettenkofer-Inst., Munich, Germany, <sup>2</sup>Inst. Für Molekulare Infektionsbiologie, Julius-Maximilians Univ., Würzburg, Germany, <sup>3</sup>Bruker Daltonik GmbH, Bremen, Germany

**566 Comparison of the Modified Carba NP and the Modified Hodge Tests for Detection of Carbapenemase-Producing Gram-Negative Bacilli (GNB)**

S. Vasoo<sup>1</sup>, S. A. Cunningham<sup>1</sup>, P. C. Kohnner<sup>1</sup>, P. J. Simner<sup>1</sup>, J. Mandrekar<sup>1</sup>, K. Lolans<sup>2</sup>, M. K. Hayden<sup>2</sup>, R. Patel<sup>1</sup>; <sup>1</sup>Mayo Clinic, Rochester, MN, <sup>2</sup>Rush Univ. Med. Ctr., Chicago, IL

**567 Detection of Antibiotic-Resistance in Biofilm Producer and Non-producer Strains of *Pseudomonas aeruginosa* Isolated from Burn Wound Infections in Karachi Pakistan**

F. Samad, R. Erum, S. U. Kazmi; Univ. of Karachi, Karachi, Pakistan

**567a Prevalence of Cervical Smear Abnormalities and High Risk Human Papilloma Virus Types in Female Sex Workers in Chandigarh, India**

M. P. Singh, M. Kaur, N. Gupta, A. Kumar, J. Khurana, K. Goyal, A. Sharma, B. Buddhathoki, M. Majumdar, R. Ratho; Post Graduate Inst. of Med. Ed. and Res., Chandigarh, India

# 045 Microbial Adherence to Host Cells and Surfaces (Division D)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 568 Interplay of Flagellar Motility and Mucin Degradation By MucD Stimulates the Association of *Pseudomonas aeruginosa* With Epithelial Cells**  
N. Hayashi, M. Matsukawa, Y. Horinishi, K. Nakai, A. Shoji, Y. Yoneko, N. Yoshida, S. Minagawa, N. Gotoh; Dept. of Microbiol. and Infection Control Sci., Kyoto Pharmaceutical Univ., Kyoto, Japan
- 569 Bioabsorbable, *In situ* Melting, Antimicrobial Film for Reducing Tissue Expander Infections**  
J. S. Rosenblatt, R. Reitzel, T. Dvorak, Y. Jiang, M. A. Jamal, G. Viola, I. I. Raad; MD Anderson Cancer Ctr., Houston, TX
- 570 Serotype Specific Sialylated Group B Streptococcus Capsular Polysaccharide Structure Influences Virulence Functions**  
C. Tung<sup>1</sup>, Y.-C. Chang<sup>1</sup>, A. Varki<sup>1,2</sup>, V. Nizet<sup>1,2,3</sup>; <sup>1</sup>Univ. of California San Diego, La Jolla, CA, <sup>2</sup>Glycobiology Res. & Training Ctr., La Jolla, CA, <sup>3</sup>Skaggs Sch. of Pharmacy & Pharmaceutical Sci., La Jolla, CA
- 571 Insertional Inactivation of the Gene Encoding Hypothetical Protein BB2359 Increases Agglutination of *Bordetella bronchiseptica***  
J. L. Ringies<sup>1</sup>, C. Horn<sup>2</sup>, A. M. Pollard<sup>1</sup>, W. H. Andry<sup>1</sup>, E. H. Burns, Jr<sup>1</sup>; <sup>1</sup>Shawnee State Univ., Portsmouth, OH, <sup>2</sup>Ohio Univ. Heritage Coll. of Osteopathic Med., Athens, OH
- 572 Characterization of *Escherichia coli* Lpp as a Plasminogen-Binding Protein**  
T. Gonzalez, R. A. Gaultney, A. M. Floden, C. A. Brissette; Univ. of North Dakota, Grand Forks, ND
- 573 Identification and Characterization of Adhesins, and Other Virulence Factors in Mycoplasma that May Contribute to Pre-Term Birth**  
M. Allen-Daniels, M. D. Harwich, K. K. Jefferson; Virginia Commonwealth Univ., Alexandria, VA
- 574 Interaction of Multidrug-Resistant *Enterococcus faecium* with Intestinal Epithelial Cells**  
A. P. A. Hendrickx, M. J. M. Bonten, R. J. L. Willems; Univ. Med. Ctr. Utrecht, Utrecht, Netherlands
- 575 *Vibrio parahaemolyticus* Contains T6SS1 and T6SS2 that Show Different Functions of Adhesion to Host Cells and Autophagy**  
Y. Yu, Y. Zhang, J. Yang, C. Fang, W. Fang; Zhejiang Univ. Inst. of Preventive Vet. Med., Hangzhou, China
- 576 Identification of Cellular Surface-exposed Proteins Involved in the Fimbrial-mediated Adherence of Enterococcal *Escherichia coli* to Intestinal Cells**  
M. J. Farfan<sup>1</sup>, M. Izquierdo<sup>1</sup>, F. Ruiz-Perez<sup>2</sup>, J. P. Nataro<sup>2</sup>; <sup>1</sup>Univ. of Chile, Santiago, Chile, <sup>2</sup>Univ. of Virginia, Charlottesville, VA
- 577 Host Inflammatory Response Inhibits *Escherichia coli* O157:H7 Adhesion to Gut Epithelium Through Augmenting Mucin Expression**  
Y. Xue<sup>1</sup>, J. Hu<sup>1</sup>, H. Wang<sup>1</sup>, H. Zhang<sup>1</sup>, M. Du<sup>2</sup>, M. J. Zhu<sup>3,1</sup>; <sup>1</sup>Dept. of Animal Sci., Univ. of Wyoming, Laramie, WY, <sup>2</sup>Dept. of Animal Sci., Washington State Univ., Pullman, WA, <sup>3</sup>Sch. of Food Sci., Washington State Univ., Pullman, WA
- 578 Study on the Adhesion Characteristics of *Bifidobacterium* spp. strains on Human Epithelial Cell Line HT-29**  
R. Inturri, A. Tiralongo, G. Tempera, F. Sinatra, G. Blandino; Univ. of Catania, Catania, Italy
- 579 Bfp Pilin-Like Proteins Form Part of the Structure of the Bundle Forming Pili in Enteropathogenic *Escherichia coli* E2348/69**  
C. F. Martinez de la Peña<sup>1</sup>, G. L. Mulvey<sup>1</sup>, G. D. Armstrong<sup>1</sup>, L. De Masi<sup>2</sup>, M. S. Donnenberg<sup>2</sup>; <sup>1</sup>Univ. of Calgary, Calgary, AB, Canada, <sup>2</sup>Univ. of Maryland, Baltimore, MD

- 580 Bacterial Collagen-like Proteins as Antibacterial Surface Grafting Agents**  
E. M. Barbu; The Univ. of Texas MD Anderson Cancer Ctr., Houston, TX

- 581 Toll-like Receptor 4 Recognition of *Acanthamoeba castellanii* Evokes an Inflammatory Response**  
A. D. Smith<sup>1,2</sup>, T. Tripathi<sup>1,3</sup>, M. Abdi<sup>1,3</sup>, H. Alizadeh<sup>1,3,4</sup>; <sup>1</sup>Univ. of North Texas Hlth. Sci. Ctr., Fort Worth, TX, <sup>2</sup>Dept. of Molecular Biol. and Immunology, Fort Worth, TX, <sup>3</sup>Dept. of Cell Biol. and Anatomy, Fort Worth, TX, <sup>4</sup>North Texas Eye Res. Inst., Fort Worth, TX

**582 WITHDRAWN**

- 583 *Pseudomonas syringae* Triggered Reduction of Host Histone H3 K9 Acetylation Is Type III Effector Driven and may Involve Histone Deacetylase HDA5**  
M. Visenio<sup>1</sup>, T. Hubbard<sup>1</sup>, A. Karpisek<sup>1</sup>, H. Geisterfer<sup>1</sup>, G. Larson<sup>1</sup>, J. Alfano<sup>2</sup>, K. van Dijk<sup>1</sup>; <sup>1</sup>Creighton Univ., Omaha, NE, <sup>2</sup>Univ. of Nebraska-Lincoln, Lincoln, NE

- 584 A Novel Fibronectin-binding Protein of *Borrelia hermsii* Expressed in the Blood During Experimental Relapsing Fever**  
E. R. G. Lewis, S. Campeau Miller, A. G. Barbour; Univ. of California, Irvine, Irvine, CA

- 585 *Burkholderia pseudomallei* Forms Biofilms in the Stomach of Mice Following Oral Infection**  
A. Goodyear<sup>1</sup>, N. Somprasong<sup>1</sup>, I. McMillan<sup>2</sup>, H. Schweizer<sup>1</sup>, D. AuCoin<sup>3</sup>, B. Borlee<sup>1</sup>, S. Dow<sup>1</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Univ. of Hawaii at Manoa, Honolulu, HI, <sup>3</sup>Univ. of Nevada, Reno, NV

# 046 Innate Immunity and Host Defense (Division E)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 586 Antimicrobial Cationic Steroid and a Cathelicidin-derived Peptide Have Anti-proliferative Effects to Colon Cancer Cell Line**  
K. Kuroda<sup>1</sup>, T. Fukuda<sup>1</sup>, K. Okumura<sup>2</sup>, H. Yoneyama<sup>1</sup>, H. Isogai<sup>3</sup>, P. B. Savage<sup>4</sup>, E. Isogai<sup>1</sup>; <sup>1</sup>Tohoku Univ., Sendai, Japan, <sup>2</sup>Hlth. Sci. Univ. of Hokkaido, Ishikari-gun, Japan, <sup>3</sup>Sapporo Med. Univ., Sapporo, Japan, <sup>4</sup>Brigham Young Univ., UT

- 587 Gene Expression Profiles of Toll-Like Receptors 2 and 4 during Chlamydia Genital Infection in a Stress Mouse Model**  
B. D. Kirby; Bluefield State Coll., Bluefield, WV

- 588 HCV Core Protein Directly Inhibits HCV-induced IFN Production in Plasmacytoid Dendritic Cells**  
A. E. L. Stone<sup>1,2</sup>, L. Cheng<sup>1</sup>, K. F. Leahy<sup>1</sup>, L. Golden-Mason<sup>1</sup>, M. Gale, Jr<sup>3</sup>, H. R. Rosen<sup>1</sup>; <sup>1</sup>Univ. of Colorado – Denver, Aurora, CO, <sup>2</sup>Natl. Jewish Hlth., Denver, CO, <sup>3</sup>Univ. of Washington, Seattle, WA

- 589 The Signaling Pathway of NLRP3 Activation by Bacterial Surface Proteins**  
H.-K. Jun<sup>1,2</sup>, B.-K. Choi<sup>3,4</sup>; <sup>1</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>2</sup>Sch. of Dentistry, Republic of Korea, <sup>3</sup>Seoul Natl. Univ., Republic of Korea, <sup>4</sup>Sch. of Dentistry, Seoul, Republic of Korea

- 590 Immunomodulatory Properties of *Fasciola hepatica* Excretory-Secretory Products During Innate Response**  
O. Figueroa-Santiago, A. M. Espino; Univ. of Puerto Rico Med. Sci. Campus, San Juan, Puerto Rico

- 591 Elucidating the Immunoregulatory Functions of Tubby-Like Protein 4**  
T. M. Barr, A. Fox, L. Navarro; UC Davis, Davis, CA

- 592 Pattern Recognition Mechanisms Underlying the Bacterial Induction of Autophagy in the Social Amoeba *Dictyostelium discoideum***  
M. D. Snyder, M. Fink, K. Pflaum, K. Stephens, K. Yovo, K. Gerdes; Towson Univ., Towson, MD



- 593 Caspase Dependent and Independent Pathways Mediate the Anti-apoptotic Effects of Vitamin D in *Chlamydia* Infected HeLa Cells**  
Y. O. Omosun<sup>1</sup>, D. McKeithen<sup>1</sup>, D. Ellerson<sup>2</sup>, F. O. Eko<sup>1</sup>, C. M. Black<sup>2</sup>, J. U. Igieme<sup>2,1</sup>, Q. He<sup>1</sup>; <sup>1</sup>Morehouse Sch. of Med., Atlanta, GA, <sup>2</sup>CDC, Atlanta, GA

**594 WITHDRAWN**

- 595 Role of Intestinal Epithelial Cells in the Capture (Sampling) of Lumen Antigens**  
S. E. Howe, K. Plunkett, V. Konjufca; Southern Illinois Univ., Carbondale, IL

- 596 Bactericidal Effects and Histological Analysis of Infected Wounds After Treatment with Atmospheric Plasma in Mice**  
K. Kelly-Wintenberg<sup>1</sup>, M. Wintenberg<sup>1</sup>, P. Coan<sup>2</sup>, B. L. Daley<sup>3</sup>, M. Karlstad<sup>4</sup>, A. L. Wintenberg<sup>1</sup>; <sup>1</sup>Advanced Plasma Products, Inc., Knoxville, TN, <sup>2</sup>The Univ. of Tennessee Coll. of Vet. Med., Knoxville, TN, <sup>3</sup>The Univ. of Tennessee Med. Sch., Knoxville, TN, <sup>4</sup>The Univ. of Tennessee Graduate Sch. of Med., Knoxville, TN

- 597 Anti-CD44 Induced IL-10 mRNA Expression In Neutrophils Following Burn And Sepsis In Rats**  
L. Do, N. Fazal; Chicago State Univ., Chicago, IL

- 598 Tumor Necrosis Factor (TNF)- $\alpha$  Diminishes the Ability of Macrophage to Cleave Extracellular Traps**  
N. A. Aulik<sup>1,2</sup>, K. M. Hellenbrand<sup>1</sup>, D. N. Atapattu<sup>1</sup>, C. J. Czuprynski<sup>1</sup>; <sup>1</sup>Univ. of Wisconsin – Madison, Madison, WI, <sup>2</sup>Winona State Univ., Winona, MN

- 599 Expression of Innate Immunity in *Frankliniella occidentalis* during Tomato spotted Wilt Virus Infection**  
J. M. Ames, D. Rotenberg; Kansas State Univ., Manhattan, KS

- 599a Neutrophil Extracellular Traps Exhibit No Bactericidal Activity against *Pseudomonas aeruginosa***  
M. Gadjeva; Brigham and Women's Hosp., Boston, MA

**047 Fungal Biochemistry, Cell Biology and Molecular Biology (Division F)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 600 Discovery of Major Transcription Factors Regulating Pathogenesis in *Alternaria brassicicola***  
A. Srivastava, Y. Cho; Univ. of Hawaii at Manoa, Honolulu, HI

- 601 Identification and Bioinformatics Analysis of Polyketide Synthase Gene Clusters from the Fungus *Mycosphaerella fijiensis***  
R. Noar<sup>1</sup>, S. Herrero<sup>2</sup>, M. Daub<sup>1</sup>; <sup>1</sup>North Carolina State Univ., Raleigh, NC, <sup>2</sup>Syngenta, NC

- 602 The Identification of the Targets of the F-box Protein Cdc4p in *Candida Albicans* Through Proteomic Analysis**  
K. Toenjes, J. Goffena, E. Mullins, M. Graham; Montana State Univ. – Billings, Billings, MT

- 603 The Natural Resistance Associated Macrophage Protein of *Sporothrix schenckii* and its Role in Metal Acquisition**  
L. Perez, N. Rodriguez-del Valle; Med. Sci. Campus, Univ. of Puerto Rico, San Juan, PR

- 604 Evaluation of Five Fungal DNA Extraction Methods Utilizing the Akonni's TruTip® Kit and the Zymo Research Fungal/Bacterial DNA MiniPrep Kit**  
R. Lee<sup>1</sup>, T. Watkins<sup>2</sup>, A. Gindlesperger<sup>3</sup>, R. Parrish<sup>3</sup>, R. Holmberg<sup>3</sup>, S. X. Zhang<sup>2,1</sup>; <sup>1</sup>Johns Hopkins Hosp., Baltimore, MD, <sup>2</sup>Johns Hopkins Univ., Baltimore, MD, <sup>3</sup>Akonni Biosystems, Frederick, MD

- 605 Extension Forces Cause Amyloid-Dependent Activation of Yeast Cell Adhesion: A Fungal Version of Catch-Bonding**  
C. X. Tan, M. C. Garcia, D. N. Jackson, P. N. Lipke; Brooklyn Coll. CUNY, Brooklyn, NY

- 606 *ERG11* Mutations in Fluconazole Resistant *Candida parapsilosis* Isolates from Patients**  
N. T. Grossman, C. D. Pham, E. S. Ahn, S. R. Lockhart; CDC, Atlanta, GA

- 607 Stability Studies on Different Preparations of *Blastomyces dermatitidis* Yeast Lysate Antigens**  
T. R. Allison, J. C. Wright, T. E. Harrild, G. M. Scalarone; Idaho State Univ., Pocatello, ID

- 608 Oxygen Tension in Biofilm Formation by *Aspergillus***  
M. M. Davila, P. DeCastro, P. Bayman; Univ. of Puerto Rico, Rio Piedras, Puerto Rico

- 609 Occurrence of Killer Phenotype in Clinical Isolates of *Candida glabrata***  
E. Robledo, L. Villarreal, J. F. Contreras, G. M. González; Univ. Autónoma de Nuevo León, San Nicolás de los Garza, Nuevo Leon, Mexico

- 610 Phenotypic Switching: An Indicator of Pathogenic Potential of Local Clinical Isolates of *Candida***  
G. Jawed<sup>1</sup>, S. U. Kazmi<sup>2</sup>; <sup>1</sup>Jinnah Univ. for Women, Karachi, Pakistan, <sup>2</sup>Univ. of Karachi, Karachi, Pakistan

- 611 Cell Wall Proteome Analysis of the *Candida albicans* DSE1 Mutant**  
R. A. Khalaf, R. Zohbi, B. Wex; Lebanese American Univ., Byblos, Lebanon

- 612 Biochemical Characterization of Xylulose 5-phosphate/ Fructose 6-phosphate Phosphoketolase 2 (XFP2) from *Cryptococcus neoformans***  
K. F. Glenn<sup>1</sup>, I. Bose<sup>2</sup>, C. Ingram-Smith<sup>1</sup>, K. Smith<sup>1</sup>; <sup>1</sup>Clemson Univ., Clemson, SC, <sup>2</sup>Western Carolina Univ., Cullowhee, NC

- 613 The Importance of D-amino Acid Oxidase in the Pathobiology of *Cryptococcus gattii***  
A. Lamichhane<sup>1</sup>, Y. Chang<sup>1</sup>, J. Bradley<sup>1</sup>, L. Rodgers<sup>1</sup>, P. Ngamskulrungrong<sup>2</sup>, J. Kwon-Chung<sup>1</sup>; <sup>1</sup>NIH, Bethesda, MD, <sup>2</sup>Mahidol Univ., Bangkok, Thailand

- 614 *Rhodotorula* and *Cryptococcus*: Do They Bind Their Capsules The Same Way?**  
A. J. Reese, L. McKean, N. Akers, C. Bradshaw, C. Olson, A. Gray, Y. Choi, J. Reed, A. Scott, J. Simmon; Cedar Crest Coll., Allentown, PA

- 615 Ionizing Radiation Promotes the Growth of Melanized *Cryptococcus neoformans* in an Energy and Dose-rate Dependent Manner**  
R. A. Bryan<sup>1</sup>, I. Shuryak<sup>2</sup>, O. Burris<sup>1</sup>, E. Dadachova<sup>1</sup>; <sup>1</sup>Albert Einstein Coll. of Med., Bronx, NY, <sup>2</sup>Columbia Univ., New York, NY

- 616 Influence of Temperature on Toxin Production and Gene Expression in *Fusarium graminearum***  
M. E. Crawford, J. M. Becker; Univ. of Tennessee - Knoxville, Knoxville, TN

- 617 Transcriptional Response to Hypoxia in the Dimorphic Fungus *Histoplasma capsulatum***  
J. C. DuBois<sup>1,2</sup>, A. G. Smulian<sup>1,2</sup>; <sup>1</sup>Univ. of Cincinnati Coll. of Med., Cincinnati, OH, <sup>2</sup>Cincinnati VA Med. Ctr., Cincinnati, OH

- 618 Investigation of Mutations in *ERG11* Gene of Fluconazole and Voriconazole Resistant *Candida albicans* Isolates from a Tertiary Hospital in Benin City, Nigeria**  
N. O. Esebelahie<sup>1</sup>, I. B. Enweani<sup>2</sup>; <sup>1</sup>Dept. of Med. Lab. Sci., Faculty of Hlth. Sci. & Technology, Coll. of Hlth.Sci., Nnamdi Azikiwe Univ., Nnewi, Anambra State, Nigeria, <sup>2</sup>Dept. of Med. Lab. Sci., Faculty of Hlth. Sci. & Technology, Coll. of Hlth. Sci., Nnamdi Azikiwe Univ., Nnewi, Anambra State, Nigeria

- 619 Repression of Aflatoxin Biosynthetic Gene Cluster of *Aspergillus flavus* by a Volatile Compound from *Pichia anomala* WRL-076**  
S. T. Hua, J. J. Beck, S. L. Sarreal, W. Gee; USDA-ARS, Western Regional Res. Ctr., Albany, CA



# 048 Gene Expression – Development and Global Regulation (Division H)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

## 620 RNA-seq Analysis Identifies 53 Potentially Growth-perturbing Genes Upregulated by CRP\* Mutants in *Escherichia coli*

S. Gunasekara, J. Curiel, Y. Mordvinov, H. Youn; Dept. of Biol., California State Univ., Fresno, CA

## 621 rpoN of *Neisseria elongata* is Functional and Regulates pilE Expression

M. A. Rendon, A. M. Hockenberry, S. McManus, M. So; The Univ. of Arizona, Tucson, AZ

## 622 The Regulatory Role of Rex (DVU0916) in Sulfate Reduction in *Desulfovibrio vulgaris* Hildenborough

G. Christensen<sup>1</sup>, D. Rodionov<sup>2</sup>, P. Novichkov<sup>3</sup>, A. Kazakov<sup>3</sup>, J. Wall<sup>1</sup>; <sup>1</sup>Univ. of Missouri, Columbia, MO, <sup>2</sup>Sanford-Burnham Med. Inst., CA, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

## 623 Crystal Structure of Hha in Complex with the N-Terminal Dimerization Domain of H-NS Provides New Insight into the Regulation of Foreign Genes in *Salmonella*

S. S. Ali<sup>1</sup>, J. C. Whitney<sup>2,3</sup>, J. Stevenson<sup>1</sup>, H. Robinson<sup>4</sup>, P. L. Howell<sup>2,3</sup>, W. W. Navarre<sup>1</sup>; <sup>1</sup>Dept. of Molecular Genetics, Univ. of Toronto, Toronto, ON, Canada, <sup>2</sup>Dept. of Biochemistry, Univ. of Toronto, Toronto, ON, Canada, <sup>3</sup>The Hosp. for Sick Children, Toronto, ON, Canada, <sup>4</sup>Brookhaven Natl. Lab., Upton, NY

## 624 Multiple Modes of Action by the RNA Chaperone Hfq for sRNA Regulation in *Escherichia coli*

D. J. Schu<sup>1</sup>, A. Zhang<sup>2</sup>, G. Storz<sup>2</sup>, S. Gottesman<sup>1</sup>; <sup>1</sup>Lab. of Molecular Biol., Natl. Cancer Inst., Bethesda, MD, <sup>2</sup>Cell Biol. and Metabolism Program, Eunice Kennedy Shriver Natl. Inst. of Child Hlth. and Human Dev., Bethesda, MD

## 625 The C-Terminal Tip of FtsZ and SepF Are Both Required for Development-Associated Cell Division in *Streptomyces coelicolor*

A. M. Kotun, J. W. Morris, J. R. McCormick; Duquesne Univ., Pittsburgh, PA

## 626 Polynucleotide Phosphorylase Regulates the Recruitment of sRNAs by RNase E

N. De Lay, S. Gottesman; Natl. Cancer Inst., Bethesda, MD

## 627 Transcriptional Analysis of the PhoB and RpoS Regulons Under Phosphate Limiting Conditions

T. L. Conkle; Univ. of Oklahoma, Norman, OK

## 628 *Bacillus subtilis* Competence is a Matter of Life and Death

J. Hahn<sup>1</sup>, K. Briley<sup>2</sup>, D. Dubnau<sup>1</sup>; <sup>1</sup>Publ. Hlth. Res. Inst., Newark, NJ, <sup>2</sup>Perelman Med. Sch., Univ. of Pennsylvania, Philadelphia, PA

## 629 *In-vitro* Transcription of SigG from *Nostoc punctiforme*

J. J. Lee, N. J. Cassel, M. L. Summers; Calif. State Univ. Northridge, Northridge, CA

## 630 Using the Model Organism *Neurospora crassa* to Elucidate the Genetic and Molecular Mechanism of Meiotic Silencing, an RNAi-like Phenomenon

A. V. Suescún<sup>1</sup>, D. W. Lee<sup>2</sup>, B. Russell<sup>3</sup>, R. Aramayo<sup>1</sup>; <sup>1</sup>Aramayo Lab, Coll. of Sci., Dept. of Biol., Texas A&M Univ., College Station, TX, <sup>2</sup>Coll. of Med., Dept. of Molecular And Cellular Med., Texas A&M Univ., College Station, TX, <sup>3</sup>Lab. of Biol. Mass Spectrometry, Dept. of Chemistry, Texas A&M Univ., College Station, TX

# 049 Symbiosis (Division I)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

## 631 SypF: A Sensor Kinase Critical for Biofilm Formation and Host Colonization

A. N. Norsworthy, K. L. Visick; Loyola Univ. Med. Ctr., Chicago, IL

## 632 Identification and Functional Characterization of ACC Deaminases in *Sinorhizobium* Genomes

B. M. Martinez-Vaz<sup>1</sup>, A. Renn<sup>1</sup>, M. J. Sadowsky<sup>2</sup>; <sup>1</sup>Hamline Univ., Saint Paul, MN, <sup>2</sup>Univ. of Minnesota, Saint Paul, MN

## 633 The *Sinorhizobium meliloti* smc03167/smc03168 Genes Encode an Efflux System that is Regulated by Flavonoids through a TetR-like Regulator

S. Rossbach<sup>1</sup>, K. Kunze<sup>2</sup>, S. Albert<sup>2</sup>, M. Göttfert<sup>2</sup>; <sup>1</sup>Western Michigan Univ., Kalamazoo, MI, <sup>2</sup>Technical Univ. Dresden, Dresden, Germany

## 634 Characterization of the Termite *Reticulitermes flavipes* Hindgut Microbiome by Illumina Sequencing of the 16S rRNA Gene

J. M. Benjamino, M. C. Nelson, J. Graf; Univ. of Connecticut, Storrs, CT

## 635 Comparison of the Digestive Tract Microbiome for Field-caught North American leeches, *Macrobdella decora* and the Medicinal Leech *Hirudo verbana*

M. C. Nelson<sup>1</sup>, M. Maltz<sup>1</sup>, L. Bomar<sup>1</sup>, H. G. Morrison<sup>2</sup>, J. Graf<sup>1</sup>; <sup>1</sup>Univ. of Connecticut, Vernon, CT, <sup>2</sup>Josephine Bay Paul Ctr., MBL, Woods Hole, MA

## 636 Endosymbiotic Bacteria affect Reproduction and Sex Ratio of the Coffee Berry Borer *Hypothenemus hampei* (Coleoptera:Scotyidae)

Y. A. Marino Cardenas, M. I. Cruz Morales, P. Bayman Gupta; Univ. of Puerto Rico, San Juan, Puerto Rico

## 637 Diazotrophic Microbiome of an Indigenous Landrace of Corn

S. Bhatnagar, G. Jospin, P. Zamora, J. A. Eisen, A. B. Bennett; Univ. of California, Davis, CA

## 638 Status Report on the Human Oral Microbiome Database

G. Weigel<sup>1</sup>, A. Kirega<sup>1</sup>, L. Yang<sup>1</sup>, T. Chen<sup>1</sup>, A. Tanner<sup>1</sup>, W. Wade<sup>2</sup>, B. Paster<sup>1</sup>, F. E. Dewhirst<sup>1</sup>, J. Izard<sup>1</sup>; <sup>1</sup>The Forsyth Inst., Cambridge, MA, <sup>2</sup>King's Coll. London, London, United Kingdom

## 639 PspK+ Nonencapsulated *Streptococcus pneumoniae* Persistently Colonizes the Mouse Nasopharynx but has Reduced Competitiveness when Compared to Encapsulated Pneumococci

L. E. Keller, C. V. Jones, E. Swiatlo, L. S. McDaniel; Univ. of Mississippi Med. Ctr., Jackson, MS

## 640 Identification of Volatile Compounds Produced *In vitro* by Bacteria Isolated from Human Faces and its Role Attracting *Rhodnius prolixus*

D. M. Tabares, M. Ortiz, J. Molina, M. Vives; Univ. De Los Andes, Bogota, Colombia

## 641 Oral, Fecal, and Cutaneous Microbiome of People Living Deep in the Amazon, and in Rural and Urban Settings

J. F. Ruiz-Calderon<sup>1</sup>, J. C. Clemente<sup>2</sup>, J. A. Gilbert<sup>3</sup>, S. Owens<sup>3</sup>, J. N. Hernandez<sup>4</sup>, O. H. Branch<sup>4</sup>, R. Knight<sup>2,5</sup>, M. Blaser<sup>6</sup>, M. G. Dominguez-Bello<sup>6,1</sup>; <sup>1</sup>Univ. of Puerto Rico, Rio Piedras Campus, San Juan, PR, <sup>2</sup>Univ. of Colorado, Boulder, CO, <sup>3</sup>Argonne Natl. Lab., Lemont, IL, <sup>4</sup>Univ. Natl. de la Amazonia Peruana, Iquitos, Peru, <sup>5</sup>Howard Hughes Med. Inst., Chevy Chase, MD, <sup>6</sup>New York Univ. Sch. of Med., New York, NY

## 642 Inability to Utilize Certain Carbohydrates Results in Loss of Fitness for *Borrelia burgdorferi* in the Enzootic Cycle

A. P. Corona, R. Iyer, D. Liveris, I. Schwartz; New York Med. Coll., Valhalla, NY

## 643 Culture-based and PCR-DGGE Analysis of Changes in the Microbiome of the Freshwater Oligochaete, *Lumbriculus variegatus*, Under Conditions of Starvation

K. A. Tweenen; St. Catherine Univ., St. Paul, MN

## 644 Characterization of a Taurine-regulated Promoter in Alpha-proteobacteria

T. Saini; San Francisco State Univ., San Francisco, CA

## 645 Characterization of *Burkholderia unamae* Motility Mutants

M. Onofre, M. Lum; Loyola Marymount Univ., Los Angeles, CA

- 646 Discovery of a Novel Bacterial Growth Factor for the Human Gut Microbiota**  
P. Strandwitz, E. Stewart, K. Lewis; Northeastern Univ., Boston, MA

## 050 Biodegradation (Division K)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 647 Bacterial Chlorate Reduction Composite Transposons**  
I. C. Clark, R. A. Melnyk, A. Engelbrektson, J. D. Coates; UC Berkeley, Berkeley, CA
- 648 Molecular Oxygen-Independent Activation of Limonene by a Novel Enzyme from *Castellaniella defragrans* 65Phen**  
J. Petasch<sup>1</sup>, S. Marker<sup>2</sup>, T. Schweder<sup>2</sup>, R. Reinhardt<sup>3</sup>, J. Harder<sup>1</sup>; <sup>1</sup>Max Planck Inst. for Marine Microbiol., Bremen, Germany, <sup>2</sup>Univ. of Greifswald, Greifswald, Germany, <sup>3</sup>Max Planck Inst. for Molecular Genetics, Cologne, Germany
- 649 A Novel Pathway In (Per)Chlorate Reducing Bacteria To Control Sulfidogenesis In Oil Reservoirs**  
P. Gregoire<sup>1</sup>, J. Thieme<sup>2</sup>, R. Melnyk<sup>1</sup>, I. Clark<sup>1</sup>, H. Carlson<sup>1</sup>, C. Hubbard<sup>3</sup>, Z. Metlagel<sup>3</sup>, M. Auer<sup>3</sup>, M. Conrad<sup>3</sup>, J. Coates<sup>1,3</sup>; <sup>1</sup>Dept. of Plant and Microbial Biol., Univ. of California, Berkeley, CA, <sup>2</sup>Brookhaven Natl. Lab., Brookhaven, New York, NY, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 650 Nitritotriacetic Acid as a N-source for the Solvent-Producing *Clostridium carboxidivorans***  
E. C. Martin, R. S. Tanner; Univ. of Oklahoma, Norman, OK
- 651 Investigating the Mechanism of Dissimilatory Phosphite Oxidation in *Desulfotignum phosphitoxidans*, Strain FiPS-3**  
I. Figueroa, J. D. Coates; UC Berkeley, Berkeley, CA
- 652 Sedimenticola selenatireducens Strain CUZ, a Novel Dissimilatory Perchlorate Reducing Gammaproteobacterium that Can Couple Perchlorate Reduction to the Oxidation of Aromatic Compounds**  
C. I. Carlström, O. Wang, J. D. Coates; UC Berkeley, Berkeley, CA
- 653 The Detoxification of Cyanide in *Lactobacillus brevis* is Mediated by a Novel Interaction between the Transcriptional Regulator TstR and a Rhodanese**  
F. A. Pagliai, C. C. Murdoch, G. L. Lorca; Univ. of Florida, Gainesville, FL
- 654 Screening of Tannin-degrading Yeasts Isolated from Wasteplant Sources**  
S. I. Arzola-Rodríguez<sup>1</sup>, A. Prado-Barragán<sup>2</sup>, E. Salas-Muñoz<sup>1</sup>, M. L. Ballinas-Casarrubias<sup>1</sup>, G. V. Nevárez-Moorillón<sup>1</sup>; <sup>1</sup>Univ. Autónoma de Chihuahua, Chihuahua, Mexico, <sup>2</sup>UAM-Iztapalapa, Mexico, Mexico
- 655 A Biochemical and Biophysical Characterization of AzoC, the Azoreductase Enzyme of *Clostridium perfringens***  
J. M. Morrison, S. Dai, J. Ren, A. Taylor, M. Wilkerson, C. M. Wright, A. Xie, G. H. John; Oklahoma State Univ., Stillwater, OK
- 656 Transcriptional Regulation of Phthalate Degradation Genes in *Rhodococcus jostii* RHA1**  
N. Araki, R. Fujii, K. Shoji, D. Kasai, E. Masai, M. Fukuda; Nagaoka Univ. Tech., Nagaoka, Japan
- 657 Dipeptide Production in *Porphyromonas gingivalis* Mediated by Dipeptidyl Peptidases and Gingipains**  
Y. Ohara-Nemoto<sup>1</sup>, S. M. A. Rouf<sup>1</sup>, Y. Shimoyama<sup>2</sup>, S. Kimura<sup>2</sup>, T. K. Nemoto<sup>1</sup>; <sup>1</sup>Nagasaki Univ., Nagasaki, Japan, <sup>2</sup>Iwate Med. Univ., Yahabacho, Japan
- 658 Propagation of selected Fungal Isolates Using Media Formulated from Brewery Spent Waste**  
T. O. Femi-Ola; Ekiti State Univ., Ado Ekiti, Nigeria
- 659 Regulation of Hyaluronic Acid Metabolism in *Streptococcus pneumoniae* by RegR**  
L. K. McLellan<sup>1</sup>, S. A. Woodiga<sup>2</sup>, S. J. King<sup>2,3</sup>, D. Rodionov<sup>4</sup>, A. A. Best<sup>1</sup>; <sup>1</sup>Hope Coll., Holland, MI, <sup>2</sup>The Res. Inst. at Nationwide Children's Hosp., Columbus, OH, <sup>3</sup>The Ohio State Univ., Columbus, OH, <sup>4</sup>Sanford-Burnham Med. Res. Inst., La Jolla, CA

- 660 Characterization of Microaerophilic Fe(II)-Oxidation Utilizing *Marinobacter* from the Soudan Iron Mine**  
B. M. Bonis, J. A. Gralnick; Univ. of Minnesota, St. Paul, MN

- 661 Degradation of Plant Antimicrobial Hydroxycinnamic Acids Contributes to Pathogenic Success of *Ralstonia solanacearum***  
T. M. Lowe<sup>1</sup>, R. M. Mitra<sup>2</sup>, A. Milling<sup>1</sup>, M. Mustful<sup>1</sup>, C. Allen<sup>1</sup>; <sup>1</sup>Univ. of Wisconsin, Madison, Madison, WI, <sup>2</sup>Carleton Coll., Northfield, MN

## 051 Central Metabolism (Division K)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 662 Purification and Characterization of *Rhodobacter sphaeroides* HemA ALA Synthase**  
X. Xiao, M. Suwansaard, J. Zeilstra-Ryalls; Bowling Green State Univ., Bowling Green, OH
- 663 Purification and Characterization of *Rhodobacter sphaeroides* 2.4.1 HemT ALA Synthase**  
J. C. Kaganjo, M. Suwansaard, J. Zeilstra-Ryalls; Bowling Green State Univ., Bowling Green, OH
- 664 Diadenosine Polyphosphatase Invasion Enzymes of the Nudix Hydrolase Superfamily**  
T. DiDonato, K. Williford, J. Thomson, J. Ramos, D. Sheibley, S. Glick, S. F. O'Handley; Rochester Inst. of Technology, Rochester, NY
- 665 L-Malate Dehydrogenase Activity in the Reductive Arm of the Incomplete Citric Acid Cycle of *Nitrosomonas europaea***  
C. E. Deutch; Arizona State Univ. at the West Campus, Phoenix, AZ
- 666 Delivery and Regulation of Reducing Power for *Pseudomonas* Sulfate Assimilation**  
T. A. Lewis, A. Glassing; Montana State Univ. Billings, Billings, MT
- 667 Search for the Substrate of CsiD: A Carbon Starvation Inducible Nonheme Iron/2-oxoglutarate Hydroxylase in *Escherichia coli***  
L. Macomber, T. A. Muller; Michigan State Univ., East Lansing, MI
- 668 Bacteria Tune an Inducible Nutrient Utilization Pathway to Metabolic Flux**  
V. Raghavan<sup>1,2</sup>, E. A. Groisman<sup>1</sup>; <sup>1</sup>Yale Univ., New Haven, CT, <sup>2</sup>Washington Univ. in St. Louis, Saint Louis, MO
- 669 Regulation of Carbohydrate Utilization by *Bacteroides thetaiotaomicron***  
N. D. Schwalm, III<sup>1</sup>, V. Raghavan<sup>2</sup>, G. E. Townsend, II<sup>1</sup>, E. A. Groisman<sup>1</sup>; <sup>1</sup>Yale Univ., New Haven, CT, <sup>2</sup>Washington Univ. in St. Louis, St. Louis, MO
- 670 Pho13 Phosphoglycolate Phosphatase from *Saccharomyces cerevisiae***  
K. Blake, R. Puts, A. Rizo Patron, S. Ramirez, A. Strassner, A. Lof, B. Wahler, M. Walling, S. O'Handley; Rochester Inst. of Technology, Rochester, NY
- 671 A Mutation that Bypasses the Requirement for 2-Oxoglutarate Dehydrogenase Activity in *Escherichia coli* During Aerobic Growth on Glucose**  
F. Hermes, J. Cronan; Univ. of Illinois Urbana-Champaign, Urbana, IL
- 672 IolR Activates Expression of Genes Involved in Acetate Metabolism in *Salmonella enterica***  
K. L. Hentchel<sup>1</sup>, S. Thao<sup>2</sup>, P. J. Intile<sup>2</sup>, J. C. Escalante-Semerena<sup>1</sup>; <sup>1</sup>Univ. of Georgia, Athens, GA, <sup>2</sup>Univ. of Wisconsin, Madison, WI
- 673 Role of Phosphorylated Acetate Kinase in *Salmonella enterica***  
J. Tumolo, K. Smith, C. Ingram-Smith; Clemson Univ., Clemson, SC
- 674 Response Surface Analysis of Acetate Inhibition in *Escherichia coli***  
A. Bleem, E. Harvey, H. C. Bernstein, T. Gedeon, J. Heys, R. P. Carlson; Montana State Univ., Bozeman, MT

- 675 Phospho-glucomutase-beta is Involved in the Acid-Adaptive Response of *Streptococcus Mutans***  
A. A. Buckley, R. C. Faustoferr, R. G. Quivey, Jr.; Univ. of Rochester, Rochester, NY
- 676 cAMP Receptor Protein (CRP) Regulates Metabolic Enzyme Acetylation in *E. coli***  
R. Davis<sup>1</sup>, A. J. Walker-Peddakotla<sup>1</sup>, M. L. Kuhn<sup>2</sup>, B. K. Chi<sup>3</sup>, D. Becher<sup>3</sup>, K. Gronau<sup>3</sup>, H. Antelmann<sup>3</sup>, W. F. Anderson<sup>2</sup>, A. J. Wolfe<sup>1</sup>; <sup>1</sup>Loyola Univ. Chicago, Maywood, IL, <sup>2</sup>Northwestern Univ. Feinberg Sch. of Med., Chicago, IL, <sup>3</sup>Ernst-Moritz-Arndt-Univ. of Greifswald, Greifswald, Germany
- 677 Deamination of Adenosine in *Helicobacter pylori***  
E. F. Miller, R. J. Maier; Univ. of Georgia, Athens, GA
- 678 Characterization of *Escherichia coli* P-aminobenzoyl Glutamate Hydrolase's Ability to Cleave a Variety of Folate And Anti-folate Substrates**  
J. M. Green, C. Larimer, D. Slavnic; Midwestern Univ., Downers Grove, IL
- 679 Discriminatory Inhibition of Protein Synthesis in Ammonia-oxidizing Bacteria and Archaea**  
N. Vajrala<sup>1</sup>, L. A. Sayavedra-Soto<sup>1</sup>, D. A. Stahl<sup>2</sup>, P. J. Bottomley<sup>1</sup>, D. J. Arp<sup>1</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Univ. of Washington, Seattle, WA
- 680 Overexpression of the NADP+-dependent Glyceraldehyde 3-Phosphate Dehydrogenase from *Streptococcus Mutans* Replaces the NAD+-dependent Enzyme Function in *Escherichia coli***  
S. G. Centeno-Leija, J. Utrilla, N. Flores, G. Gosset, A. Martinez; Inst. de Biotecnología UNAM, Cuernavaca, Mexico
- 681 Caspase Active Proteins in the Extreme Halophile *Haloferax volcanii***  
M. Seth-Pasricha<sup>1</sup>, M. Maniscalco<sup>2</sup>, S. Senn<sup>1</sup>, J. Schrier<sup>1</sup>, K. A. Bidle<sup>2</sup>, K. D. Bidle<sup>1</sup>; <sup>1</sup>Rutgers Univ., New Brunswick, NJ, <sup>2</sup>Rider Univ., Lawrenceville, NJ
- 682 CpdA, not TolC, Plays a Dominant Role in Removal of Cellular cAMP in *Escherichia coli***  
G. Li, K. D. Young; UAMS, Little Rock, AR
- 683 A Spectrum of CodY Activities Prioritizes Gene Expression and Metabolism in *Bacillus subtilis***  
S. R. Brinsmade<sup>1</sup>, E. L. Alexander<sup>2</sup>, J. Livny<sup>3</sup>, K. Y. Rhee<sup>2</sup>, A. L. Sonenshein<sup>1</sup>; <sup>1</sup>Tufts Univ. Sch. of Med., Boston, MA, <sup>2</sup>Div. of Infectious Diseases, Dept. of Med., Weill Cornell Med. Coll., New York, NY, <sup>3</sup>The Broad Inst. of MIT and Harvard, Cambridge, MA

## 052 Aquatic Microbial Ecology (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 684 Microbial Diversity and Activity In Costal Virginia Stormwater Retention Ponds**  
M. A. Saxton, F. Rahman, N. S. Naqvi, R. M. Chambers, J. M. Kaste, K. E. Williamson; Coll. of William & Mary, Williamsburg, VA
- 685 The Microcosm Mediates the Persistence of Shiga Toxin Expressing *E. coli* (STEC) in Freshwater Ecosystems**  
S. A. Mauro<sup>1</sup>, H. Opalko<sup>1</sup>, K. Lindsay<sup>1</sup>, G. B. Koudelka<sup>2</sup>; <sup>1</sup>Mercyhurst Univ., Erie, PA, <sup>2</sup>Univ. at Buffalo, Buffalo, NY
- 686 An Analysis of the Bacterial Diversity in Reelfoot Lake**  
M. Kempf, S. Hixson; Univ. of Tennessee at Martin, Martin, TN
- 687 The Response of Freshwater Aquatic Microbial Communities to Marcellus Shale Natural Gas Extraction**  
C. M. Solomon<sup>1</sup>, R. V. Trexler<sup>1</sup>, S. Strutt<sup>1</sup>, C. Grant<sup>1</sup>, J. W. Santo Domingo<sup>2</sup>, R. Lamendella<sup>3</sup>; <sup>1</sup>Juniata Coll., Huntingdon, PA, <sup>2</sup>EPA, Natl. Risk Management Res. Lab., Cincinnati, OH

- 688 Spacious and Temporal Variation in Freshwater Microbial Communities in the Yeongsan River, Korea**  
T. Unno<sup>1</sup>, S. Park<sup>2</sup>, J. Chung<sup>3</sup>; <sup>1</sup>Jeju Natl. Univ., Jeju-Si, Republic of Korea, <sup>2</sup>Natl. Inst. of Environmental Res., Incheon, Republic of Korea, <sup>3</sup>Natl. Inst. of Environmental Res., Incheon, Republic of Korea
- 689 Hydrocarbon Degrading Bacteria in the Warm Oligotrophic Deep Eastern Mediterranean**  
S. M. Techtman<sup>1,2,3</sup>, J. L. Fortney<sup>1,2,3</sup>, D. C. Joyner<sup>1,2,3</sup>, A. M. Rocha<sup>1,2,3</sup>, T. D. Linley<sup>4</sup>, T. C. Hazen<sup>1,2,3,5,6</sup>; <sup>1</sup>Dept. of Civil & Environmental Engineering, Univ. of Tennessee, Knoxville, TN, <sup>2</sup>Ctr. for Environmental Biotechnology, Univ. of Tennessee, Knoxville, TN, <sup>3</sup>BioSci. Div., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>4</sup>Oceanlab, Univ. of Aberdeen, Newburgh, United Kingdom, <sup>5</sup>Dept. of Microbiol., Univ. of Tennessee, Knoxville, TN, <sup>6</sup>Dept. of Earth & Planetary Sci., Univ. of Tennessee, Knoxville, TN
- 690 Iron in the Wind Microbes in the Water: Effect of Saharan Dust on *Vibrio* Growth**  
J. R. Westrich<sup>1</sup>, D. Griffin<sup>2</sup>, E. K. Lipp<sup>1</sup>; <sup>1</sup>Univ. of Georgia, Athens, GA, <sup>2</sup>United States Geological Survey, Tallahassee, FL
- 691 Inter-depth Associations Between Marine Bacterial Communities in a Ten Year Time Series**  
J. A. Cram<sup>1</sup>, L. Xia<sup>1</sup>, D. Needham<sup>1</sup>, R. Sachdeva<sup>1</sup>, C-E. Chow<sup>2</sup>, A. E. Parada<sup>1</sup>, J. Steele<sup>3</sup>, J. A. Fuhrman<sup>1</sup>; <sup>1</sup>Univ. of Southern California, Los Angeles, CA, <sup>2</sup>Univ. of British Columbia, Vancouver, BC, Canada, <sup>3</sup>California Inst. of Technology, Pasadena, CA
- 692 Characterization of the Deep-sea Microbial Community in Monterey Bay, CA Using Autonomous Instrumentation and Traditional Laboratory Methods**  
C. M. Preston<sup>1</sup>, A. C. Mosier<sup>2</sup>, C. A. Francis<sup>3</sup>, D. Pargett<sup>1</sup>, B. Roman<sup>1</sup>, S. Jensen<sup>1</sup>, R. Marin, III<sup>1</sup>, E. Demir<sup>1</sup>, W. Ussler<sup>1</sup>, J. Birch<sup>1</sup>, C. A. Scholin<sup>1</sup>; <sup>1</sup>Monterey Bay Aquarium Res. Inst., Moss Landing, CA, <sup>2</sup>Dept. of Earth and Planetary Sci., Univ. of California, Berkeley, Berkeley, CA, <sup>3</sup>Environmental Earth System Sci., Stanford Univ., Stanford, CA
- 693 Application of Illumina-based Microbial Community Analysis for Freshwater Quality Monitoring**  
T. Unno<sup>1</sup>, S. Park<sup>2</sup>, J. Chung<sup>3</sup>; <sup>1</sup>Jeju Natl. Univ., Jeju-Si, Republic of Korea, <sup>2</sup>Natl. Inst. of Environmental Res., Incheon, Republic of Korea, <sup>3</sup>Natl. Inst. of Environmental Res., Incheon, Republic of Korea

## 053 Biogeochemistry (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 694 Physiology of Nitrate-reducing Anaerobes Isolated from Background and Nitrate-contaminated Groundwater at Oakridge Frc**  
J. Huang<sup>1</sup>, A. Pettenato<sup>1</sup>, M. Schicklberger<sup>1</sup>, A. M. Deutschbauer<sup>1</sup>, A. M. Rocha<sup>2</sup>, D. B. Watson<sup>3</sup>, T. C. Hazen<sup>2</sup>, A. P. Arkin<sup>1</sup>, R. Chakraborty<sup>1</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>2</sup>Univ. of Tennessee, Knoxville, TN, <sup>3</sup>Oakridge Natl. Lab, Knoxville, TN
- 695 Comparison of C:N:P Stoichiometry in New Mexican Caves**  
N. G. Martinez, D. E. Northup, R. L. Sinsabaugh; Univ. of New Mexico, Albuquerque, NM
- 696 Regulation of Nitrate/Nitrite Reduction Pathways in *Shewanella loihica* Strain PV-4**  
S. Yoon<sup>1</sup>, R. A. Sanford<sup>2</sup>, K. M. Ritalahti<sup>1</sup>, F. E. Loeffler<sup>1,3</sup>; <sup>1</sup>Univ. of Tennessee, Knoxville, TN, <sup>2</sup>Univ. of Illinois, Urbana, IL, <sup>3</sup>Oak Ridge Natl. Lab., Oak Ridge, TN
- 697 Microscale Quantification of the Effects of Bacterial Chemotaxis on the Utilization of Dissolved Organic Matter from Phytoplankton**  
S. Smriga<sup>1</sup>, V. Fernandez<sup>1</sup>, J. G. Mitchell<sup>2</sup>, R. Stocker<sup>1</sup>; <sup>1</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>2</sup>Flinders Univ., Adelaide, Australia



**698 Methane Associated Microbial Community and Activity in the Lateral Bays of the Columbia River Estuary**  
J. Roque<sup>1</sup>, J. MacLean<sup>1</sup>, F. Prah<sup>2</sup>, T. Peterson<sup>3</sup>, G. Nyerges<sup>1</sup>; <sup>1</sup>Pacific Univ., Forest Grove, OR, <sup>2</sup>OSU, Corvallis, OR, <sup>3</sup>OHSU CMOP, Beaverton, OR

**699 Characterization of a Novel Methanotrophic Mutant Defective in Methanobactin Production**  
J. D. Semrau<sup>1</sup>, S. Jagadevan<sup>1</sup>, A. A. DiSpirito<sup>2</sup>, A. Khalifa<sup>3</sup>, J. Scanlan<sup>3</sup>, A. Vorobev<sup>1</sup>, D. Haft<sup>4</sup>, S. Vuilleumier<sup>5</sup>, J. Murrell<sup>6</sup>; <sup>1</sup>Univ. of Michigan, Ann Arbor, MI, <sup>2</sup>Iowa State Univ., Ames, IA, <sup>3</sup>Univ. of Warwick, Coventry, United Kingdom, <sup>4</sup>J. Craig Ventner Inst., Rockville, MD, <sup>5</sup>Univ. de Strasbourg, Strasbourg, France, <sup>6</sup>Univ. of East Anglia, Norwich, United Kingdom

**700 Patterns of Nitrogen-cycling Microbial Abundance and Diversity Across a Salt Marsh Landscape**  
L. Frankel, S. Goldstein, C. Zazueta-Ramirez, S. Matthews, A. E. Bernhard; Connecticut Coll., New London, CT

**701 Seasonal Nitrogen Cycling Processes in Bed Sediments from the Yukon River at Pilot Station II: Characterizing the Relationship Between Bacterial Community Structure and Denitrification Rate Potentials**  
J. C. Underwood<sup>1</sup>, D. A. Repert<sup>1</sup>, R. L. Smith<sup>1</sup>, B. Song<sup>2</sup>, R. W. Harvey<sup>1</sup>; <sup>1</sup>United States Geological Survey, Boulder, CO, <sup>2</sup>Virginia Inst. of Marine Sci., Gloucester Point, VA

**702 Cheatgrass Invasion of Sagebrush Steppe Increases Rates of Atmospheric Methane Consumption in Soils by Relieving Inhibition due to Sagebrush Terpenes**  
C. F. Weber<sup>1</sup>, J. S. Lockhart<sup>1</sup>, G. M. King<sup>2</sup>; <sup>1</sup>Idaho State Univ., Pocatello, ID, <sup>2</sup>Louisiana State Univ., Baton Rouge, LA

**703 Diel Nitrogen Fixation Dynamics in an Intertidal Photosynthetic Microbial Mat From Great Sippewissett Marsh, Ma**  
H. J. Smith<sup>1</sup>, S. H. Zinder<sup>2</sup>, D. H. Buckley<sup>3</sup>; <sup>1</sup>Montana State Univ., Ctr. for Biofilm Engineering and the Dept. for Land Resources and Environmental Sci., Bozeman, MT, <sup>2</sup>Cornell Univ., Dept. of Microbiol., Ithaca, NY, <sup>3</sup>Cornell Univ., Dept. of Crop and Soil Sci., Ithaca, NY

**704 Exploring Nitrogen Cycling Through the Use of Stable Isotope Probing**  
M. B. Morando, D. G. Capone; Univ. of Southern California, Los Angeles, CA

**705 Impacts of Nitrogen Limitation on the Distribution and Activities of Methanogens in a Nutrient Impacted Wetland**  
A. V. Ogram, H-S. Bae; Univ. of Florida, Gainesville, FL

**706 Probing the Pigments and Physiology of Modern Cyanobacterial Mats that are Analogs of Life on Early Earth**  
M. Snider; Grand Valley State Univ., Allendale, MI

**707 A Metaproteomic Assessment of the Microbial Loop During Algal Bloom Formation**  
D. Russo, J. Pandhal; Univ. of Sheffield, Sheffield, United Kingdom

**708 Dilution to Extinction Screening of a Coastal Microbial Community to Identify Isolates Degrading High-Molecular-Weight Dissolved Organic Matter**  
O. Sosa<sup>1</sup>, S. Gifford<sup>1</sup>, D. Repeta<sup>2</sup>, E. DeLong<sup>1</sup>; <sup>1</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>2</sup>Woods Hole Oceanographic Inst., Woods Hole, MA

**709 Forest Harvesting Affects Lignocellulose Catabolism potential of Soil Microbial Communities in the Interior Douglas Fir Ecozone of Canada**  
E. Cardenas, K. Mitchell, M. Scofield, S. Hallam, W. H. Mohn; Univ. of British Columbia, Vancouver, BC, Canada

**710 Navigating the Soil Microbial Food Web: Using <sup>13</sup>C-Stable Isotope Probing to Track Carbon Cycling in Complex Microbial Communities**  
A. N. Campbell, S. T. Berthrong, C. P. Pepe-Ranney, C. N. Koechli, D. H. Buckley; Cornell Univ., Ithaca, NY

**711 Synergistic Interactions Among Salt Marsh Bacteria in the Degradation of Lignocellulose**  
Y. Deng, S. Y. Wang; Univ. of Southern Mississippi, Hattiesburg, MS

## 054 Bioremediation & Engineered Environments (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**712 Promoted Reduction of Tellurite and Formation of Extracellular Tellurium Nanorods by Concerted Reaction between Iron and *Shewanella oneidensis* MR-1**  
D-H. Kim<sup>1</sup>, M-G. Kim<sup>2</sup>, S. Park<sup>1</sup>, H-G. Hur<sup>1</sup>; <sup>1</sup>Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea, <sup>2</sup>Pohang Accelerator Lab., Pohang, Republic of Korea

**713 Identification of PHB Producing Bacteria in Wastewater and the Effects of Manufactured Nanoparticles on PHB Production**  
L. C. Van De Werfhorst<sup>1</sup>, J. H. Priester<sup>1</sup>, A. Horst<sup>1</sup>, L. M. Tom<sup>2</sup>, Y. Piceno<sup>2</sup>, G. L. Andersen<sup>2</sup>, P. A. Holden<sup>1</sup>; <sup>1</sup>Univ. of California, Santa Barbara, Santa Barbara, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**714 Injection of Nitrate as a Competing Electron Acceptor during Stimulation for Cr(VI) Reduction Alters the Microbial Population in Groundwater and Surrogate Sediments**  
K. B. Bowen De Leon<sup>1</sup>, B. D. Ramsay<sup>1</sup>, D. R. Newcomer<sup>2</sup>, B. Faybishenko<sup>3</sup>, T. C. Hazen<sup>4,5</sup>, M. W. Fields<sup>1</sup>; <sup>1</sup>Montana State Univ., Bozeman, MT, <sup>2</sup>Pacific Northwest Natl. Lab., Richland, WA, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>4</sup>Univ. of Tennessee, Knoxville, TN, <sup>5</sup>Oak Ridge Natl. Lab., Oak Ridge, TN

**715 Characterization of Methanogen Diversity in Nursery, Finishing, and Sow Swine Waste Lagoon Systems**  
J. A. Ufnar<sup>1</sup>, J. A. Nelson<sup>1</sup>, C. Flood<sup>2</sup>, R. D. Ellender<sup>2</sup>; <sup>1</sup>Southern Vermont Coll., Bennington, VT, <sup>2</sup>Univ. of Southern Mississippi, Hattiesburg, MS

**716 Prevalence and Characterization of Tetrathionate-Reducing Bacteria Isolated from Environmental Samples**  
A. L. Carr, A. M. Spain; Ferris State Univ., Big Rapids, MI

**717 Systems Biology Approaches Predict Inorganic N Regulation of *xylM* and *xylE* Gene Expressions and Xylene Degradation by *Pseudomonas putida* mt-2 in Soil Microcosms**  
N. B. Svenningsen<sup>1</sup>, M. H. Nicolaisen<sup>1</sup>, V. de Lorenzo<sup>2</sup>, J. Sorensen<sup>1</sup>, O. Nybroe<sup>1</sup>; <sup>1</sup>Univ. of Copenhagen, Copenhagen, Denmark, <sup>2</sup>Ctr. Natl. de Biotecnologia, CSIC, Madrid, Spain

**718 Microbiome of a Clean Room and its Associated Environment**  
A. Mahnert<sup>1,2</sup>, P. Vaishampayan<sup>2</sup>, K. Venkateswaran<sup>2</sup>, G. Berg<sup>1</sup>; <sup>1</sup>Inst. for Environmental Biotechnology, Graz Univ. of Technology, Graz, Austria, <sup>2</sup>Biotechnology and Planetary Protection Group, Jet Propulsion Lab., California Inst. of Technology, Pasadena, CA

**719 Molecular Study of Bacterial Community from Surface Water Treatment Using Prebiofilters**  
T. Wu, M. Sabula, G. Fu; Georgia Southern Univ., Statesboro, GA

**720 Molecular Analysis of Fungal Diversity and Dynamics Associated with Crude Oil Bioremediation in Contaminated Soil**  
C. B. Chikere; Univ. of Port Harcourt, Nigeria, Port Harcourt, Nigeria

**721 Chromium as a Geochemical Determinant of Microbial Community Structure and Function**  
A. C. Somenahally<sup>1</sup>, J. J. Mosher<sup>1</sup>, R. A. Hurt, Jr.<sup>1</sup>, T. J. Phelps<sup>1</sup>, S. D. Brown<sup>1</sup>, M. Podar<sup>1</sup>, A. V. Palumbo<sup>1</sup>, T. C. Hazen<sup>2</sup>, A. P. Arkin<sup>3</sup>, D. A. Eliast<sup>1</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Univ. of Tennessee, Knoxville, TN, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**722 Investigation of the Microbial Community in the Mixed Plug-Flow Loop Reactor (MPFLR) Fed with Dairy Manure**  
Y-F. Li, Z. Yu; The Ohio State Univ., Columbus, OH



- 723 Polyvinyl acetate Degradation by Bacteria Isolated from Paper Recycled Industry in Chihuahua Mexico**  
A. Levario-Gómez<sup>1</sup>, J. Peregrina<sup>2</sup>, L. Ballinas-Casarrubias<sup>1</sup>, C. I. Saenz Marta<sup>1</sup>, M. Sánchez<sup>2</sup>, M. Sánchez<sup>2</sup>, G. Mendoza<sup>2</sup>, J. Meneses<sup>2</sup>, E. Duarte<sup>2</sup>, G. V. Nevárez-Moorillón<sup>1</sup>; <sup>1</sup>Univ. Autónoma de Chihuahua, Chihuahua, Chih., Mexico, <sup>2</sup>COPAMEX, Chihuahua, Chih., Mexico
- 724 Use of High-throughput Screening to Measure Short-term Cytotoxicity of Nano-titanium Dioxide to Common Stream Bacteria and Bacterial Communities in Natural Surface Waters**  
B. T. Chu<sup>1</sup>, T. Tong<sup>2</sup>, K. Gray<sup>2</sup>, J-F. Gaillard<sup>2</sup>, J. Kelly<sup>1</sup>; <sup>1</sup>Dept. of Biol., Loyola Univ. Chicago, Chicago, IL, <sup>2</sup>Dept. of Civil and Environmental Engineering, Northwestern Univ., Evanston, IL
- 725 Succession of Biofilm Microbial Community during Nitrification in Lab-Scale Reactors Simulating Chloraminated Drinking Water Distribution System Conditions: The Impact of Simultaneously Increasing Monochloramine and Chlorine to Nitrogen Mass Ratios**  
V. Gomez-Alvarez, K. A. Schrantz, J. G. Pressman, D. G. Wahman; EPA, Office of Res. and Dev., Cincinnati, OH
- 726 Microbially-Catalyzed Anaerobic Uranium Oxidation in Subsurface Sediments**  
O. M. Healy, T. Spanbauer, A. Heithoff, D. D. Snow, D. Pan, K. A. Weber; Univ. of Nebraska-Lincoln, Lincoln, NE
- 727 Effect of Algal Species Identity on the Development of Denitrifying Bacterial Communities in Periphytic Biofilms**  
M. Rojas<sup>1</sup>, K. N. Kalscheur<sup>2</sup>, K. A. Gray<sup>2</sup>, C. G. Peterson<sup>1</sup>, J. J. Kelly<sup>1</sup>; <sup>1</sup>Loyola Univ. Chicago, Chicago, IL, <sup>2</sup>Northwestern Univ., Evanston, IL
- 728 Distribution of General and Rare Bacterial Taxa in an Activated Sludge Bioreactor**  
S-H. Lee<sup>1</sup>, T-S. Kim<sup>1</sup>, J-Y. Jeong<sup>2</sup>, H-D. Park<sup>1</sup>; <sup>1</sup>Korea Univ., Seoul, Republic of Korea, <sup>2</sup>Dept. of Water Quality Res., Gyeonggi-do Inst. of Hlth. and Environment, Suwon, Republic of Korea
- 729 Petroleum Degradation by Northern Gulf of Mexico Vibrios**  
D. J. Grimes, A. R. Flowers, S. Shen; Univ. of Southern Mississippi, Oceans Springs, MS
- 730 Establishment and Early Succession of Bacterial Communities in Monochloramine-treated Drinking Water Biofilms**  
R. P. Revetta<sup>1</sup>, V. Gomez-Alvarez<sup>1</sup>, T. L. Gerke<sup>2</sup>, C. Curioso<sup>1</sup>, J. W. Santo Domingo<sup>1</sup>, N. J. Ashbolt<sup>1</sup>; <sup>1</sup>EPA, Cincinnati, OH, <sup>2</sup>ORISE, EPA, Cincinnati, OH
- 731 Temporal Dynamics of a Methanotroph Community in a Methane Biofilter Using Culture Dependent and Molecular Approaches**  
M. Miazga-Rodriguez, K. D. Kits, L. Y. Stein; Univ. of Alberta, Edmonton, AB, Canada
- 733 Pristine and Contaminated Environments Yield Robust Trichloroethene to Ethene-Respiring Consortia: The Impact of Enrichment Techniques**  
A. G. Delgado, K. G. Nelson, H. Y. Done, D. Fajardo-Williams, M. Ziv-El, J. F. Miceli, III, D-W. Kang, R. Krajmalnik-Brown; Arizona State Univ., Tempe, AZ
- 734 A Survey of Antibiotic Resistant Bacteria in Sewage Treatment Plant**  
T. Everage, R. Boopathy; Nicholls State Univ., Thibodaux, LA
- 735 Amplification and Sequence Analysis of the alk M Gene from a Strain of *Acinetobacter baumannii* Isolated from a Refinery Oil Sludge**  
A. G. Sarmago, F. M. Hermo, C. T. Hedreya; Univ. of the Philippines, Quezon City, Philippines

## 055 Extreme Environments (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 736 Comparison of Microbial Diversity in a Potash and Freshwater Lake in the Sandhills Region of Nebraska**  
J. J. Shaffer, B. White, D. M. Simon; Univ. of Nebraska-Kearney, Kearney, NE
- 737 Metagenomic Analysis of Autotrophic and Chemolithotrophic Microbial Communities in Dark Fumarolic Ice Cave of Mt. Erebus, Antarctica**  
M. S. Guzman<sup>1</sup>, R. E. Davis<sup>1</sup>, R. Anitori<sup>1</sup>, L. Connell<sup>2</sup>, H. Staudigel<sup>3</sup>, B. M. Tebo<sup>1</sup>; <sup>1</sup>Inst. of Environmental Hlth., Oregon Hlth. & Sci. Univ., Beaverton, OR, <sup>2</sup>Sch. of Marine Sci., Univ. of Maine, Orono, ME, <sup>3</sup>Scripps Inst. of Oceanography, UC San Diego, La Jolla, CA
- 738 Screening Microbial Communities from Extreme Environments in a Carboxylate Platform for Cellulosic Biofuel Production and Evaluating Community Compositions Found During Superior Performance**  
J. Cope, A. M. Hammett, E. Kolomiets, A. K. Forrest, K. W. Golub, T. J. Dewitt, M. T. Holtzapple, T. J. Gentry, H. H. Wilkinson; Texas A&M Univ., College Station, TX
- 739 WITHDRAWN**
- 740 It's Getting Hot in Here: Phylogeny of Replicase Genes in Hydrothermal Viral and Microbial Assemblages**  
J. M. Chopyk<sup>1</sup>, E. G. Sakowski<sup>1</sup>, H. F. Schmidt<sup>1</sup>, D. J. Nasko<sup>1</sup>, L. A. Zeigler Allen<sup>2</sup>, B. P. Hedlund<sup>3</sup>, D. A. Mead<sup>4</sup>, T. W. Schoenfeld<sup>4</sup>, K. Wommack<sup>1</sup>, S. W. Polson<sup>1</sup>; <sup>1</sup>Univ. of Delaware, Newark, DE, <sup>2</sup>J. Craig Venter Inst., San Diego, CA, <sup>3</sup>Univ. of Nevada Las Vegas, Las Vegas, NV, <sup>4</sup>Lucigen Corp., Madison, WI
- 741 Cultivation-dependent and Independent Characterization of Unique Geothermally Heated Hawaiian Microbial Mats**  
M. Russell, G. M. King; Louisiana State Univ., Baton Rouge, LA
- 742 Diversity of Extremophiles in Salt Flats of Bolivia and Puerto Rico**  
M. Iriarte<sup>1</sup>, D. Colon-Maldonado<sup>2</sup>, T. M. Santiago-Rodriguez<sup>2,3</sup>, M. Coradin<sup>2</sup>, A. Veizaga<sup>1</sup>, W. Hinojosa<sup>1</sup>, C. A. Perez<sup>1</sup>, J. Soto-Santiago<sup>2</sup>, M. Rivera-Velez<sup>2</sup>, J. I. Rivera<sup>2</sup>, R. J. Cano<sup>4</sup>, G. A. Toranzo<sup>2</sup>; <sup>1</sup>Univ. Mayor de San Simon, Cochabamba, Bolivia, Plurinational State of, <sup>2</sup>Univ. of Puerto Rico, San Juan, PR, <sup>3</sup>Univ. of Puerto Rico, Rio Piedras Campus, PR, <sup>4</sup>California Polytechnic State Univ., San Luis Obispo, CA
- 743 Microbialites in the Hypersaline, Light-limiting Waters of Storr's Lake, Bahamas**  
V. G. Paul<sup>1</sup>, D. J. Wronkiewicz<sup>1</sup>, M. R. Mormile<sup>1</sup>, J. S. Foster<sup>2</sup>; <sup>1</sup>Missouri Univ. of Sci. and Technology, Rolla, MO, <sup>2</sup>Univ. of Florida-Gainesville, Gainesville, FL
- 744 Microbial Diversity of Oligotrophic Wetlands in the Desert of Cuatro Ciénegas, Coahuila, Mexico**  
A. Cervantes<sup>1</sup>, N. Balagurusamy<sup>2</sup>, D. Huber<sup>3</sup>; <sup>1</sup>Univ. Autónoma de Coahuila, Coahuila, Mexico, <sup>2</sup>Univ. Autónoma de Coahuila, Institute, Mexico, <sup>3</sup>West Virginia State Univ., Institute, WV
- 745 Isolation and Identification of Fungi from Springwater Thermal from Chihuahua Desert: Ojo De Dolores, Jimenez, Chihuahua North of Mexico**  
G. S. Silva-Gonzalez, L. N. Muñoz-Castellanos, R. Peralta-Perez, V. Nevarez-Moorillon, F. J. Zavala-Diaz de la Serna; Facultad de Ciencias Químicas Uach, Chihuahua, Mexico
- 746 Genetic Diversity and Halotolerance of Actinomycetes Isolated from Vegetated and Unvegetated Areas of the Great Salt Plains of Oklahoma**  
A. H. Gad, M. K. Fakhr; The Univ. of Tulsa, Tulsa, OK

**056 Lignocellulose Degradation (Division Q)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 747 Isolation of a Microbe from Pulp Mill Sources with Potential to Deconstruct Pulping Waste**  
S. L. Mathews, J. Pawlak, A. Grunden; North Carolina State University, Raleigh, NC
- 748 Adaptation of *Shewanella oneidensis* towards Mixed-Sugar Utilization**  
R. Sekar, T. DiChristina; Georgia Inst. of Technology, Atlanta, GA
- 749 Direct Image-Based Enumeration of Microbes Decomposing Plant Biomass Feedstocks**  
J. G. Alvelo-Maurosa, S. J. Lee, T. A. Warnick, S. P. Hazen, S. B. Leschine; Univ. of Massachusetts, Amherst, MA
- 750 Evaluating The Role of a Bacterial and Fungal Co-culture in Microbial Pretreatment of Plant Biomass**  
A. Ranganathan, B. Z. Fathepure; Oklahoma State Univ., Stillwater, OK
- 751 Production of Triacylglycerols from Lignocellulosic Biomass**  
B. Wang<sup>1</sup>, Y. H. Rezenom<sup>1</sup>, K-C. Cho<sup>1</sup>, D. Lee<sup>2</sup>, J. J. Gill<sup>1</sup>, R. Young<sup>1</sup>, K-H. Chu<sup>1</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>Univ. of California, Santa Barbara, CA
- 752 The Passalid Beetle (*Odontotaenius disjunctus*) and Its Microbial Functional Potential: Lignocellulosic Deconstruction to Potential Biofuels**  
J. A. Ceja-Navarro<sup>1</sup>, M. Nyyssönen<sup>1</sup>, M. Bill<sup>1</sup>, M. Conrad<sup>1</sup>, Z. Hao<sup>1</sup>, T. Filley<sup>2</sup>, J. Pett-Ridge<sup>3</sup>, E. L. Brodie<sup>1</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>2</sup>Purdue Univ., West Lafayette, IN, <sup>3</sup>Lawrence Livermore Natl. Lab., Livermore, CA
- 753 Transcriptomic Analysis of Cellulosomal Genes Expressed in Cellulolytic *Clostridiaceae***  
Y. Lee, Y. Huang, C. L. Hemme, Z. Shi, Y. Deng, T. Yuan, Z. He, L. Wu, J. Zhou; The Univ. of Oklahoma, Norman, OK
- 754 Fungal Degradation of Lignocellulosic Residues to Enhance their Nutritive Value and Production of Lignocellulolytic Enzymes**  
R. K. Sharma<sup>1</sup>, D. S. Arora<sup>2</sup>; <sup>1</sup>The Maharaja Sayajirao Univ. of Baroda, Vadodara, India, <sup>2</sup>Guru Nanak Dev Univ., Amritsar, India
- 755 Fundamental Analysis of Synergistic Saccharification of Cellulose by Three Types Of Cellulases Displayed on Yeast Cell Surface**  
J. Bae, K. Kuroda, M. Ueda; Kyoto Univ., Kyoto, Japan
- 756 Characterization of Thermophilic Compost Communities for Cellulosic Biofuel Production**  
J. Hiras<sup>1,2</sup>, B. A. Simmons<sup>1,3</sup>, S. W. Singer<sup>1,4</sup>; <sup>1</sup>Joint BioEnergy Inst., Emeryville, CA, <sup>2</sup>Physical BioSci. Div., Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Biomass Sci. and Conversion Technology Dept., Sandia Natl. Lab., Livermore, CA, <sup>4</sup>Earth Sci. Div., Lawrence Berkeley Natl. Lab., Berkeley, CA
- 757 Identification of Putative Gene Clusters Involved in Lignocellulose Degradation by Psychrotolerant *Paenibacillus* Sp. Strain Ec1**  
E. Choi<sup>1</sup>, E. Ahn<sup>1</sup>, D. Kim<sup>2</sup>, E. Kim<sup>1</sup>; <sup>1</sup>Yonsei Univ., Seoul, Republic of Korea, <sup>2</sup>Polar Bio Ctr., KORDI, Incheon, Republic of Korea
- 758 Molecular and Physiological Insight into Bacterial Degradation of Lignin in Plant Biomass**  
B. Z. Fathepure, M. Prabhakaran, A. Ranganathan, B. Couger, P. Canaan, R. Prade; Oklahoma State Univ., Stillwater, OK
- 759 Controlled Microbial Degradation of *Magnifera indicia* Peels**  
R. A. O. Gabriel-Ajobiwe<sup>1</sup>, O. C. Mabayoje-Bali<sup>2</sup>; <sup>1</sup>Federal Univ., Oye-Ekiti, Oye-Ekiti, Nigeria, <sup>2</sup>Adekunle Ajasin Univ., Akungba-Akoko, Nigeria

**057 Microbial Biodegradative Community Analysis (Division Q)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 760 Eco-Friendly and Efficient Restoration of the Constructed Sea Stream by Bioaugmentation of a Microbial Consortium (BM-S-1)**  
S-H. Kim<sup>1</sup>, K-C. Jeong<sup>1</sup>, K. Ekpeghere<sup>1</sup>, J. Yang<sup>1</sup>, S-Y. Ha<sup>1</sup>, I-S. Kim<sup>1</sup>, S. Kang<sup>2</sup>, H-G. Kim<sup>3</sup>, S-C. Koh<sup>1</sup>; <sup>1</sup>Korea Maritime Univ., Busan, Republic of Korea, <sup>2</sup>Daegu Univ., Daegu, Republic of Korea, <sup>3</sup>BM, Inc., Busan, Republic of Korea
- 761 Improving Waste Hydrolysis Rates during Anaerobic Digestion via Microbial Community Adaptation**  
P. Wilson, S. De Long; Colorado State Univ., Fort Collins, CO
- 762 Applying Innovative Environmental Molecular Diagnostics (EMDs) for Informing Bioremediation at Contaminated Sites**  
W. Sun, L. McGuinness, L. Kerkhof, M. Haggblom, D. Fennell; Rutgers Univ., New Brunswick, NJ
- 763 Linking Microbial Ecology to Geochemistry in Sulfate Reducing Systems**  
D. M. Drennan<sup>1</sup>, I. Lee<sup>2</sup>, L. Landkamer<sup>1</sup>, L. Figueroa<sup>1</sup>, S. Webb<sup>3</sup>, J. O. Sharp<sup>1</sup>; <sup>1</sup>Colorado Sch. of Mines, Golden, CO, <sup>2</sup>Freeport McMoRan Copper and Gold, AZ, <sup>3</sup>Stanford Synchrotron Radiation Light Source, CA
- 764 Inhibition of Biosouring and Microbial Community Changes in Sediment Packed Flow-Through Columns Treated With (Per)chlorate or Nitrate**  
A. L. Engelbrekton<sup>1</sup>, A. Boussina<sup>1</sup>, Y. Piceno<sup>2</sup>, Y. Jin<sup>1</sup>, Y. Peled<sup>3</sup>, J. Patel<sup>1</sup>, G. Anderson<sup>2</sup>, J. D. Coates<sup>1</sup>; <sup>1</sup>Univ. Of California, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Univ. Of California, Santa Cruz, CA
- 765 Screening of a Metagenomic Library from Polluted Subantarctic Sediments for the Identification of Gene Clusters Involved in Hydrocarbon Biodegradation**  
C. L. Loviso, L. M. Guibert, S. Sarango, M. Lozada, H. M. Dionisi; Ctro. Nac. Patagónico (CENPAT-CONICET), Puerto Madryn, Chubut, Argentina
- 766 A Metagenomic Study of the Bioremediation Potential Within the Sediment Microbial Communities of an Urban Estuary**  
M. Vangala<sup>1</sup>, K. Okamoto<sup>2</sup>, J. Miller<sup>3</sup>, J. P. Dustin<sup>3</sup>, S. Matar<sup>4</sup>, S. M. Ni Chadhain<sup>5</sup>, S. Jones<sup>6</sup>, L. A. Launen<sup>3</sup>; <sup>1</sup>Vermont Genetics Network, Norwich Univ., Norwich, VT, <sup>2</sup>Univ. of New Hampshire Hubbard Ctr. for Genomic Studies, Durham, NH, <sup>3</sup>Dept. of Biol., Keene State Coll., Keene, NH, <sup>4</sup>Dept. of Chemistry, Keene State Coll., Keene, NH, <sup>5</sup>Dept. of Biol., Univ. of South Alabama, Keene, NH, <sup>6</sup>Jackson Estuarine Lab., Univ. of New Hampshire, Durham, NH
- 767 Meta-Transcriptomic Analysis of Microbial Community Response to Arsenic Exposure**  
N. Hamamura<sup>1</sup>, H. Huang<sup>1</sup>, N. Damdinsuren<sup>2</sup>; <sup>1</sup>Ehime Univ., Matsuyama, Ehime, Japan, <sup>2</sup>Natl. Univ. of Mongolia, Ulaanbaatar, Mongolia
- 768 Diversity of Microbial Functional Communities during Long-term Cr(VI) Immobilization Stimulated with a Slow-release Substrate in the Hanford Aquifer**  
P. Zhang<sup>1</sup>, R. Chakraborty<sup>2</sup>, J. Van Nostrand<sup>1</sup>, Z. He<sup>1</sup>, D. Curtis<sup>1</sup>, Y. Deng<sup>1</sup>, T. Hazen<sup>3</sup>, A. Arkin<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Univ. of Tennessee, Knoxville, TN
- 769 Using 15N-Stable Isotope Probing to Identify Active RDX-Utilizing Microorganisms Under Different Electron-Accepting Conditions**  
K-C. Cho<sup>1</sup>, M. E. Fuller<sup>2</sup>, P. B. Hatzinger<sup>2</sup>, K-H. Chu<sup>1</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>Shaw Environmental, Inc., Lawrenceville, NJ

- 770 Alkane Hydroxylase Diversity in Tidal Marsh Sediments Before and After Petroleum Hydrocarbon Exposure**  
J. L. Miller<sup>1</sup>, J. P. Dustin<sup>1</sup>, S. Matar<sup>1</sup>, J. Trethewey<sup>1</sup>, S. Jones<sup>2</sup>, S. M. Ni Chadhain<sup>3</sup>, L. A. Launen<sup>1</sup>; <sup>1</sup>Keene State Coll., Keene, NH, <sup>2</sup>Univ. of New Hampshire, Durham, NH, <sup>3</sup>Univ. of South Alabama, Mobile, AL
- 771 Bacterial Degradation of Aliphatic Alkanes across Ecosystems in Puerto Rico**  
Y. Bernier-Casillas, S. A. Cantrell, J. R. Pérez-Jiménez; Univ. del Turabo, Gurabo, PR
- 772 Changes in the Population Structure Do Not Imply Shift in the Genetic Pool of a Bacteria Consortium During Degradation of Complex Hydrocarbons**  
M. Canul-Chan, A. González-Burgos, N. Estrella-Gómez, A. Zepeda-Pedreguera, R. Rojas-Herrera; Univ. Autónoma de Yucatán, Mérida, Mexico
- 773 Characterization of Microbial Communities Mediating Anaerobic Biodegradation of Petroleum Hydrocarbons along a Depth Transect in LNAPL Zones**  
M. Irianni Renno, A. Byrne, D. Akhbari, T. Sale, S. K. De Long; Colorado State Univ., Fort Collins, CO
- 774 Deconstructing Microbial Community Profiles in Hydraulic Fracturing Fluids to Elucidate *In situ* Subsurface Community Dynamics**  
M. I. Ansari<sup>1</sup>, P. Mouser<sup>1</sup>, A. Hartsock<sup>2</sup>, J. Macrae<sup>3</sup>; <sup>1</sup>Dept. of Civil, Environmental and Geodetic Engineering, Ohio State Univ., Columbus, OH, <sup>2</sup>Natl. Energy Technology Lab., U.S Dept. of Energy, Pittsburgh, PA, <sup>3</sup>Dept. of Civil and Environmental Engineering, Univ. of Maine, Orono, ME
- 775 Seasonal Variation in Metabolic Activity of Anaerobic Microbial Communities in Salt Marsh Sediments Impacted by the Deepwater Horizon Oil Spill**  
V. R. Perry<sup>1</sup>, M. A. Sanderson<sup>1</sup>, N. A. Sutton<sup>1</sup>, N. J. Patel<sup>1</sup>, D. M. Deocampo<sup>2</sup>, K-J. Chin<sup>1</sup>; <sup>1</sup>Dept. of Biol., Georgia State Univ., Atlanta, GA, <sup>2</sup>Dept. of GeoSci., Georgia State Univ., Atlanta, GA
- 776 Microbial Population Dynamics in Louisiana Coastal Marsh Sediments Following the Deepwater Horizon Oil Release**  
R. M. Atlas<sup>1</sup>, S. A. Faith<sup>2</sup>, D. M. Stoeckel<sup>2</sup>, A. Minard-Smith<sup>3</sup>, E. M. Heizer<sup>2</sup>, C. M. Bartling<sup>2</sup>, J. R. Thorn<sup>4</sup>; <sup>1</sup>Univ. of Louisville, Louisville, KY, <sup>2</sup>Battelle, Columbus, OH, <sup>3</sup>Battelle, Louisville, OH, <sup>4</sup>Battelle, Duxbury, MA
- 777 Biostimulation of Oil Polluted Soil Biodegradation by Native Consortium Bacteria**  
F. Merino-Rafael, E. Samanez, S. Gutierrez; San Marcos Univ., Lima, Peru
- 778 Distribution of Hydrocarbon-Degrading Nitrogen-Fixing Bacteria in the Rhizosphere of *Paspalum vaginatum* Sw.**  
A. E. Omotayo, A. Ajayi, O. O. Amund; Univ. of Lagos, Lagos, Nigeria
- 779 Time Course Community Analysis of Bacterial Retting Process of *Hibiscus cannabinus* by Sequencing of 16S rDNA Amplicons**  
D. K. Visi, M. S. Allen; Univ. of North Texas Hlth. Sci. Ctr., Fort Worth, TX
- 780 Trichloroethylene (TCE) Degradation By Sludge And Sediment Enriched Bacterial Consortium Under Different Carbon Source**  
C. Nguyen Phuong<sup>1</sup>, S-S. Lee<sup>2</sup>; <sup>1</sup>Dept. of Bio-Engineering, Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Life Sci., Coll. of Natural Sci., Kyonggi Univ., Suwon, Republic of Korea
- 781 Microbial Community Enriched with Methanol and Their ability to degrade Perchloroethylene (PCE) in Aerobic Condition**  
S. Srinivasan<sup>1</sup>, S-S. Lee<sup>2</sup>; <sup>1</sup>Basic Sci. Res. Inst., Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Life Sci., Kyonggi Univ., Suwon, Republic of Korea

- 782 Molecular Analysis of 4-fluorophenol Degradors from Five Wastewater Treatment Plants Using PCR-DGGE**  
G. N. Okpala<sup>1,2</sup>, R. J. Davenport<sup>2</sup>; <sup>1</sup>Univ. of Nigeria, Nsukka, Nigeria, <sup>2</sup>Univ. of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom
- 783 WITHDRAWN**
- 784 Variation in Wastewater Treatment Plant Microbial Communities Influences Biodegradability Predictions for Green Chemical Design**  
S. W. Aiello, B. K. Buehler, K. M. Docherty; Western Michigan Univ., Kalamazoo, MI
- 785 The Impact of Titanium Dioxide Nanoparticles on the Biological Nitrogen Removal from Wastewater and the Bacterial Community Shift in Activated Sludge**  
D. Li<sup>1</sup>, F. Cui<sup>1</sup>, N. Hou<sup>2</sup>, Z. Zhao<sup>1</sup>, X. Yang<sup>1</sup>; <sup>1</sup>Sch. of Municipal and Environmental Engineering Harbin Inst. of Technology, Harbin, China, <sup>2</sup>Coll. of Resources and Environment, Northeast Agricultural Univ., Harbin, China
- 786 Characterization of Biofilm-forming Bacteria from a Wastewater Treatment Reactor and Optimization of Conditions for Promoting Biofilm Formation**  
C. Li<sup>1</sup>, J. Sun<sup>1</sup>, X. Cheng<sup>2</sup>; <sup>1</sup>Coll. of Resource & Environment, Northeast Agricultural Univ., Harbin, China, <sup>2</sup>Coll. of First Clinical Med. of Harbin Med. Univ., Harbin, China
- 787 On-tundra Microbial Ecosystem Responses to Groundwater Contamination by 1,4-Dioxane, Chlorinated Solvents, and Hydrocarbons at Prudhoe Bay, Alaska**  
M. Li, Y. Yang, J. Mathieu, P. J. J. Alvarez; Rice Univ., Houston, TX

## 058 Mycobacterial Genetics and Biochemistry (Division U)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 788 Identification of Survival Genes in *Mycobacterium Tuberculosis* using Transposon Site Hybridization**  
K. M. Pulice; Univ. of Pittsburgh, Pittsburgh, PA
- 789 MenI: A Newly Identified Enzyme in Mycobacterial Menaquinone Biosynthesis**  
A. Upadhyay, M. R. McNeil, M. Jackson, D. Crick; Colorado State Univ., Fort Collins, CO
- 790 Dynamic Reprogramming of tRNA Modifications is Linked to Activation of the Dos Regulon in Hypoxia-induced Mycobacterial Dormancy**  
Y. H. Chionh<sup>1,2</sup>, F. Hia<sup>1</sup>, S. Alonso<sup>1,2</sup>, P. C. Dedon<sup>3,1</sup>; <sup>1</sup>Singapore-MIT Alliance for Res. and Tech, Singapore, Singapore, <sup>2</sup>Natl. Univ. of Singapore, Singapore, Singapore, <sup>3</sup>Massachusetts Inst. of Technology, Cambridge, MA
- 791 *Mycobacterium smegmatis* OhrR Mutant Strain Shows Remarkably Elevated Expression of Organic Hydroperoxide Reductase (ohr) and Resistance to Peroxide Stress**  
S. Saikolappan, K. Das, S. Dhandayuthapani; UT Hlth. Sci. Ctr. at San Antonio, Edinburg, TX
- 792 Cleavage of 23S rRNA by a Mycobacterial MazF Toxin: A Novel Mechanism for Potent Translation Inhibition**  
J. M. Schifano<sup>1</sup>, R. Edifor<sup>2</sup>, J. D. Sharp<sup>1,2</sup>, M. Ouyang<sup>3</sup>, A. Konkimalla<sup>1</sup>, R. N. Husson<sup>2</sup>, N. A. Woychik<sup>1</sup>; <sup>1</sup>Robert Wood Johnson Med. Sch. at Rutgers Univ., Piscataway, NJ, <sup>2</sup>Children's Hosp. Boston, Boston, MA, <sup>3</sup>Univ. of Louisville, Louisville, KY
- 793 The *M. tuberculosis* mel2 Locus Plays an Important Role in Lipid Production**  
H. K. Janagama, T. Sambou, J. D. Cirillo; Texas A&M Hlth. Sci. Ctr., Bryan, TX
- 794 WITHDRAWN**

**795 Identification of Small Extracellular RNA Fragments of *Mycobacterium Tuberculosis***

S. W. Sheldon<sup>1</sup>, L. Kingry<sup>2</sup>, R. Slayden<sup>1</sup>, D. Heaslip<sup>1</sup>, J. Belisle<sup>1</sup>;  
<sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Div. of Vetro-Borne Diseases, CDC, Fort Collins, CO

**796 Quantitative Expression of Selected Metabolic Enzyme Genes in *Mycobacterium leprae***

O. O. Ojo<sup>1</sup>, R. Lahiri<sup>1</sup>, L. B. Adams<sup>1</sup>, P. Wheeler<sup>2</sup>, T. Gillis<sup>1</sup>, D. L. Williams<sup>1</sup>;  
<sup>1</sup>Natl. Hansen's Disease Programs (NHDP), Lab. Res. Branch, Louisiana State Univ. Sch. of Vet. Med., Baton Rouge, LA, <sup>2</sup>Animal Hlth. Vet. Lab. Agency (Weybridge), New Haw, Surrey, United Kingdom

**797 Purification and Characterization of a NAD-dependent Deacetylase from *Mycobacterium smegmatis***

Y. Tan, Z. Xu, Y. Yao; Shanghai Jiao Tong Univ., Shanghai, China

**798 Mechanism of *Mycobacterium Tuberculosis* Antigen 85C Inhibition by Ebselen**

D. R. Ronning, L. Favrot, R. K. Marvin, D. Isailovic; Univ. of Toledo, Toledo, OH

**059 Eukaryotic Molecular Genetics (Division X)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**799 Analysis of Distinct Lysosomal Proteins Exposed Melanin on HeLa Cells and Melanocyte by Two-dimensional Polyacrylamide Gel Electrophoresis**

D. Park<sup>1</sup>, Y.-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Republic of Korea, <sup>2</sup>Chungbuk Natl. Univ., Republic of Korea

**800 PBA Treatment Did not Affect Grp78 Levels in *C. elegans* Following E.R. Stress Induction**

G. P. Le<sup>1</sup>, C.-A. Gutekunst<sup>2</sup>, R. E. Gross<sup>2</sup>, F. Norflus<sup>1</sup>; <sup>1</sup>Clayton State Univ., Morrow, GA, <sup>2</sup>Emory Univ., Atlanta, GA

**801 Determining Functional Specificity of Yeast Cytosolic Hsp70 Nucleotide Exchange Factors**

J. L. Abrams; UT Hlth. Houston, Houston, TX

**802 M1-Aminopeptidase Gene Deletions Affect *Saccharomyces cerevisiae* Cell Cycle Regulation**

B. J. Reeves, D. Caprioglio, H. Caprioglio; Colorado State Univ.-Pueblo, Pueblo, CO

**803 Evidence for Dependence of the GPCR Mediated Glucose Sensing Pathway on Components of the Pheromone Sensing Pathway in *Saccharomyces cerevisiae***

J. R. Brigati<sup>1</sup>, Z. A. Duck<sup>2</sup>, D. L. Haskins<sup>1</sup>, K. Selcer<sup>1</sup>, D. G. Willhite<sup>3</sup>, S. E. Wright<sup>2</sup>; <sup>1</sup>Maryville Coll., Maryville, TN, <sup>2</sup>Carson-Newman, Jefferson City, TN, <sup>3</sup>Tennessee Wesleyan Coll., Athens, TN

**804 Characterization of the Low Affinity Calcium Channel of *Saccharomyces cerevisiae***

L. G. Sanchez, J. L. Kepler, P. A. Marshall; Arizona State Univ. at the West Campus, Phoenix, AZ

**805 Sequencing and Comparison of Different *Saccharomyces cerevisiae* Strains Using the Hiseq 2500 and the Miseq with Different Data Handling Options.**

C. Teiling<sup>1</sup>, I. Chorny<sup>1</sup>, T. Prah<sup>2</sup>, A. Bass<sup>3</sup>, B. Steffy<sup>1</sup>, L. Miraglia<sup>4</sup>, S. Knowles<sup>1</sup>, C. White<sup>2</sup>; <sup>1</sup>Illumina, San Diego, CA, <sup>2</sup>White Labs, San Diego, CA, <sup>3</sup>Yonder Biol., Carlsbad, CA, <sup>4</sup>Genomics Inst. of Novartis, San Diego, CA

**806 Rho1-GTPase Activating Protein, Bem2 is Required for Antifungal Action of Fludioxonil**

A. Sharma, Alok K Mondal; Inst. of Microbial Technology, Chandigarh, India

**807 Deletion Sensitivity Profiling (DSP) Reveals that the Antifungal Agent Fludioxonil Affects Secretory Pathway in *Saccharomyces cerevisiae***

A. Randhawa, Alok K Mondal; Inst. of Microbial Technology, Chandigarh, India

**808 Protective Role of Osmotic Stress-Resistant Hos3 against Oxidative and Nitrosative Stresses in *Schizosaccharomyces pombe***

H. L. Lee, K. Kim, Y. E. Park, Y. E. Kho, N. H. Sim, C. J. Lim; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**809 Further Characterization on the Defensive Role of Thioredoxin Reductase against Nitrogen Starvation in the Fission Yeast**

K. Ahn<sup>1</sup>, H. Jo<sup>2</sup>, W. Y. Choi<sup>2</sup>, C. J. Lim<sup>2</sup>; <sup>1</sup>Baekseok Culture Univ., Cheonan, Republic of Korea, <sup>2</sup>Kangwon Natl. Univ., Chuncheon, Republic of Korea

**810 Methionine-R-Sulfoxide Reductase Plays a Defensive Role against Cadmium Toxicity in *Schizosaccharomyces pombe***

H. Jo, C. J. Lim; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**811 Protective Roles of Spp1 against Oxidative/Nitrosative Stresses in the Fission Yeast**

M. S. Park, I. W. Ryu, H. Jo, D. J. Ji, C. J. Lim; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**812 Deubiquitinating Activity of Spp1, a Putative Member of PPPDE Peptidase Superfamily, in *Schizosaccharomyces pombe***

H. Jo, C. Lim; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**813 Sex Determination as a Direct Control of Mitochondrial Inheritance in *Phycomyces***

V. P. S. Shakyia, A. Idnurm; Sch. of Biological Sci., Univ. of Missouri Kansas City, Kansas City, MO

**814 Rhomboid Proteins in *Leishmania* Species: A Gene Characterization Study**

D. Hallums, Q. Sherman, L. Ware, A. Kucknoor; Lamar Univ., Beaumont, TX

**060 Public Health Challenges of STI, HIV, and TB (Division Y)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**815 A Model of Shared Mycobacteriology Testing Services Between New York and Rhode Island**

K. Mitchell<sup>1</sup>, T. Halse<sup>1</sup>, E. Nazarian<sup>1</sup>, A. Kidney<sup>1</sup>, L. Mingle<sup>1</sup>, T. Quinlan<sup>1</sup>, M. Isabelle<sup>1</sup>, S. Wolfe<sup>1</sup>, D. Kohlerschmidt<sup>1</sup>, T. Bennett<sup>2</sup>, C. Vanner<sup>2</sup>, R. Ireland<sup>2</sup>, E. King<sup>2</sup>, K. Musser<sup>1</sup>, V. Escuyer<sup>1</sup>; <sup>1</sup>NYS Dept. of Hlth. Wadsworth Ctr., Albany, NY, <sup>2</sup>RI State Hlth. Lab., Providence, RI

**816 Reflex Testing of *Mycobacterium Tuberculosis* Complex NAAT-positive Specimens for Detection of Drug Resistance to Rifampin And Isoniazid by a Rapid Line Probe Assay**

M.-C. Rowlinson<sup>1</sup>, T. Jobe<sup>1</sup>, Y. Lee<sup>1</sup>, M. Pedrosa<sup>1</sup>, R. Farah<sup>1</sup>, P. Fiorella<sup>1</sup>, S. Crowe<sup>1</sup>, M. Salfinger<sup>2</sup>; <sup>1</sup>Florida Dept. of Hlth., Bureau of Publ. Hlth. Lab., Jacksonville, FL, <sup>2</sup>Natl. Jewish Hlth., Dept. of Med., Denver, CO

**817 Reduction of Time for Heat Fixation of *Mycobacteria* Smears**

M. A. Pentella, R. Jepson, B. Albaugh, M. DeMartino; Univ. of Iowa, Iowa City, IA

**818 The Greying of an Epidemic: A Descriptive Study of HIV in Patients over 70 Years of Age**

T. A. Nahass, L. Pittarelli, M. Seenivasan, E. McManus, R. Nahass; ID Care, Hillsborough, NJ

**819 Successful Long Term Treatment of HIV-1 Infection Using Boosted Protease Inhibitor Monotherapy Therapy (BPMT): Review of a Clinical Practice**

M. H. Cynamon, D. Khani; VA Med. Ctr., Syracuse, NY

**820 *Cryptococcus neoformans* Antigenemia in HIV Positive Pregnant Women Attending a PMTCT Clinic in South-East Nigeria**

R. C. Chukwuanukwu<sup>1</sup>, P. O. Manafa<sup>1</sup>, E. U. Iloghalu<sup>1</sup>, C. C. Onyenekwe<sup>1</sup>, C. J. Mbamalu<sup>2</sup>; <sup>1</sup>Nnamdi Azikiwe Univ., Awka, Anambra State, Nigeria, <sup>2</sup>Federal Teaching Hosp., Abakaliki, Ebonyi State, Nigeria



**821** *Chlamydia Trachomatis* Detection From Low Genital Tract of Infertile Women ( Sicily, 2012)  
C. Bonaccorso, G. Tempera, B. Bisignano, R. Timpanaro, A. Garozzo, A. Stivala; Bio-Med. Sci. Dept., Univ. of Catania, Catania, Italy

**822** Characterization of *Neisseria gonorrhoeae* Isolates with Reduced Susceptibility to Cephalosporins in California  
D. Nguyen<sup>1,2</sup>, S. Gose<sup>2</sup>, K. Chung<sup>2</sup>, D. Lowenberg<sup>2</sup>, S. Philip<sup>2</sup>, M. Pandori<sup>2</sup>; <sup>1</sup>APHL-CDC, CA, <sup>2</sup>San Francisco Dept. of Publ. Hlth. Lab., San Francisco, CA

**823** Evaluation of an Enzyme Immunoassay in an Alternative Syphilis Diagnostic Algorithm in a High Prevalence Setting  
A. Tran<sup>1</sup>, B. Louie<sup>2</sup>, C. Madayag<sup>2</sup>, M-L. Mak<sup>2</sup>, S. Philip<sup>3</sup>, K. Bernstein<sup>3</sup>, R. Kohn<sup>3</sup>, M. Pandori<sup>2</sup>; <sup>1</sup>Univ. of California-Berkeley, Berkeley, CA, <sup>2</sup>San Francisco Dept. of Publ. Hlth. Lab., San Francisco, CA, <sup>3</sup>San Francisco Dept. of Publ. Hlth., San Francisco, CA

## 061 Public Health Surveillance and Outbreak Response (Division Y)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**824** Linking Peanut Butter with an Outbreak of *Salmonella* Bredeney Infections Using Laboratory, Environmental, and Epidemiological Data  
S. Viazis<sup>1</sup>, J. K. Beal<sup>1</sup>, D. L. Zink<sup>2</sup>, D. C. Melka<sup>2</sup>, W. D. Boden<sup>3</sup>, J. L. Dion<sup>3</sup>, Z. A. Miller<sup>4</sup>, T-A. Nguyen<sup>5</sup>, W. A. Lanier<sup>6</sup>; <sup>1</sup>FDA/CORE Network, College Park, MD, <sup>2</sup>FDA, CFSAN, College Park, MD, <sup>3</sup>FDA, Denver District Office, Denver, CO, <sup>4</sup>FDA, Denver Lab., Denver, CO, <sup>5</sup>CDC, Atlanta, GA

**825** Sample Preparation for Detection of *Escherichia coli* O157 in Fresh Spinach by Flow Cytometry  
A. J. Williams<sup>1</sup>, W. M. Cooper<sup>1</sup>, C. Summage-West<sup>1</sup>, L. Sims<sup>1</sup>, J. B. Sutherland<sup>1</sup>, F. Rafii<sup>1</sup>, D. A. Bass<sup>2</sup>, L. L. Smith<sup>2</sup>, J. Christman<sup>2</sup>, R. Woodruff<sup>2</sup>, J. G. Wilkes<sup>1</sup>, D. A. Buzatu<sup>1</sup>; <sup>1</sup>Natl. Ctr. for Toxicological Res. FDA, Jefferson, AR, <sup>2</sup>Arkansas Regional Lab., FDA, Jefferson, AR

**826** Isolation and Identification of Nontuberculous *Mycobacteria* Associated with Tattoo-related Outbreaks  
K. Chou, K. Van, K-S. Chen, D. Williams-Hill, S. Torres; FDA, Irvine, CA

**827** Filter Sterilization Breakdown Leading to *Serratia marcescens* Bloodstream Infections  
H. A. O'Connell, J. Noble-Wang, N. Gupta, S. Hocevar, A. Kallen, M. Arduino; CDC, Atlanta, GA

**828** The First Report on Molecular Characterization of Environmental Swab Samples collected from New England Compounding Center known to cause 2012 Fungal Meningitis Outbreak  
I. M. Sulaiman, E. Jacobs, L. Chatman, S. Simpson, K. Kerdahi; FDA, Atlanta, GA

**829** Serosurvey of a Rural Population for West Nile Virus IgG Antibodies  
R. A. Printz, R. I. Lamb, T. Graham, S. L. Shearer, T. Hutchinson, D. Leach, C. Paulsen, S. J. McAllister; Central Wyoming Coll., Riverton, WY

**830** Prevalence of Rickettsiales among Ticks Collected from Outdoor Workers in North Carolina  
S. Lee<sup>1</sup>, L. Ponnusamy<sup>1</sup>, M. Vaughn<sup>2</sup>, S. Funkhouser<sup>2</sup>, S. Meshnick<sup>2</sup>, C. Apperson<sup>1</sup>; <sup>1</sup>North Carolina State Univ., Raleigh, NC, <sup>2</sup>Univ. of North Carolina, Chapel Hill, NC

**831** Prevalence of *Anaplasma phagocytophilum* in Ixodid Ticks near River Falls, Wisconsin  
J. L. Elvert, F. K. McCoy, J. A. Bonilla; Univ. of Wisconsin-River Falls, River Falls, WI

**832** Prevalence of Chronic Toxoplasmosis in Indian Schizophrenic Patients  
M. L. Dubey<sup>1</sup>, D. T<sup>1</sup>, N. Malla<sup>1</sup>, S. Malhotra<sup>2</sup>; <sup>1</sup>Dept. of Parasitology, Postgraduate Inst. of Med. Ed. and Res., Chandigarh, India, Chandigarh, India, <sup>2</sup>Dept. of Psychiatry, Postgraduate Inst. of Med. Ed. and Res., Chandigarh, India, Chandigarh, India

**833** A New Global Challenge, Nalidixic Acid Resistance *Salmonella enterica* Serovar Paratyphi A  
P. Pokharel<sup>1</sup>, R. Amatya<sup>2</sup>, B. Lekhak<sup>1</sup>; <sup>1</sup>Golden Gate Intl. Coll., Kathmandu, Nepal, <sup>2</sup>Nepal Med. Coll., Kathmandu, Nepal

**834** Molecular Epidemiology of Influenza Virus Infection in Nepal  
P. Ghimire<sup>1</sup>, B. P. Upadhyay<sup>2</sup>, S. Adhikari<sup>2</sup>, G. Shakya<sup>2</sup>, M. R. Banjara<sup>1</sup>; <sup>1</sup>Tribhuvan Univ., Kathmandu, Nepal, <sup>2</sup>Natl. Publ. Hlth. Lab., Kathmandu, Nepal

**835** Molecular Typing of Antibiotic-Resistant *Staphylococcus aureus* in Nigeria  
S. M. O'Malley<sup>1</sup>, F. E. Emele<sup>2</sup>, F. O. Nwaokorie<sup>3</sup>, N. Idika<sup>3</sup>, T. C. Smith<sup>1</sup>; <sup>1</sup>Ctr. for Emerging Infectious Diseases, Univ. of Iowa Coll. of Publ. Hlth., Iowa City, IA, <sup>2</sup>Nnamdi Azikiwe Univ., Nnewi, Nigeria, <sup>3</sup>Nigerian Inst. of Med. Res., Lagos, Nigeria

**836** A Pseudo-epidemic of Tuberculosis Conversions Using Quantiferon Tb Gold In-tube (qft-git) for Testing High Risk Employees  
R. G. Nahass<sup>1,2</sup>, L. Pittarelli<sup>1,2</sup>, P. Lafaro<sup>2</sup>, P. McDonough<sup>2</sup>; <sup>1</sup>ID CARE, Hillsborough, NJ, <sup>2</sup>Somerset Med. Ctr., Somerville, NJ

## 062 Detection and Characterization of Animal Pathogens (Division Z)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**837** Development of a DNA-Based Nanoscale Optical Fiber Biosensor Assay to Detect *Brucella* species and *Histophilus somni*  
A. B. Bandara, Z. Zuo, B. Fox, J. R. Heflin, T. J. Inzana; Virginia Polytechnic Inst. & State Univ., Blacksburg, VA

**838** Exposure to Infectious Agents in Maine Wild Turkeys  
P. Milligan<sup>1</sup>, K. Sullivan<sup>2</sup>, A. Lichtenwalner<sup>3</sup>, J. D. Brown<sup>4</sup>; <sup>1</sup>Univ. of Maine, Augusta, Augusta, ME, <sup>2</sup>Maine Dept of Inland Fisheries and Wildlife, Bangor, ME, <sup>3</sup>Univ. of Maine, Orono, ME, <sup>4</sup>Univ. of Georgia, Athens, GA

**839** Isolation of *Salmonella* and *Staphylococci* from Maine Wild Turkeys  
J. M. King<sup>1</sup>, A. Bean<sup>1</sup>, H. Dyer<sup>1,2</sup>, P. Milligan<sup>1</sup>; <sup>1</sup>Univ. of Maine at Augusta, Augusta, ME, <sup>2</sup>DHHS, Hlth. & Environmental Testing Lab., Augusta, ME

**840** Metagenomics to Discover Unknown Neurotropic Viruses in a Harbour Porpoise (*Phocoena phocoena*) Stranded Along the Oregon Coast  
S. Rosales, R. L. Vega Thurber; Oregon State Univ., Corvallis, OR

**841** Development of Fluorescence *In situ* Hybridization (FISH) Method to Detect *Helicobacter* spp. in Feline Intestinal Tissue  
Y. Feng<sup>1</sup>, E. Sawyer<sup>1</sup>, Z. Shen<sup>1</sup>, D. Twedt<sup>2</sup>, J. G. Fox<sup>1</sup>; <sup>1</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>2</sup>Colorado State Univ., Fort Collins, CO

**842** Validation of a Multiplexed PCR Method for Diagnosis of Anaplasmosis in Equines and Canines in a Midwest USA Locale Endemic for Tick-borne Diseases  
A. M. Schotthoefer<sup>1</sup>, T. N. Weiler<sup>2</sup>, T. S. Uphoff<sup>2</sup>, F. M. Moore<sup>2</sup>, L. C. Ivacic<sup>1</sup>, J. K. Meece<sup>1,3</sup>, T. J. Novicki<sup>2</sup>, T. R. Fritzsche<sup>2,3</sup>; <sup>1</sup>Marshfield Clinic Res. Fndn., Marshfield, WI, <sup>2</sup>Marshfield Clinic, Marshfield, WI, <sup>3</sup>Univ. of Wisconsin, La Crosse, WI

- 843 Development of a Multiple-Locus Variable-number tandem repeat Analysis (MLVA) for *Anaplasma phagocytophilum***  
**T. Dugat<sup>1</sup>**, R. Maillard<sup>2</sup>, E. Petit<sup>1</sup>, H-J. Boulouis<sup>1</sup>, M. Monteil<sup>1</sup>, N. Haddad<sup>1</sup>; <sup>1</sup>Univ. Paris-Est, Ecole Natl. Vétérinaire d'Alfort, UMR BIPAR ENVA Anses UPEC USC INRA, Maisons-Alfort Cedex, France, <sup>2</sup>Univ. Paris-Est, Ecole Natl. Vétérinaire de Toulouse, UMR BIPAR ENVA Anses UPEC USC INRA, France
- 844 Identification and Tracking Genomic Variability of PRRSV using a Microarray Platform**  
**T. L. Nicholson<sup>1</sup>**, A. R. Spear<sup>1</sup>, T. Wilson<sup>2</sup>, K. F. Fischer<sup>2</sup>, K. S. Faaborg<sup>1</sup>, S. L. Brockmeier<sup>1</sup>; <sup>1</sup>Natl. Animal Disease Ctr., ARS, USDA, Ames, IA, <sup>2</sup>Dept. of Pathology, Univ. of Utah, Salt Lake City, UT
- 845 Pathogenomic Characterisation of a Novel, Layer-Associated Avian Pathogenic *Escherichia coli***  
**C. R. Collingwood**, C. Winstanley, P. Wigley; Univ. of Liverpool, Liverpool, United Kingdom
- 846 Evaluation of Molecular Profiling Tools to Differentiate Strains of *Salmonella enteritidis***  
**M. Ibukic**, T. Frana, D. Trampel, C. M. Logue; Iowa State Univ., Ames, IA
- 847 High-throughput Multiplex PCR Detection of Shiga Toxin-producing *E. coli***  
**M. Kozulic<sup>1</sup>**, B. An<sup>2</sup>, J. Bai<sup>2</sup>; <sup>1</sup>QIAGEN Instruments AG, Hombrechtikon, Switzerland, <sup>2</sup>Kansas State Univ., Manhattan, KS
- 848 Molecular Detection And Genetic Characterization Of Select Filariid And Metastrongylid Nematodes Of Free Ranging Moose In Minnesota**  
**C. M. Grunenwald**, R. W. Gerhold, C. Su; Univ. of Tennessee, Knoxville, TN

- 849 Isolation and Identification of Canine Herpesvirus Type 1 in Puppies Dead Suddenly During the Perinatal Stage in Mexico**  
**E. G. Valdivia Lara<sup>1</sup>**, J. C. Briones Vera<sup>1</sup>, J. I. Angeles Solís<sup>1</sup>, C. Cuenca Verde<sup>1</sup>, G. E. Lara Reyes<sup>2</sup>, J. C. Del Río García<sup>1</sup>, G. Valdivia Anda<sup>1</sup>; <sup>1</sup>Facultad de Estudios Superiores, Cuautitlan, UNAM, Edo. Mexico, Mexico, <sup>2</sup>Especialidades en Diagnóstico SA de CV Laboratorio DIVET, Edo. Mexico, Mexico
- 850 The QIAamp Cador Pathogen Qxt Kit. An Automated Solution for Nucleic Acid Isolation from Various Sample Types in the Same Run**  
**D. Flügge**, L. Krüger, M. Breitbach, H. Engel; Qiagen, Germany
- 851 Molecular-Genetic Typing of the National Ukrainian Collection Brucella spp Isolates**  
**A. Golovko<sup>1</sup>**, O. Obukhovska<sup>2</sup>, A. Gerilovych<sup>2</sup>, B. Stegnyy<sup>2</sup>, V. Bolotin<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IECVM, NAAS, Kharkiv, Ukraine
- 852 WITHDRAWN**
- 853 Development of a Multiplex Real-time Pcr for the Serotype-specific Detection of *Salmonella enteritidis***  
**D. H. Shah**, R. Crespo, F. Campioni; Washington State Univ., Pullman, WA
- 854 Use of Matrix-Assisted Laser Desorption Ionization Time of-Flight Mass Spectrometry for Bacterial Identification in a Veterinary Diagnostic Laboratory**  
**C. Thompson**, J. Kinyon, T. Frana; Iowa State Univ., Ames, IA
- 855 Type Strains of the Closely Related *V. harveyi* and *V. campbellii* Exhibit Distinct Sequence Variations in Four Genes**  
**C. T. Hedreyda**; Natl. Inst. of Molecular Biol. and Biotechnology, Quezon City, Philippines
- 856 Efficacy of Lon and/or Cpxr Deleted Mutants of *Salmonella Gallinarum* As Vaccine Candidates for Fowl Typhoid**  
**J. Lee**; Chonbuk Natl. Univ., Coll. of Vet. Med., Chonju, Republic of Korea



## Monday, May 20

10:45 a.m. – 12:30 p.m.

**087 New Antimicrobial Agents (Division A)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**857 An NIH/NIAD Initiative for the *In vitro* Assessment of Novel Antibacterial and Antifungal Compounds**

**N. P. Wiederhold**<sup>1</sup>, J. H. Jorgensen<sup>1</sup>, A. W. Fothergill<sup>1</sup>, M. T. Cushion<sup>2</sup>, M. Collins<sup>2</sup>, L. C. Fulcher<sup>1</sup>, M. L. McElmeel<sup>1</sup>, W. R. Kirkpatrick<sup>1,3</sup>, T. F. Patterson<sup>1,3</sup>; <sup>1</sup>Univ. of Texas Hlth. Sci. Ctr. at San Antonio, San Antonio, TX, <sup>2</sup>Cincinnati Fdn. for BioMed. Res. and Ed., Cincinnati, OH, <sup>3</sup>STVHCS, San Antonio, TX

**858 2-Hexadecyonic Acid: A Potent Microbial Topoisomerase Inhibitor**

**D. J. Sanabria-Rios**<sup>1</sup>, J. W. Rodriguez<sup>2</sup>, E. Rios-Olivares<sup>2</sup>, R. M. Reguera<sup>3</sup>, R. Balana-Fouce<sup>3</sup>, N. M. Carballeira<sup>4</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico-Metropolitan Campus, San Juan, PR, <sup>2</sup>Univ. Central del Caribe, Bayamon, PR, <sup>3</sup>Univ. of León, Campus de Vegazana, Leon, Spain, <sup>4</sup>Univ. of Puerto Rico-Rio Piedras Campus, San Juan, PR

**859 A Novel Strategy in Antimicrobial Drug Discovery against Periodontal Pathogen *Porphyromonas gingivalis***

**V. N. Stone**, X. Ge, P. Xu; Virginia Commonwealth Univ., Richmond, VA

**860 Time Kill Kinetics of a Novel Antimicrobial Silver Wound Gel against Select Burn Pathogens**

D. H. Atchley<sup>1</sup>, C. A. Proctor<sup>2</sup>, Y.-J. Lee<sup>1</sup>, C. M. Loftis<sup>3</sup>, S. Yi<sup>1</sup>, G. Z. Evans<sup>4</sup>, F. L. Smith<sup>1</sup>, **K. M. Yates**<sup>1</sup>; <sup>1</sup>Harding Univ. Coll. of Pharmacy, Searcy, AR, <sup>2</sup>Johns Hopkins Pharmacy, Baltimore, MD, <sup>3</sup>Univ. of Tennessee Hlth. Sci. Ctr., Memphis, TN, <sup>4</sup>Searcy High Sch., Searcy, AR

**861 Antimicrobial Effect of Proprietary Peptides TP226 and TP359 on *Salmonella enterica* serovar Typhimurium**

**S. K. Hussain**<sup>1</sup>, K. Vig<sup>1</sup>, S. R. Singh<sup>1</sup>, V. A. Dennis<sup>1</sup>, M. Baker<sup>2</sup>, S. R. Pillai<sup>1</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Sch. of Allied Hlth. Professions, New Orleans, LA

**862 New Antimicrobial Substances Isolated from Fresh and Dry Pods of *Caesalpinia pulcherrima* with Activity against MDR Human Pathogens**

**S. U. Kazmi**<sup>1</sup>, F. Zeeshan<sup>2</sup>, S. Faizi<sup>3</sup>; <sup>1</sup>Dept. of Microbiol., Univ. of Karachi, Karachi, Pakistan, <sup>2</sup>Dept. of Microbiol., Univ. of Karachi, Karachi, Pakistan, <sup>3</sup>H.E.J Res. Inst. of Chemistry, Univ. of Karachi, Karachi, Pakistan

**863 Antidermatophytic Activities of Methanolic Extracts of the Leaves of *Vernonia amygdalina* and *Psidium guajava***

**A. C. Ngwogu**<sup>1</sup>, T. V. Otokunefor<sup>2</sup>, K. O. Ngwogu<sup>1</sup>; <sup>1</sup>Abia State Univ., Uturu, Abia State, Nigeria, <sup>2</sup>Univ. of Port Harcourt, Port Harcourt, Rivers State, Nigeria

**864 Plant Secondary Metabolites as Inhibitors of Drug Resistant Bacteria Causing Wound Infections in U.S. Military Personnel**

**A. Ryan**<sup>1</sup>, S. Li<sup>2</sup>, J. M. Fritzler<sup>1</sup>; <sup>1</sup>Weber State Univ., Ogden, UT, <sup>2</sup>Natl. Ctr. for Pharmaceutical Crops, Nacogdoches, TX

**865 Antimicrobial Effect of Purple Violet Pigment (PVP) Isolated from an Antarctic Bacterium, *Janthinobacterium* sp. Ant5-2, on Select Gram-Positive Pathogens**

**S. S. Momeni**, J. P. Huang, N. K. Childers, A. K. Bej; Univ. of Alabama at Birmingham, Birmingham, AL

**866 Total Synthesis and Antibacterial Evaluation of 2-Alkynoic Fatty Acids**

**T. M. Torres**<sup>1</sup>, C. Reyes<sup>1</sup>, C. Rios<sup>2</sup>, J. Rosario<sup>1</sup>, D. Sanabria Rios<sup>1</sup>, N. M. Carballeira<sup>3</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico-Metropolitan Campus, San Juan, Puerto Rico, <sup>2</sup>Inter American Univ. of Puerto Rico-Metropolitan Campus, San Juan, Puerto Rico, <sup>3</sup>Univ. of Puerto Rico-Rio Piedras Campus, Rio Piedras, Puerto Rico

**867 Inhibitory Effect of *Pistacia vera* L. on Herpes Simplex Viruses Replication**

**B. Bisignano**<sup>1</sup>, C. Bisignano<sup>2</sup>, R. Timpanaro<sup>1</sup>, C. Bonaccorso<sup>1</sup>, A. Garozzo<sup>1</sup>, G. Tempera<sup>1</sup>; <sup>1</sup>Bio-Med. Sci. Dept. Univ. of Catania, Catania, Italy, <sup>2</sup>SCIFAR Dept. Univ. of Messina, Messina, Italy

**868 Comparisons of Inhibitory Capacity of Several Antimicrobial Essential Oils toward Cystic Fibrosis Pathogens**

**D. L. Chance**, J. P. Newman, A. K. Schwartz, T. P. Mawhinney; Univ. of Missouri, Columbia, MO

**869 Hybrid Antimicrobial Peptides Combining Insect & Amphibian Structural Motifs**

**R. M. Plunkett**, L. F. Bentson; New Mexico Highlands Univ., Las Vegas, NM

**870 Potato Extract: A Potential Treatment for *Helicobacter pylori* Infection**

**T. A. Adeyemi**, I. S. Roberts; Univ. of Manchester, United Kingdom

**871 Identification of Small Molecules Targeting *Pseudomonas aeruginosa* Persisters**

**V. R. Liebens**<sup>1</sup>, W. Knapen<sup>1</sup>, T. Swings<sup>1</sup>, V. Defraigne<sup>1</sup>, R. Corbau<sup>2</sup>, A. Marchand<sup>2</sup>, P. Chaltin<sup>1,2</sup>, M. Fauvart<sup>1</sup>, J. Michiels<sup>1</sup>; <sup>1</sup>KU Leuven, Heverlee, Belgium, <sup>2</sup>CISTIM Leuven vzw, Leuven, Belgium

**872 Antimicrobial Effects of Herbs Used in Traditional Chinese Medicine**

D. Lau, **B. Plotkin**; Midwestern Univ., Downers Grove, IL

**873 Antagonistic Activity Expression by *Parabacteroides distasonis* Isolates Recovered from Broiler Feces**

A. G. Oliveira, P. P. Magalhães, J. S. Oliveira, A. M. Borges, J. R. Nicoli, M. M. Santoro, M. A. Carvalho, **L. M. Farias**; Univ. Federal de Minas Gerais, Belo Horizonte, Brazil

**874 Antimicrobial Activity of Two- and Five-Year-Old Synsepalum ducificum Extracts against Eight Medically Important Pathogenic Microorganisms**

**M. L. Delos Santos**<sup>1</sup>, K. S. Ng<sup>2</sup>, I. A. Papa<sup>3</sup>, T. O. Zulybar<sup>3</sup>, I. D. Quiban<sup>1</sup>; <sup>1</sup>Dept. of Ed., Makati City, Philippines, <sup>2</sup>Inst. of Biol., Univ. of the Philippines, Diliman, Quezon City, Philippines, <sup>3</sup>Inst. of Molecular Biol., Univ. of the Philippines, Los Baños, Metro Manila, Philippines

**088 Regulation of Virulence – III (Division B)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**875 Mutation of Luxs Gene in *Campylobacter jejuni* Impacts Major Virulence Attributes Important for Colonization in Host**

**K. T. Mou**, P. Plummer; Iowa State Univ., Ames, IA

**876 Staphylococcal Accessory Gene Regulator Contributes to Varying Virulence Function in Young and Aged Hosts**

**C. Tseng**, G. Liu; Cedars Sinai Med. Ctr., Los Angeles, CA

**877 RsmA exerts a Positive Regulatory Effect on ExsA expression at the Post-transcriptional Level**

**M. R. Diaz**<sup>1</sup>, M. L. Urbanowski<sup>1</sup>, M. C. Wolfgang<sup>2</sup>, T. L. Yahr<sup>1</sup>; <sup>1</sup>Univ. of Iowa, Iowa City, IA, <sup>2</sup>Univ. of North Carolina, Chapel Hill, NC

**878 Virulence Repression by Anaerobicity and Butyrate in *Listeria monocytogenes***

**Y. Sun**, M. X. D. O'Riordan; Univ. of Michigan Med. Sch., Ann Arbor, MI

**879 *Staphylococcus aureus* and *Borrelia burgdorferi* SpoVG are Site-Specific DNA-Binding Proteins**

**B. L. Jutras**<sup>1</sup>, C. L. Rowland<sup>1</sup>, T. Bykowski<sup>1</sup>, C. Miller<sup>2</sup>, A. Antonicello<sup>1</sup>, N. Brown<sup>1</sup>, A. Chenail<sup>1</sup>, **B. Stevenson**<sup>1</sup>; <sup>1</sup>Univ. of Kentucky, Lexington, KY, <sup>2</sup>Univ. of Louisville, Louisville, KY



- 880 Anaerobiosis-induced Cholera Toxin Production in *Vibrio cholerae***  
S. Yoon, K.-M. Lee; Yonsei Univ. Coll. of Med., Seoul, Republic of Korea
- 881 Discovery of a Novel RNA Transcript Antisense to the *hasABC* Capsule Operon in *Streptococcus pyogenes***  
J. O. Wright, K. Cho; Southern Illinois Univ. Carbondale, Carbondale, IL
- 882 Regulation of Biosurfactant Production and Swarming Motility in *Yersinia pseudotuberculosis***  
Y. G. Chang, R. C. White, W. W. Latham; Northwestern Univ., Chicago, IL
- 883 Atypical Response Regulator ChxR from *Chlamydia trachomatis* is Structurally Poised for DNA Binding and Interacts with DNA through Distinct Residues**  
M. L. Barta<sup>1</sup>, J. H. Hickey<sup>1</sup>, A. Anbanandam<sup>1</sup>, K. Dyer<sup>2</sup>, M. Hammel<sup>2</sup>, P. Hefty<sup>1</sup>; <sup>1</sup>Univ. of Kansas, Lawrence, KS, <sup>2</sup>Lawrence Berkely Natl. Lab., Berkeley, CA
- 884 Respiratory Nitric Oxide Reductase of *Ralstonia solanacearum* is Required to Activate T3SS During Host Infection**  
B. L. Dalsing, J. M. Jacobs, A. Milling, C. Allen; Univ. of Wisconsin-Madison, Madison, WI
- 885 In-depth Characterization of PAH4M, a Chronic Infection Isolate of *Pseudomonas aeruginosa* from a Patient with Bronchiectasis**  
M. Barbier<sup>1</sup>, J. J. Varga<sup>1</sup>, X. Mulet<sup>2</sup>, P. Bielecki<sup>3</sup>, I. Martinez-Ramos<sup>4</sup>, F. H. Damron<sup>1</sup>, V. A. P. Martin Dos Santos<sup>5</sup>, S. Alberti<sup>4</sup>, A. Oliver<sup>2</sup>, J. B. Goldberg<sup>1</sup>; <sup>1</sup>Univ. of Virginia, Charlottesville, VA, <sup>2</sup>Hosp. Son Espases, Palma de Mallorca, Spain, <sup>3</sup>Helmholtz Ctr. for Infection Res., Braunschweig, Germany, <sup>4</sup>Univ. of the Balearic Islands, Palma de Mallorca, Spain, <sup>5</sup>Wageningen Univ., Wageningen, Netherlands
- 886 Analysis of the Cpx Regulon by RNA-Seq in *Haemophilus ducreyi***  
D. M. Gangaiah<sup>1</sup>, X. Zhang<sup>1</sup>, K. R. Fortney<sup>1</sup>, B. Baker<sup>2</sup>, Y. Liu<sup>1</sup>, R. S. Munson, Jr.<sup>2</sup>, S. M. Spinola<sup>1</sup>; <sup>1</sup>Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>2</sup>The Ohio State Univ. Coll. of Med., Columbus, OH
- 887 Zebrafish as a Natural Host Model for *Vibrio cholerae***  
K. C. Mitchell, D. L. Runft, B. H. Abuita, J. P. Allen, K. Ginsburg, M. N. Neely, J. H. Withey; Wayne State Univ., Sch. of Med., Detroit, MI
- 888 Transcriptional Analysis of the *Pseudomonas aeruginosa* AlgZR Two-Component Regulatory System**  
A. S. Little<sup>1</sup>, C. L. Pritchett<sup>2</sup>, Y. Okkotsu<sup>1</sup>, W. L. Cody<sup>1</sup>, C. Covey<sup>1</sup>, M. J. Schurr<sup>1</sup>; <sup>1</sup>Univ. of Colorado Sch. of Med., Aurora, CO, <sup>2</sup>East Tennessee State Univ., Johnson City, TN
- 889 *Pseudomonas aeruginosa* AlgR Phosphorylation Regulates Rhamnolipid Production And Type IV Pili Mediated Twitching Motility**  
Y. Okkotsu, P. Tiek, L. Fitzsimmons, M. Churchill, M. J. Schurr; Univ. of Colorado Sch. of Med., Aurora, CO
- 890 Whole Blood Influences *Pseudomonas aeruginosa* Virulence: A Transcriptome Analysis**  
J.-C. Auten, U. Qaisar, J. A. Colmer-Hamood, A. N. Hamood; Texas Tech University Hlth. Sci. Ctr., Lubbock, TX
- 891 Truncation in Type-IV Pili Induces Mucoidy in *Pseudomonas aeruginosa* Strain PA0579**  
T. R. Withers, F. H. Damron, Y. Yin, H. D. Yu; Marshall Univ., Huntington, WV
- 892 Gene Expression Differences between Intracellular and Extracellular *Yersinia pestis* using Rna-seq**  
B. Hu<sup>1</sup>, S. N. Micheva-Viteva<sup>2</sup>, M. Vuyisich<sup>1</sup>, V. L. Motin<sup>3</sup>, E. Hong-Geller<sup>2</sup>, P. S. Chain<sup>1</sup>; <sup>1</sup>Bioenergy and Biome Sci., Los Alamos Natl. Lab., Los Alamos, NM, <sup>2</sup>Biosecurity and Publ. Hlth., Los Alamos Natl. Lab., Los Alamos, NM, <sup>3</sup>Dept. of Pathology, Univ. of Texas Med. Branch, Galveston, TX

- 893 The RNA Chaperone Hfq Represses Bundle-Forming Pilus Expression in Enteropathogenic *Escherichia coli***  
S. L. Vogt, T. L. Raivio; Univ. of Alberta, Edmonton, AB, Canada
- 894 Investigation of the Blood Survival Mechanism of *Campylobacter jejuni* Associated with Sheep Abortion by Transcriptome Analysis**  
Z. Wu, D. Kurkiewicz, O. Sahin, P. Liu, Q. Zhang; Iowa State Univ., Ames, IA
- 895 Elucidating the Role of Eep Metalloprotease in *Enterococcus faecalis* Virulence and Lysozyme Resistance**  
K. L. Frank<sup>1</sup>, C. D. Ellermeier<sup>2</sup>, G. M. Dunne<sup>1</sup>; <sup>1</sup>Univ. of Minnesota, Minneapolis, MN, <sup>2</sup>Univ. of Iowa, Iowa City, IA
- 896 Competence Stimulates Early *blp* Bacteriocin Production by *Streptococcus pneumoniae***  
T. Kochan, S. Dawid; Univ. of Michigan, Ann Arbor, MI
- 089 Secretion Systems, Toxins, and Other Secreted Products – I (Division B)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 897 Mapping the Substrate-binding Site of a Serine Protease Autotransporter**  
H. Malik, C. Stathopoulos; California State Polytechnic Univ., Pomona, CA
- 898 Contribution of the VgrG proteins of *Pseudomonas aeruginosa* in the Bacterial Competition Mediated by the Type VI Secretion System**  
A. Hachani, A. Filloux; Imperial Coll. London, London, United Kingdom
- 899 Liposome Binding by the *Pseudomonas aeruginosa* Cytotoxin ExoU and the Implications for Membrane Localization**  
G. Tyson, B. Geissler, A. Hauser; Northwestern Univ., Chicago, IL
- 900 Detection and Characterization of Shiga-like Toxin Subtype Stx2f**  
C. B. Skinner, S. McMahon, X. He; USDA, Albany, CA
- 901 Characterization of Multimerization of the *Pseudomonas aeruginosa* Cytotoxin ExoU**  
A. Zhang, J. L. Veessenmeyer, A. R. Hauser; Northwestern Univ., Chicago, IL
- 902 Dissecting Usher-Chaperone-Subunit Interactions during Pilus Biogenesis**  
G. T. Werneburg, N. S. Henderson, D. G. Thanassi; Stony Brook Univ., Stony Brook, NY
- 903 Mechanisms of Focal Sortase and Sec Localization in *Enterococcus faecalis***  
C. Y. Wang<sup>1</sup>, W. L. Beatty<sup>2</sup>, B. Ford<sup>3</sup>, K. Kandaswamy<sup>1</sup>, S. J. Hultgren<sup>2</sup>, K. A. Kline<sup>1</sup>; <sup>1</sup>SCELS at NTU, Singapore, Singapore, <sup>2</sup>Washington Univ. Sch. of Med., Saint Louis, MO, <sup>3</sup>Univ. of Iowa Carver Coll. of Med., Iowa City, IA
- 904 Functional Requirements for Cytosolic Proteins of Bacterial Type IV Secretion Systems Varies with the Nature of Exocellular Signaling**  
S. Lang, C. J. Gruber, S. Raffl, E. L. Zechner; Univ. of Graz, Graz, Austria
- 905 *Salmonella* Gallinarum Utilizes a Type VI Secretion System to Survive within Avian and Murine Macrophages**  
C. J. Blondel, Sr., J. C. Jimenez, L. E. Leiva, S. A. Alvarez, B. I. Pinto, F. Contreras, D. Pezoa, C. A. Santiviago, I. Contreras; Univ. de Chile, Santiago, Chile
- 906 Characterization of Novel Chromosome-encoded Type III Secretion Effector Proteins of *Yersinia pestis***  
C. Lorica<sup>1</sup>, S. Schesser Bartra<sup>2</sup>, W. Bahnan<sup>2</sup>, L. Qian<sup>3</sup>, X. Gong<sup>3,4</sup>, Z. Li<sup>3</sup>, K. Schesser<sup>2</sup>, G. V. Plano<sup>2</sup>; <sup>1</sup>Univ. of Miami, Miller Sch. of Med.-Jackson Mem. Hosp., Miami, FL, <sup>2</sup>Univ. of Miami, Miami, FL, <sup>3</sup>Florida Atlantic Univ., Boca Raton, FL, <sup>4</sup>Univ. of Texas, Southwestern Med. Ctr., Dallas, TX

**907 The Mechanism by Which *Helicobacter pylori* VacA-mediated Disruption of Mitochondrial Dynamics Leads to Cell Death**  
I.-J. Kim, P. Jain, S. R. Blanke; Univ. of Illinois, Champaign, IL

**908 Characterizing the Protein-Lipid interaction of Invasion Plasmid Antigen B (IpaB) from *Shigella flexneri***  
P. R. Adam, W. L. Picking, W. D. Picking; Oklahoma State Univ., Stillwater, OK

**909 Role of Binary Toxin in the Pathogenesis of *Clostridium difficile* Infection In Multiple Animal Species**  
J. Heinrichs<sup>1</sup>, M. Miezewski<sup>2</sup>, J. Zorman<sup>1</sup>, J. Xie<sup>1</sup>, M. Horton<sup>1</sup>, I. Caro-Aguilar<sup>1</sup>, J. Skinner<sup>1</sup>, R. Xoconostle<sup>1</sup>, J. Cook<sup>1</sup>, J. Joyce<sup>1</sup>, D. Thiriot<sup>1</sup>, S. Secore<sup>1</sup>, S. Wang<sup>1</sup>; <sup>1</sup>Merck & Co., Inc., West Point, PA, <sup>2</sup>Eurofins Lab., PA

**910 Shiga Toxin (Stx) Type 2 but not Stx1 is Toxic by the Oral Route in Mice**  
L. M. Russo, A. R. Melton-Celsa, M. J. Smith, A. D. O'Brien; Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD

**911 Detection and Functionality of CdtB Toxin in *Salmonella enterica* Serovar Javiana Isolated from Food, Environmental and Clinical Samples**  
E. H. Mezal<sup>1,2</sup>, S. Khare<sup>2</sup>, A. A. Khan<sup>2</sup>; <sup>1</sup>Univ. of Arkansas at Little Rock, Little Rock, AR, <sup>2</sup>U.S. FDA, Nat'l. Ctr. for Toxicol. Res., Jefferson, AR

**912 Development and Characterization of Modular BoNT/A-based Delivery Vehicles**  
M. Wegscheid<sup>1</sup>, S. C. Johnson<sup>2</sup>, M. Ho<sup>1</sup>, B. A. Wilson<sup>1</sup>; <sup>1</sup>Univ. of Illinois, Urbana, IL, <sup>2</sup>Univ. of New England, Portland, ME

**913 Expression of ExoS by *Pseudomonas aeruginosa* Is Triggered by Epithelial Cell Lysates And by the Intracellular Environment after Internalization**  
V. Hritonenko<sup>1</sup>, A. Jolly<sup>1</sup>, C. Maloney<sup>1</sup>, A. Farfel<sup>1</sup>, D. J. Evans<sup>1,2</sup>, S. M. J. Fleiszig<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, CA, <sup>2</sup>Touro Univ. California, Vallejo, CA

**914 A Host Cell-specific Effector Protein Complex Primes *Legionella pneumophila* For Human Infection**  
A. Lama, S. L. Drennan, B. Doron, E. T. Tobar, M. C. Reichert, E. D. Cambronne; Oregon Hlth. & Sci. Univ., Portland, OR

**915 Target Cell Interactions of Shiga Toxin Variants**  
S. Karve, A. Weiss; Univ. of Cincinnati, Cincinnati, OH

**916 Multiple *Legionella pneumophila* Type II Secretion Substrates, Including an Entirely Novel Protein, Contribute to Differential Infection of Amoebae**  
J. Y. Tyson, M. M. Pearce, P. Vargas, N. P. Cianciotto; Northwestern Univ., Chicago, IL

**917 Entry of Full-length and Receptor-binding Domain of Tetanus Neurotoxin into Neurons**  
F. C. Blum, A. Przedpelski, J. T. Barbieri; Med. Coll. of Wisconsin, Milwaukee, WI

**918 Modularity of *Burkholderia* Contact Dependent Growth Inhibition Systems in Interbacterial Competition and Biofilm Formation**  
M. S. Anderson, E. C. Garcia, P. A. Cotter; Univ. of North Carolina at Chapel Hill, Chapel Hill, NC

**090 Diagnostic Mycology and Parasitology – Detection, ID, and Susceptibility (Division C)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**919 Chlamydoconidia-Production in Tissue of a Multivisceral Organ Transplant Recipient with Mucormycosis Caused by a *Mucor* Species**  
M. J. Magers<sup>1</sup>, R. F. Relich<sup>1</sup>, J. Koehlinger<sup>2</sup>, C. Jackson<sup>2</sup>, R. McBride<sup>2</sup>, T. E. Davis<sup>1</sup>; <sup>1</sup>Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>2</sup>Div. of Clinical Microbiol., Indiana Univ. Hlth. Pathology Lab., Indianapolis, IN

**920 Comparison of Direct and Standard Antifungal Susceptibility Testing of Positive *Candida* Blood Culture Isolates Using the Sensititre YeastOne™ Test Panel**  
A. M. Sheikh<sup>1,2</sup>, R. G. Washburn<sup>2,1</sup>, G. A. Capraro<sup>1</sup>; <sup>1</sup>Louisiana State Univ. Hlth., Shreveport, LA, <sup>2</sup>Shreveport VA Med. Ctr., Shreveport, LA

**921 *Pneumocystis jirovecii*-detection Rates in Respiratory Samples of Hospitalized Patients Suffering from Pneumonia: Results from Clinical Study CS-2011**  
J. Weile<sup>1</sup>, B. Schulte<sup>2</sup>, I. Autenrieth<sup>2</sup>, O. Denis<sup>3</sup>, R. De Mendonça<sup>3</sup>, C. Cillóniz Campos<sup>4</sup>, J. Puig de la Bellacasa<sup>4</sup>, A. Torres<sup>4</sup>, H. Eickmeyer<sup>5</sup>, C. Knabbe<sup>1</sup>, G. Lüdke<sup>6</sup>, A. Heininger<sup>7</sup>, E. Straube<sup>8</sup>, P. M. Keller<sup>6</sup>, M. Karrasch<sup>8</sup>; <sup>1</sup>Inst. of Lab. und Transfusion Med., Univ. Hosp. of Ruhr-Bochum, Bad Oeynhausen, Germany, <sup>2</sup>Inst. for Med. Microbiol. and Hygiene, Univ. Hosp. of Eberhard Karls Univ., Tübingen, Germany, <sup>3</sup>Service de Microbiologie, Hôpital Erasme, Univ. Libre de Bruxelles, Brussels, Belgium, <sup>4</sup>Servei de Pneumologia, Hosp. Clínic, Villarreal, Barcelona, Spain, <sup>5</sup>Clinic for Thoracic and Cardiovascular Surgery, Univ. Hosp. of Ruhr, Univ. Bochum, Bad Oeynhausen, Germany, <sup>6</sup>Curetis AG, Holzgerlingen, Germany, <sup>7</sup>Dept. of Anesthesiology and Intensive Care Med., Tübingen Univ. Hosp., Tübingen, Germany, <sup>8</sup>Inst. of Med. Microbiol., Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany

**922 The Effect on Fungal Growth of Various Methods and Types of Plate Seals with Different Brands of Plastic Plates**  
B. J. Harrington; Univ. of Toledo, Toledo, OH

**923 Isolation of Filamentous Fungi from Sputum and Sinus Cultures Processed Using COPAN Sputum Liquefying (SL) Solution**  
M. Mahlmeister, H. Jayakumar, J. Stempien, K. MacDonald, E. Bauer, J. Lewis-Rasul, J. Nyhuis, D. Williams, D. Newton; Univ. of Michigan, Ann Arbor, MI

**924 Evaluation of Matrix-Assisted Laser Desorption/Ionization-Time of Flight and a Laboratory Developed Assay Using Luminex™ xTAG Analyte-Specific (ASR) Reagents for Rapid Yeast Identification Directly from Positive Blood Cultures**  
N. Kwiatkowski, T. Watkins, S. Zhang; Johns Hopkins Hosp., Baltimore, MD

**925 Comparison of the T2 Biosystems *Candida* Assay and Automated Blood Culture in the Detection of *Candida* species Using Simulated Blood Cultures**  
N. D. Beyda, M. J. Alam, K. W. Garey; Univ. of Houston Coll. of Pharmacy, Houston, TX

**926 Use of Matrix Assisted Laser Desorption Ionization – Time of Flight Mass Spectrometry for Identification of Yeast: Modification of Scoring Criteria for Bruker System**  
R. C. Jerris, E. Graves, T. M. Stanley, A. P. Desai, B. B. Rogers; Children's Healthcare of Atlanta, Atlanta, GA

**927 Multi-Center Evaluation of the Mass Spectrometric Identification of Yeasts in the Clinical Microbiology Laboratory using the VITEK MS System**  
L. F. Westblade<sup>1,2</sup>, R. Jennemann<sup>3</sup>, J. A. Branda<sup>4</sup>, M. Bythrow<sup>5</sup>, M. J. Ferraro<sup>4</sup>, O. B. Garner<sup>6</sup>, C. C. Ginocchio<sup>2,5</sup>, M. A. Lewinski<sup>6</sup>, R. Manji<sup>5</sup>, B. A. Mochon<sup>6</sup>, G. W. Procop<sup>7</sup>, S. S. Richter<sup>7</sup>, J. A. Rychert<sup>4</sup>, L. Scieria<sup>7</sup>, C.-A. D. Burnham<sup>1</sup>; <sup>1</sup>Dept. of Pathology & Immunology, Washington Univ. Sch. of Med., St. Louis, MO, <sup>2</sup>Dept. of Pathology and Lab. Med., Hofstra North Shore-LIJ Sch. of Med., Hempstead, NY, <sup>3</sup>Barnes Jewish Hosp., St. Louis, MO, <sup>4</sup>Dept. of Pathology, Massachusetts Gen. Hosp. and Harvard Med. Sch., Boston, MA, <sup>5</sup>Dept. of Pathology and Lab. Med., North Shore-LIJ Hlth. System Lab., Lake Success, NY, <sup>6</sup>Dept. of Pathology and Lab. Med., David Geffen Sch. of Med. at UCLA, Los Angeles, CA, <sup>7</sup>Dept. of Clinical Pathology, Cleveland Clinic, Cleveland, OH

**928 Oral *Candida* Carriage and Immune Status in Thai HIV-infected Individuals**  
P. Thanayasrisung<sup>1</sup>, P. Kesakomol<sup>1</sup>, P. Pipatanagovit<sup>1</sup>, P. Ritprajak<sup>1</sup>, P. Youngnak-Piboonratanakit<sup>1</sup>, W. Pitiphat<sup>2</sup>, O. Matangkasombut<sup>1</sup>; <sup>1</sup>Chulalongkorn Univ., Bangkok, Thailand, <sup>2</sup>Khon Kaen Univ., Khon Kaen, Thailand

**929 Evaluation of a *Histoplasma capsulatum* Galactomannan Antigen Enzyme Immunoassay**  
D. J. Jespersen<sup>1</sup>, J. Harring, J. Mandrekar, M. J. Binnicker, E. S. Theel; Mayo Clinic, Rochester, MN

**930 A Rapid Method for Detecting *Shigella* and EHEC**  
H. Cardenas; UC Merced, Merced, CA

**931 Validation of the Bruker MALDI-ToF for the Identification of Filamentous Fungi**  
K. M. Riebe<sup>1</sup>, B. W. Buchan<sup>2</sup>, N. A. Ledebor<sup>2</sup>; <sup>1</sup>Dynacare Lab., Milwaukee, WI, <sup>2</sup>Med. Coll. of Wisconsin, Milwaukee, WI

**932 Diagnostic Challenge Distinguishing *Mucor* and *Aspergillus* in Tissue Biopsy**  
J. E. Arkin<sup>1</sup>, R. F. Relich<sup>1</sup>, M. H. McCoy<sup>1</sup>, J. A. Koehlinger<sup>2</sup>, T. E. Davis<sup>1</sup>; <sup>1</sup>Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>2</sup>Indiana Univ. Hlth. Pathology Laboratory, Indianapolis, IN

**933 The Use of Double-Quenched Probes Increases the Analytical Sensitivity of Malaria Real-time PCR Taqman Assays**  
D. R. Pillai<sup>1,2</sup>, B. Chow<sup>2</sup>, D. Church<sup>1,2</sup>; <sup>1</sup>Univ. of Calgary, Calgary, AB, Canada, <sup>2</sup>Calgary Lab. Services, Calgary, AB, Canada

**934 Detection of *Pneumocystis jirovecii* by Real-Time PCR with the Open, Automated BD MAX System**  
A. H. Dalpke, M. Hofko, S. Zimmermann; Dept. of Infectious Diseases, Heidelberg, Germany

**935 Integration of *Plasmodium knowlesi* into a Multiplex Real-Time PCR Assay for Detection of *Plasmodium* Species**  
M. A. Lichay, J. B. Dalton, M. Reller, J. Dumler; Johns Hopkins Univ. Sch. of Med., Baltimore, MD

**936 Population-based Laboratory Surveillance of Imported Malaria in Metropolitan Calgary, 2000-2011**  
D. R. Pillai<sup>1</sup>, C. Lee<sup>1</sup>, K. Laupland<sup>1</sup>, R. Eckhardt<sup>2</sup>, D. Church<sup>1</sup>, W. Chan<sup>1</sup>, D. Gregson<sup>1</sup>; <sup>1</sup>Univ. of Calgary, Calgary, AB, Canada, <sup>2</sup>St. Michael's Hosp., Toronto, ON, Canada

**937 Association Between Genotypes of *Entamoeba histolytica* With Outcomes of Infection Using Pcr Amplification of Trna-linked Short Tandem Repeats**  
U. Ghoshal<sup>1</sup>, V. Jaiswal<sup>1</sup>, S. S. Bajjal<sup>2</sup>, B. Mittal<sup>3</sup>, T. N. Dhole<sup>1</sup>, U. C. Ghoshal<sup>4</sup>; <sup>1</sup>Dept. Of Microbiology, Sanjay Gandhi Postgraduate Inst. Of Med. Sci., Lucknow, India, <sup>2</sup>Dept. of Radiology, Sanjay Gandhi Postgraduate Inst. of Med. Sci., Lucknow, India, <sup>3</sup>Dept. of Genetics, Sanjay Gandhi Postgraduate Inst. of Med. Sci., Lucknow, India, <sup>4</sup>Dept. of Gastroenterology, Sanjay Gandhi Postgraduate Inst. of Med. Sci., Lucknow, India

## 091 STD-Pathogens and Methods (Division C) 10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**938 PPA and NPA for ProbeTec™ *Trichomonas vaginalis* (TV) Qx AmplifiedDNA Assay as Compared to the Aptima TV Assay**  
D. Fuller<sup>1</sup>, S. Taylor<sup>2</sup>, J. Schwabke<sup>3</sup>, J. Lebed<sup>4</sup>, B. Smith<sup>5</sup>, B. Van Der Pol<sup>6</sup>, B. Body<sup>7</sup>, M. Nye<sup>8</sup>, C. Gaydos<sup>9</sup>, T. Davis<sup>1</sup>; <sup>1</sup>Wishard Mem. Hosp.-Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>2</sup>LSU Hlth. Sci. Ctr., New Orleans, LA, <sup>3</sup>Univ. of Alabama, Birmingham, AL, <sup>4</sup>Planned Parenthood Southeastern PA, Philadelphia, PA, <sup>5</sup>Planned Parenthood Gulf Coast, Houston, TX, <sup>6</sup>Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>7</sup>LabCorp, Burlington, NC, <sup>8</sup>LabCorp, Burlington, ND, <sup>9</sup>The Johns Hopkins Univ., Baltimore, MD

**939 Differences in the Diagnostic and Instrumentation Performance of APTIMA Combo 2 on the TIGRIS System and cobas CT/NG on the cobas 4800 System for Detection of *C. trachomatis* in First Void Urine and Self-Collected Vaginal Swabs**  
M. Chernesky<sup>1</sup>, L. Robberts<sup>2</sup>, D. Jang<sup>1</sup>, J. Gilchrist<sup>1</sup>, M. Smieja<sup>1</sup>, J-F. Flandin<sup>2</sup>, S. Ratnam<sup>3</sup>; <sup>1</sup>St. Joseph's Healthcare, McMaster Univ., Hamilton, ON, Canada, <sup>2</sup>Newfoundland, Labrador Publ. Hlth. Lab., St. John's, NL, Canada, <sup>3</sup>Mem. Univ., St. John's, NL, Canada

**940 Comparing the Performance Characteristics of CSF-TRUST and CSF-VDRL for Syphilis: A Cross-sectional Study**  
W. Gu<sup>1</sup>, Y. Yang<sup>1</sup>, L. Wu<sup>1</sup>, S. Yang<sup>1</sup>, L-K. Ng<sup>2</sup>; <sup>1</sup>Shanghai Skin Disease Hosp., Shanghai, China, <sup>2</sup>Natl. Microbiol. Lab., Publ. Hlth. Agency of Canada, Winnipeg, MB, Canada

**941 WITHDRAWN**

**942 The Comparison of Two DNA Extraction Methods for Quality, Time, and Cost for Preservcyt® Samples**  
J. M. West, A. Gordon, A. Moreno, D. A. Payne; American Pathology Partners, Denver, CO

**943 Comparison of Workflow and Clinical Performance of the GenProbe PANTHER and Abbott M2000 for Detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) in Adolescent Females**  
C. Cummins, T. Smith, F. Haamid, C. Holland-Hall, A. Leber; Nationwide Children's Hosp., Columbus, OH

**944 CT/NG Detection from Various Specimen Types: A Comparison of the Roche cobas® 4800 to the Roche cobas® AmpliCor and the BD ProbeTec™**  
H. Webber, A. Orlando, M. Ianosi-Irimie; NorDx, Scarborough, ME

**945 A Comparison of Agar Dilution to Etest for the Assessment of Ceftriaxone and Azithromycin Susceptibility in *Neisseria gonorrhoeae***  
Y. Lee<sup>1</sup>, S. Gose<sup>1</sup>, J. Lei<sup>1</sup>, J. S. Carlson<sup>1</sup>, O. O. Soge<sup>2</sup>, P. Dixon<sup>3</sup>, M. Samuel<sup>4</sup>, M. Pandori<sup>1</sup>; <sup>1</sup>San Francisco Dept. of Publ. Hlth. Lab., San Francisco, CA, <sup>2</sup>Univ. of Washington, Seattle, WA, <sup>3</sup>Univ. of Alabama, Birmingham, AL, <sup>4</sup>California Dept. of Publ. Hlth., Richmond, CA

**946 Test Performance of the COBAS® 4800 System for the Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* with Specimen Pre-treatment Resolution of Invalid Test Samples**  
M. J. Bankowski<sup>1,2</sup>, J. Baba<sup>1</sup>, S. Ono<sup>1</sup>, L. Tanioka<sup>1</sup>, C. Ying<sup>1</sup>, T. Koyamatsu<sup>1</sup>, W. Kim<sup>1,2</sup>; <sup>1</sup>Diagnostic Lab. Services, Inc., Aiea, HI, <sup>2</sup>John A. Burns Sch. of Med. and the Univ. of Hawaii at Manoa, Dept. of Pathology, Honolulu, HI

**947 Prevalence of *Mycoplasma genitalium* in a US Cohort of Symptomatic and Asymptomatic Subjects**  
A. Jiang, A. Johnson, C. Bennett, D. Getman; Hologic, San Diego, CA

**948 *Chlamydia trachomatis*: Non Classical Methods of Identification and Impact on Semen Quality**  
A. M. Ezz el Din; Assiut Univ. Egypt, Assiut, Egypt

**949 A New Rapid Molecular Point-of-Care Test for *Trichomonas vaginalis*: Preliminary Performance Data**  
D. M. Pearce<sup>1</sup>, D. N. Styles<sup>1</sup>, J. P. Hardick<sup>2</sup>, C. A. Gaydos<sup>2</sup>; <sup>1</sup>Atlas, Trowbridge, United Kingdom, <sup>2</sup>Johns Hopkins Univ., Baltimore, MD

**950 A New Molecular Assay for Detection of *T. vaginalis* on the BD Viper™ System**  
B. Van Der Pol<sup>1,2</sup>, S. N. Taylor<sup>3</sup>, J. Schwabke<sup>4</sup>, J. Lebed<sup>5</sup>, D. Fuller<sup>6</sup>, B. K. Smith<sup>7</sup>, B. Body<sup>8</sup>, M. Nye<sup>9</sup>; <sup>1</sup>Indiana Univ. Sch. of Publ. Hlth., Bloomington, IN, <sup>2</sup>Indiana Univ. Sch. of Med., Indianapolis, IN, <sup>3</sup>LSU Hlth. Sci. Ctr., New Orleans, LA, <sup>4</sup>Univ. of Alabama-Birmingham Sch. of Med., Birmingham, AL, <sup>5</sup>Planned Parenthood Southeastern PA, Philadelphia, PA, <sup>6</sup>Wishard Hlth. Services, Indianapolis, IN, <sup>7</sup>Planned Parenthood Gulf Coast, Houston, TX, <sup>8</sup>Lab. Corp. of America, Burlington, NC

**951 Determination of the Prevalence of *Trichomonas vaginalis* in Northern Alberta using Aptima *Trichomonas vaginalis* Transcription-Mediated Amplification Assay**  
E. Prasad<sup>1</sup>, M-C. Lee<sup>1,2</sup>, P. Janzen<sup>1</sup>, N. Zelyas<sup>3</sup>, B. Verity<sup>1</sup>; <sup>1</sup>DynaLIFE Diagnostic Lab., Edmonton, AB, Canada, <sup>2</sup>Dept. of Lab. Med. & Pathology, Univ. of Alberta, Edmonton, AB, Canada, <sup>3</sup>Univ. of Alberta, Edmonton, AB, Canada

**952 Performance of the ProbeTec *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Qx Assays on Throat and Rectal Swab Specimens**  
F. Valencia, K. Bufton, M. Loeffelholz; Univ. of Texas Med. Branch, Galveston, TX



## 092 Microbial Control of Host Cell Functions (Division D)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 953 Anti-*Pseudomonas aeruginosa* IgY Antibodies Promote Specific Bacterial Aggregation and Internalization in Polymorphonuclear Neutrophils**  
K. Thomsen, L. Christophersen, T. Bjarnsholt, P. Ø. Jensen, C. Moser, N. Holby; Dept. of Clinical Microbiol., Rigshosp. et, Copenhagen Univ. Hosp., Copenhagen, Denmark
- 954 *In vitro* Evolution of an Archetype Enteropathogenic *E. coli* Strain**  
S. Nisa, L. Assatourian, T. Hazen, D. Rasko, M. Donnenberg; Univ. of Maryland, Baltimore, MD
- 955 Evidence for the Contribution of *toxAvapA* to the Survival of Nontypeable *Haemophilus influenzae* During Infection**  
D. Ren<sup>1</sup>, A. A. Kordis<sup>2</sup>, D. A. Daines<sup>2</sup>; <sup>1</sup>Rochester Gen. Hosp. Res. Inst., Rochester, NY, <sup>2</sup>Old Dominion Univ., Norfolk, VA
- 956 Alcohol Impairs J774.16 Macrophage-like Cell Effector Functions in *Acinetobacter baumannii* Infection**  
M. B. Asplund<sup>1</sup>, C. Coelho<sup>2</sup>, R. J. B. Cordero<sup>2</sup>, L. R. Martinez<sup>1,2</sup>; <sup>1</sup>Long Island Univ., Post, Brookville, NY, <sup>2</sup>Albert Einstein Coll. of Med., Bronx, NY
- 957 Type 1 Secretion System of *Francisella tularensis* Renders Resistance to Oxidative Stress**  
C. S. Bakshi<sup>1</sup>, M. Zhuo<sup>2</sup>, V. Mora<sup>1</sup>, M. Malik<sup>2</sup>; <sup>1</sup>New York Med. Coll., Valhalla, NY, <sup>2</sup>Albany Coll. of Pharmacy and Hlth. Sci., Albany, NY
- 958 Sequencing and Comparison of Genomes of *Ehrlichia* Strains and Transcriptome Profiles in Mammalian Host and Tick Cells**  
M. Lin<sup>1</sup>, Z. Cheng<sup>1</sup>, Q. Xiong<sup>1</sup>, A. M. Rahman<sup>1</sup>, J. Matsuo<sup>1</sup>, N. Sengamalai<sup>2</sup>, L. Sadzewicz<sup>2</sup>, N. Kumar<sup>2</sup>, L. J. Tallon<sup>2</sup>, C. Fraser<sup>2</sup>, J. C. Dunning Hotopp<sup>2</sup>, Y. Rikihisa<sup>1</sup>; <sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>Univ. of Maryland Sch. of Med., Baltimore, MD
- 959 Interactions of *Burkholderia pseudomallei* with *Acanthamoeba castellanii*: Implications for Environmental Survival and Virulence**  
M. Elsheikh, S. H. El Etr; Lawrence Livermore Natl. Lab., Livermore, CA
- 960 Inhibition of Cholesterol-dependent Obligatory Intracellular Bacterial Infection by  $\beta$ -cyclodextrin**  
Q. Xiong, Y. Rikihisa; The Ohio State Univ., Columbus, OH
- 961 Identification of Bacterial Factors that Mediate Erythrocyte Invasion by *Francisella tularensis***  
D. M. Schmitt, B. N. Cowan, J. Horzempa; West Liberty Univ., West Liberty, WV
- 962 Antioxidants of *Francisella tularensis* Subvert Innate Immune Responses by Interfering with Redox-Sensitive Inflammation Machinery**  
E. L. Westcott<sup>1</sup>, C. S. Bakshi<sup>2</sup>, M. Malik<sup>1</sup>; <sup>1</sup>Albany Coll. of Pharmacy and Hlth. Sci., Albany, NY, <sup>2</sup>New York Med. Coll., Valhalla, NY
- 963 Roles of Glutamine Synthetase in Obligatory Intracellular Pathogen *Ehrlichia chaffeensis***  
Z. Cheng, Y. Rikihisa; The Ohio State Univ., Columbus, OH
- 964 Investigating the *Yersinia pestis*-*Acanthamoeba castellanii* Interaction in the Understanding of Environmental Persistence of the Bubonic Plague**  
J. Santos<sup>1,2</sup>, V. Vadyvaloo<sup>1,2</sup>; <sup>1</sup>Paul G. Allen Sch. for Global Animal Hlth., Pullman, WA, <sup>2</sup>Washington State Univ., Pullman, WA
- 965 Identification of *Salmonella Typhi*'s Typhoid Toxin Receptor**  
J. Song, J. E. Galán; Yale Univ., New Haven, CT
- 966 The Identification and Characterization of a Candidate *Wolbachia* Type IV Effector from Strain Wana**  
K. B. Sheehan, I. L. G. Newton; Indiana Univ., Bloomington, IN

- 967 Bacterial Protein ECH0825 Interacts with Rab5 and Beclin-1-Class III Phosphatidylinositol 3-kinase to Promote *Ehrlichia* Growth**  
H. Liu, H. Niu, M. Lin, Q. Xiong, Y. Rikihisa; The Ohio State Univ., Columbus, OH
- 968 Identification of Genetic Determinants Involved in Rice Rhizobial Interaction and Role of Lipopolysaccharide during Colonization of Rice by *Rhizobium* sp. IRBG74**  
S. Mitra<sup>1</sup>, E. K. James<sup>2</sup>, J. M. Ane<sup>3</sup>, G. Prasad<sup>1</sup>; <sup>1</sup>UW, Milwaukee, WI, <sup>2</sup>James Hutton Inst., Dundee, United Kingdom, <sup>3</sup>UW, Madison, WI
- 969 DNaseX, a GPI-anchored Nucleotidase, Is a Mammalian Receptor for Entry for the Novel *Ehrlichia chaffeensis* Invasin ECH1038**  
D. Mohan Kumar<sup>1</sup>, M. Yamaguchi<sup>1</sup>, K. Miura<sup>1</sup>, M. Los<sup>2</sup>, J. Coy<sup>3</sup>, Y. Rikihisa<sup>1</sup>; <sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>Integrative Regenerative Med. Ctr. Linköping Univ., Linköping, Sweden, <sup>3</sup>Vorstand, CSO TAVARLIN® AG, Darmstadt, Germany
- 970 Is There a Role for the *Salmonella enterica* Horizontally Acquired Virulence Genes in Persistence within Plants?**  
E. L. Kirkpatrick, M. Teplitski; Univ. of Florida, Gainesville, FL
- 971 Cystic Fibrosis Bronchial Epithelial Cells Show Enhanced Formation of *P. aeruginosa*-induced Membrane Bleb-niches and Increased Intracellular Survival**  
A. Jolly<sup>1</sup>, D. J. Evans<sup>1,2</sup>, S. M. J. Fleiszig<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, CA, <sup>2</sup>Touro Univ. California, Vallejo, CA
- 972 Title: Role of Ras Interference 1 (Rin1) in *Pseudomonas aeruginosa* Phagocytosis**  
S. Mustafi, A. Barbieri; FIU, Miami, FL
- 973 The Role of Reactive Oxygen Species in the Regulation of *Burkholderia* Survival Following Immuno-antimicrobial Therapy**  
K. L. Mosovsky<sup>1</sup>, E. Silva<sup>1</sup>, A. Vazquez-Torres<sup>2</sup>, S. W. Dow<sup>1</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Univ. of Colorado Denver, Denver, CO
- 974 The Identification of 6 Novel Nuclear Translocated Proteins in *Anaplasma phagocytophilum***  
S. Gilmore<sup>1</sup>, J. Garcia Garcia<sup>1</sup>, C. L. Larson<sup>2</sup>, P. Beare<sup>2</sup>, J. S. Dumler<sup>1</sup>; <sup>1</sup>Johns Hopkins Univ., Sch. of Med., Baltimore, MD, <sup>2</sup>NIH, Div. of NIAID, Lab. of Intracellular Parasites, Hamilton, MT
- 975 Repression of Cytosolic Innate Immune Responses by *Francisella tularensis***  
M. Malik<sup>1</sup>, R. Dotson<sup>1</sup>, C. S. Bakshi<sup>2</sup>; <sup>1</sup>Albany Coll. of Pharmacy and Hlth. Sci., Albany, NY, <sup>2</sup>New York Med. Coll., Valhalla, NY

## 093 Fungal Pathogenesis, Virulence and Host Response (Division F)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 976 An Infectious Model for *Geomyces destructans*: A Fungus that is Devastating Bat Hibernacula**  
A. J. Davidson, M. B. Landis, L. G. Boomhower, P. Adhikari; Georgia Gwinnett Coll., Lawrenceville, GA
- 977 Characterization of Secreted Serine and Aspartic Proteases in Pathogenesis of *Cryptococcus neoformans***  
L. Li<sup>1,2</sup>, M. S. Price<sup>1</sup>, J. L. Tenor<sup>1</sup>, J. R. Perfect<sup>1</sup>; <sup>1</sup>Duke Univ. Med. Ctr., Durham, NC, <sup>2</sup>Dept. of Infectious Diseases, Guangzhou Eighth People's Hosp., Guangzhou, China
- 978 Costimulation of Myd88- and Card9-mediated Signal Pathways are Required for Activation of Th1/Th17 Immunity to *Coccidioides* Infection**  
C.-Y. Hung<sup>1</sup>, M. Wüthrich<sup>2</sup>, B. S. Klein<sup>2</sup>, G. T. Cole<sup>1</sup>; <sup>1</sup>Univ. of Texas at San Antonio, San Antonio, TX, <sup>2</sup>Univ. of Wisconsin-Madison Med. Sch. and Univ. of Wisconsin Hosp. and Clinics, Madison, WI
- 979 *Candida albicans* Enhances the Hemolytic Activity of *Staphylococcus aureus* via *agr* Activation**  
B. M. Peters, P. L. Fidel Jr, M. C. Noveri; LSU Hlth. Sci. Ctr., New Orleans, LA



- 980 Global Analysis of Core Signaling Pathways in Human Endothelial and Epithelial Cells Activated by *Candida albicans***  
Y. Liu<sup>1</sup>, J. Schwartz<sup>2</sup>, A. Shetty<sup>2</sup>, S. G. Filler<sup>1,3</sup>, V. M. Bruno<sup>2</sup>; <sup>1</sup>Los Angeles BioMed. Res. Inst. at Harbor-UCLA Med. Ctr., Torrance, CA, <sup>2</sup>Inst. for Genome Sci. and the Dept. of Microbiol. and Immunology, Univ. of Maryland Sch. of Med., Baltimore, MD, <sup>3</sup>David Geffen Sch. of Med. at UCLA, Los Angeles, CA
- 981 Adhesion and Biofilm Forming Capacity *In vivo* Determines the Cutaneous Tropism of *Cryptococcus neoformans* var. *neoformans* (serotype D) strains**  
G. M. Desai<sup>1,2</sup>, J. M. Greco<sup>1</sup>, R. J. B. Cordero<sup>2</sup>, C. DeLeon-Rodriguez<sup>2</sup>, N. Jain<sup>2</sup>, J. D. Nosanchuk<sup>2</sup>, B. C. Fries<sup>2</sup>, L. R. Martinez<sup>1</sup>; <sup>1</sup>Long Island Univ., Post, Brookville, NY, <sup>2</sup>Albert Einstein Coll. of Med., Bronx, NY
- 982 The Impact of Surfactant Protein-D, IL-5, and Eosinophilia on Cryptococcosis**  
S. M. Holmer<sup>1</sup>, K. S. Evans<sup>1</sup>, Y. G. Asfaw<sup>1</sup>, J. G. Ledford<sup>1</sup>, S. Geunes-Boyer<sup>2</sup>, G. D. Sempowski<sup>1</sup>, J. R. Perfect<sup>1</sup>, J. Wright<sup>1</sup>; <sup>1</sup>Duke Univ., Durham, NC, <sup>2</sup>Springer Healthcare, inSci. Communications, Yardley, PA
- 983 A Zebrafish-*Cryptococcus neoformans* Model System for Analysis of Host- Pathogen Interactions**  
J. R. Perfect, J. L. Yang, J. L. Tenor, S. H. Oehlers, D. M. Tobin; Duke Univ. Med. Ctr., Durham, NC
- 984 Treatment of *Pneumocystis murina* Infected Immunosuppressed Mice with a Host-Directed Kinase Inhibitor Leads to Improved Survival**  
M. J. Linke<sup>1,2</sup>, A. Ashbaugh<sup>2</sup>, M. Collins<sup>2</sup>, K. Lynch<sup>2</sup>, M. H. Werner<sup>3</sup>, M. T. Cushion<sup>1,2</sup>; <sup>1</sup>Cincinnati Dept. of VA Med. Ctr., Cincinnati, OH, <sup>2</sup>Univ. of Cincinnati, Coll. of Med., Dept. of Internal Med., Cincinnati, OH, <sup>3</sup>Inhibikase Therapeutics, Inc., Atlanta, GA
- 985 Melanized *Cryptococcus neoformans* Elicits Nodule Formation in *Galleria mellonella***  
H. Eisenman, R. Duong, R. E. Tsue; Baruch Coll., CUNY, New York, NY
- 986 Mapping the Connection Between Urea and Capsule Production in *Cryptococcus gattii***  
N. Cheng, J. L. Tenor, M. S. Price, A. E. Frazzitta, J. R. Perfect; Duke Univ. Med. Ctr., Durham, NC
- 987 *Candida glabrata*: A Pathogen Adapted to Intracellular Survival in Macrophages**  
L. Kasper<sup>1</sup>, K. Seider<sup>1</sup>, F. Gerwien<sup>1</sup>, S. Brunke<sup>1,2</sup>, B. Hube<sup>1,2,3</sup>; <sup>1</sup>Leibniz Inst. for Natural Product Res. and Infection Biol. – Hans Knoll Inst. (HKI), Jena, Germany, <sup>2</sup>Ctr. for Sepsis Control and Care, Univ. Hosp., Jena, Germany, <sup>3</sup>Friedrich Schiller Univ., Jena, Germany
- 988 The Role of Notch Signaling in Immune Response to Cryptococcal Infection in a Mouse Model**  
Y. Qiu<sup>1,2</sup>, A. R. Sandy<sup>3,4</sup>, Z. Hadd<sup>1</sup>, M. J. Davis<sup>1,2</sup>, R. Chapman<sup>1,2</sup>, J. Carolan<sup>1</sup>, I. Maillard<sup>2,3,4</sup>, M. A. Olszewski<sup>1,2</sup>; <sup>1</sup>Res., VAAHS, Ann Arbor, MI, <sup>2</sup>Dept. of Internal Med., Univ. of Michigan Hlth. System, Ann Arbor, MI, <sup>3</sup>Graduate Program in Immunology, Univ. of Michigan, Ann Arbor, MI, <sup>4</sup>Life Sci. Inst., Univ. of Michigan, Ann Arbor, MI
- 989 Neutrophils Can Degrade Cell Wall-Associated Protein and Unmask *C. albicans*  $\beta$ -Glucan**  
E. Hidu, R. Stetson, K. Mckeown, R. T. Wheeler; Univ. of Maine, Orono, ME

## 094 Gene and Genome Structure (Division H)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 990 Comparative Analysis of Alternansucrase Genes from *Leuconostoc***  
S. M. Holt; Western Illinois Univ., Macomb, IL
- 991 Tools for Microbial Genome Assembly and Finishing**  
M. Matvienko<sup>1</sup>, M. Simonsen<sup>2</sup>, P. Liboriussen<sup>2</sup>, P. Nielsen<sup>2</sup>, J. Jakobsen<sup>2</sup>, S. Mikkelsen<sup>2</sup>, H. Sandmann<sup>2</sup>, S. Mønsted<sup>2</sup>, J. Bendtsen<sup>2</sup>; <sup>1</sup>CLC Bio, CA, <sup>2</sup>CLC Bio, Denmark

- 992 Metabolic Pathway Analysis Of Genome-wide Study In *Rhodococcus* Strain Highlights Aromatic Hydrocarbon-degrading Genes For Bioremediation**  
N. Kimura, T. Miura, Y. Kamagata; Natl. Inst. of Advanced Industrial Sci. and Technology, Tsukuba, Japan
- 993 Genomic And Genetic Investigation Of Sequence Differences Responsible For 5-aminolevulinic Acid Sensitivity Of *Rhodobacter Sphaeroides* Strain 2.4.1.**  
Y. Wang, J. Zeilstra-Ryalls; Bowling Green State Univ., Bowling Green, OH
- 994 Genome Analyses for High Glucose Tolerance of Acetic Acid Bacteria**  
H. Hadano<sup>1</sup>, N. Higashiura<sup>1</sup>, H. Hirakawa<sup>2</sup>, S. Takebe<sup>1</sup>, K. Matsushita<sup>3</sup>, Y. Azuma<sup>1</sup>; <sup>1</sup>BOST, Kinki Univ., Kinokawa, Japan, <sup>2</sup>Kazusa DNA Res. Inst., Kisarazu, Japan, <sup>3</sup>Faculty of Agriculture, Yamaguchi Univ., Yamaguchi, Japan
- 995 Degenerated CRISPR-Cas Elements in *Campylobacter fetus***  
B. Duim<sup>1,2</sup>, W. G. Miller<sup>3</sup>, M. Gilbert<sup>1,2</sup>, L. van der Graaf<sup>1,2</sup>, E. Yee<sup>3</sup>, N. Simon<sup>3</sup>, J. A. Wagenaar<sup>1,2</sup>; <sup>1</sup>Utrecht Univ., Faculty of Veterinary Med., Utrecht, Netherlands, <sup>2</sup>WHO Collaborating Ctr. for Campylobacter, OIE Reference Lab. for Campylobacteriosis, Netherlands, <sup>3</sup>Produce Safety and Microbiol. Res. Unit, Agricultural Res. Service, USDA, Albany, CA
- 996 Are Bacterial GTPases Involved in RNA Recycling?**  
J. Winters, V. Robinson, P. E. March; Emmanuel Coll., Boston, MA
- 997 Complete Genome Sequence of *Salmonella enterica* subsp. *enterica* Serotype Oranienburg Isolated from an Aquatic Environment**  
A. Medrano-Félix<sup>1</sup>, C. Chaidez<sup>1</sup>, M. Jiménez<sup>2</sup>, B. Gómez-Gil<sup>3</sup>, J. Martínez-Urtaza<sup>4</sup>, J. León-Félix<sup>1</sup>, N. Castro-del Campo<sup>1</sup>, B. Heredia<sup>1</sup>, C. Martínez<sup>1</sup>; <sup>1</sup>Ctr. de Investigación en Alimentación y Desarrollo A. C., Culiacán, Mexico, <sup>2</sup>Univ. Autónoma de Sinaloa, Culiacán, Mexico, <sup>3</sup>Ctr. de Investigación en Alimentación y Desarrollo A. C., Mazatlán, Mexico, <sup>4</sup>European Ctr. for Disease Prevention and Control, Stockholm, Sweden
- 998 A MarR Transcriptional Regulator from the Citrus Pathogen '*Candidatus Liberibacter asiaticus*' Is a Target for the Development of Therapeutics against Citrus Greening Disease**  
A. H. Potts, K-K. Lai, G. L. Lorca, C. F. Gonzalez; Univ. of Florida, Gainesville, FL

## 095 General Microbiology I (Division I)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 999 Two Glycosylation-Associated Proteins Protect the Third Protein from Degradation through Interaction with a Peptidase System in *Streptococcus parasanguinis***  
H. L. Echlin, F. Zhu, Y. Li, H. Wu; Univ. of Alabama at Birmingham, Birmingham, AL
- 1000 Contributions of Different Players to cAMP-CRP-mediated Regulation in *Vibrio fischeri***  
D. M. Colton, E. V. Stabb; Univ. of Georgia, Athens, GA
- 1001 Identification of Surface-Layer Associated Proteins (SLAPs) in *Lactobacillus acidophilus* NCFM**  
B. R. Johnson, K. M. Selle, Y. J. Goh, S. O'Flaherty, T. R. Klaenhammer; North Carolina State Univ., Raleigh, NC
- 1002 Rapid Test System for the Detection of Beer-spoilage Bacteria**  
S. Verma<sup>1</sup>, U. M. Kohlstock<sup>2</sup>, U. Louca<sup>2</sup>, K. Vetter<sup>2</sup>, M. Zachlod<sup>2</sup>, J. Siegrist<sup>1</sup>; <sup>1</sup>Sigma-Aldrich Co., Bellefonte, PA, <sup>2</sup>Scanbec GmbH, Bitterfeld-Wolfen, Germany
- 1003 The Effect of Caries Risk Factors on the Microbial Communities of Dental Plaque in Children**  
E. Morou-Bermudez<sup>1</sup>, S. M. Rodriguez<sup>2</sup>, M. G. Dominguez-Bello<sup>3,4</sup>; <sup>1</sup>Univ. of Puerto Rico Sch. of Dental Med., San Juan, PR, <sup>2</sup>Dept. of Biol. Univ. of Puerto Rico Rlo Piedras, San Juan, PR, <sup>3</sup>Dept. of Biol. Univ. of Puerto Rico Rlo Piedras, San Juan, PR, <sup>4</sup>New York Univ. Sch. of Med., NY

- 1004 Mms6 Is Localized to the Magnetosome Chain of *Magnetospirillum magneticum* AMB-1**  
Z. W. Oestreicher<sup>1,2</sup>, S. K. Lower<sup>1</sup>, D. A. Bazylinski<sup>3</sup>, B. H. Lower<sup>1</sup>;  
<sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>Univ. of Kanazawa, Kanazawa, Japan, <sup>3</sup>Univ. of Nevada, Las Vegas, Las Vegas, NV
- 1005 Isolation of Cultivable Antibiotic Resistant Bacteria from Puerto Rican Cave Soil**  
N. Hussein-Fernandez; Univ. of Puerto Rico, Mayaguez, PR
- 1006 The Herbicides Isoxaben and Flupoxam Affect the Growth and Cellulose Biosynthesis of *Gluconacetobacter xylinus* ATCC 53582**  
J. L. Strap<sup>1</sup>, O. Qureshi<sup>1</sup>, H. Sohail<sup>1</sup>, A. Latos<sup>1,2</sup>; <sup>1</sup>Univ. of Ontario Inst. of Technology, Oshawa, ON, Canada, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada
- 1007 Investigation of Bacteria Cultured from Multipurpose Disinfecting Solutions of Corneal Infiltrate Event Patients**  
N. A. Brady, M. Milenkovic; Abbott Med. Optics, Inc., Santa Ana, CA
- 1008 Application of Single Molecule, Real-time (SMRT) DNA Sequencing to the Analysis of PT in Oligonucleotides, Plasmids, and Bacterial Genomic DNA**  
B. Cao<sup>1,2</sup>, T. A. Clark<sup>3</sup>, M. S. DeMott<sup>1</sup>, Q. Cheng<sup>2</sup>, Z. Deng<sup>2</sup>, M. Boitano<sup>3</sup>, K. Luong<sup>3</sup>, S. W. Turner<sup>3</sup>, D. You<sup>2</sup>, P. C. Dedon<sup>1</sup>, J. Korlach<sup>3</sup>;  
<sup>1</sup>MIT, Cambridge, MA, <sup>2</sup>Shanghai Jiao Tong Univ., Shanghai, China, <sup>3</sup>Pacific BioSci., Menlo Park, CA
- 1009 Competition Between Novel *Streptococcus* Isolates from the Human Oral Cavity**  
D. Stanczyk, M. Sizova, S. Epstein; Northeastern Univ., Boston, MA
- 1010 Do Slow Growers Exist?**  
B. M. Berdy<sup>1</sup>, S. Buerger<sup>2</sup>, A. Sousa<sup>1</sup>, A. Spoering<sup>3</sup>, L. Ling<sup>3</sup>, S. Epstein<sup>1</sup>; <sup>1</sup>Northeastern Univ., Boston, MA, <sup>2</sup>Boston Univ., Boston, MA, <sup>3</sup>Novobiotic Pharmaceuticals, Cambridge, MA
- 1011 Periplasmic Free Oligosaccharides Produced by *Campylobacter lari***  
R. Dwivedi<sup>1</sup>, H. Nothaft<sup>1</sup>, B. Reiz<sup>2</sup>, A. Alemka<sup>1</sup>, Y. Barre<sup>1</sup>, R. Hu<sup>3</sup>, J. Li<sup>3</sup>, R. Whittall<sup>2</sup>, C. M. Szymanski<sup>1</sup>; <sup>1</sup>Dept. of Biological Sci. and Alberta Glycomics Ctr., Univ. of Alberta, Edmonton, AB, Canada, <sup>2</sup>Dept. of Chemistry, Univ. of Alberta, Edmonton, AB, Canada, <sup>3</sup>Inst. for Biological Sci., Natl. Res. Council, Ottawa, ON, Canada
- 1012 Mutagenesis of Key Catalytic Residues in a Dehydratase Domain from a Bacterial Polyunsaturated Fatty Acid Synthase**  
J. M. Sanchez, D. J. Oyola-Robles, A. Baerga-Ortiz; UPR-Med. Sci. Campus, San Juan, PR
- 1013 Mucoid Phenotype in the Biocontrol Agent *Pseudomonas fluorescens* Pf0-1**  
A. Aspedon; Southwestern Oklahoma State Univ., Weatherford, OK
- 1014 Identifying Novel Genes Involved in Rebaudioside A Transport and Metabolism from Isolated Environmental Bacteria**  
T. M. Turner; Dominican Univ., Chicago, IL
- 1015 *Ureaplasma Parvum* Stimulation Prompts Chlamydia Trachomatis Growth In Hela Cells Treated With Ifn-γ**  
T. Yamazaki<sup>1</sup>, J. Matsuo<sup>1</sup>, S. Nakamura<sup>2</sup>, H. Yamaguchi<sup>1</sup>; <sup>1</sup>Hokkaido Univ., Sapporo, Japan, <sup>2</sup>Juntendo Univ., Tokyo, Japan
- 1016 A Comparison of Plating and Broth Media for the Resuscitation and Enrichment of *Burkholderia cenocepacia* from Distilled Water**  
Y. Ahn<sup>1</sup>, H. Ahn<sup>2</sup>, Y.-J. Lee<sup>3</sup>, J. J. LiPuma<sup>4</sup>, D. Hussong<sup>5</sup>, C. E. Cerniglia<sup>1</sup>; <sup>1</sup>NCTR, U.S. FDA, Jefferson, AR, <sup>2</sup>Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, <sup>3</sup>Univ. of Oklahoma, Norman, OK, <sup>4</sup>Univ. of Michigan, Ann Arbor, MI, <sup>5</sup>CDCER, U.S. FDA, Silver Spring, MD
- 1017 Elucidating Electrical Connections for Direct Interspecies Electron Transfer in Defined Syntrophic Methanogenic Co-cultures**  
A.-E. Rotaru, P. Shrestha, F. Liu, M. Shrestha, B. Markovaite, D. Shrestha, J. Smith, P.-L. Tremblay, K. Nevin, D. Lovley; Univ. of Massachusetts, Amherst, MA

- 1018 Sucrase Production and Growth of *Leuconostoc* in Chemically Defined Media**  
J. L. Liles, M. A. McGlone, M. D. Bauer, Z. R. Andrew, S. M. Holt; Western Illinois Univ., Macomb, IL
- 1019 Isolation and Characterization of Protease Produced by *Bacillus* sp. isolated from Periodontitis**  
T. M. Onakoya; Federal Univ. of Agriculture, Abeokuta, Ogun State, Nigeria
- 1020 Microbial Synthesis of Carbon-Nitrogen Triple Bond: Unique Enzyme Reaction**  
J. Nomura<sup>1</sup>, H. Hashimoto<sup>2</sup>, T. Ohta<sup>3</sup>, Y. Hashimoto<sup>1</sup>, M. Kobayashi<sup>1</sup>;  
<sup>1</sup>Univ. of Tsukuba, Tsukuba, Japan, <sup>2</sup>Yokohama City Univ., Yokohama, Japan, <sup>3</sup>Kyushu Univ., Fukuoka, Japan
- 1021 In Search of a p-Value: Navigating the Statistical Maze**  
S. Wiles, A. L. Bishop; Univ. of Auckland, Auckland, New Zealand
- 1022 Isolation and Identification of New *Streptomyces* Species Associated to the *Streptomyces acidiscabies* subclade**  
E. T. Quintana<sup>1</sup>, A. Alejo-Viderique<sup>1</sup>, L. A. Maldonado<sup>2</sup>, R. F. Gastelú<sup>3</sup>, G. Herrera-Rodríguez<sup>4</sup>; <sup>1</sup>Escuela Natl. de Ciencias Biológicas, Inst. Politécnico Natl., Prolongación de Carpio y Plan de Ayala s/n, Col. Santo Tomás, Del. Miguel Hidalgo, Mexico DF, Mexico, <sup>2</sup>Inst. de Ciencias del Mar y Limnología, Circuito Exterior s/n, Ciudad Univ., Mexico DF, Mexico, <sup>3</sup>Univ. de Occidente, Blvd. Macario Gaxiola y Carretera Internacional México, Los Mochis, Mexico, <sup>4</sup>Laboratorio de Diagnóstico Fitosanitario, Edificio A.A.R.F.S., Los Mochis, Mexico
- 1023 Novel Species of Neonectria-like Fungi (Nectriaceae, Hypocrales) in Northern Taiwan**  
J.-R. Guu, J.-C. Chang, G.-F. Yuan; FIRDI, Hsinchu, Taiwan
- 1024 Evaluation of Commonly Used Preservatives in Cosmetic Formulations against Antibiotic Susceptible and Resistant *Staphylococcus* Isolates**  
D. J. English, Y. Yang, L. Tran-Osowski, S. Pungitore, K. Lapointe, V. Chu, M. Scotti, S. D. Gettings; Avon Products Inc., Suffern, NY
- 096 Microbial Responses to Stress and Environmental Stimuli (Division I)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1025 Evaluation of Response Regulators Involved in *Pseudomonas syringae* Light-mediated Signaling**  
R. S. McGrane, L. Wu, G. A. Beattie; Iowa State Univ., Ames, IA
- 1026 Competitiveness and Cost of High Persistence in *Pseudomonas aeruginosa***  
K. Stepanyan, F. Muratori, B. Van den Bergh, N. Verstraeten, M. Fauvart, T. Wenseleers, J. Michiels; KU Leuven, Leuven, Belgium
- 1027 Germinant-Free Stochastic Germination of Wild Type *Bacillus subtilis* Spores: Observations in Favor of the Scout Hypothesis**  
P. A. Muller, Jr., S. S. Epstein; Northeastern Univ., Boston, MA
- 1028 Understanding of Adaptation and Molecular Mechanisms of *D. vulgaris* in Response to Multiple Environmental Stresses**  
R. Song<sup>1</sup>, A. Zhou<sup>1</sup>, Z. He<sup>1</sup>, K. L. Keller<sup>2</sup>, J. D. Wall<sup>2</sup>, A. P. Arkin<sup>3</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Univ. of Missouri-Columbia, Columbia, MO, <sup>3</sup>Physical BioSci. Div., Lawrence Berkeley Natl. Lab., Berkeley, CA
- 1029 Transcriptional Response of *Sinorhizobium meliloti* to Hydrogen Peroxide**  
A. P. Lehman, S. R. Long; Stanford Univ., Stanford, CA
- 1030 Characterization of the *Streptococcus mutans* LexA-Like Regulator and its Role in DNA Damage Response**  
V. Leung, S. Koyanagi, C. M. Lévesque; Univ. of Toronto, Toronto, ON, Canada

- 1031 Molecular Mechanisms of Salt Tolerance Revealed by Experimental Evolution of *Desulfovibrio vulgaris* under Salinity Stress**  
A. Zhou<sup>1</sup>, R. Baran<sup>2</sup>, J. Ma<sup>1</sup>, Q. Tu<sup>1</sup>, T. Northern<sup>2</sup>, Y. Qin<sup>1</sup>, Z. He<sup>1</sup>, A. Arkin<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 1032 Universal Stress Protein Gene Expression in *Bacillus thuringiensis***  
B. Williams<sup>1,2</sup>, W. Ayensu<sup>3</sup>, R. Isokpehi<sup>3</sup>, B. Garner<sup>1</sup>; <sup>1</sup>Tougaloo Coll., Jackson, MS, <sup>2</sup>Jackson State Univ., MS, <sup>3</sup>Jackson State Univ., Jackson, MS
- 1033 Molecular Mechanisms of LytSR-mediated Signal Transduction in *Staphylococcus aureus***  
M. K. Lehman, B. K. Sharma-Kuinkel, J. L. Bose, K. W. Bayles; Univ. of Nebraska Med. Ctr., Omaha, NE
- 1034 The Effect of Universal Stress Protein A Phosphorylation on Heat Shock Response in *Escherichia coli***  
E. S. Spady, A. C. Vollmer; Swarthmore Coll., Swarthmore, PA
- 1035 Characterization of Iron Utilization in *Bacillus amyloquelificans***  
C. Youngblood<sup>1</sup>, B. Williams<sup>1,2</sup>, B. Catchings<sup>1</sup>, S. Leverette<sup>1</sup>, B. Garner<sup>1</sup>; <sup>1</sup>Tougaloo Coll., Jackson, MS, <sup>2</sup>Jackson State Univ., MS
- 1036 Are Antibiotics in the Environment Contributing to Resistance in Non-tuberculous *Mycobacteria*?**  
V. Atukorale<sup>1</sup>, N. Boire<sup>1</sup>, A. Vadlamudi<sup>2</sup>, S. Riedel<sup>2</sup>, N. Parrish<sup>2</sup>; <sup>1</sup>Johns Hopkins Bloomberg Sch. of Publ. Hlth., Baltimore, MD, <sup>2</sup>Johns Hopkins Med. Inst., Baltimore, MD
- 1037 Decreased Infecting Ability of Long-term Starvation of *Pseudomonas aeruginosa* in a Mouse Model**  
Y. Valmyr, D. Haynes, T. Belay; Bluefield State Coll., Bluefield, WV
- 1038 Probing Uranium Resistance by the Aerobic, Aquatic Bacterium *Caulobacter crescentus***  
M. C. Yung, J. Ma, Y. Jiao; LLNL, Livermore, CA
- 1039 Response of *E. coli* Persister Cells to a Fatty Acid Signaling Molecule**  
A. Morozov, C. N. H. Marques; Binghamton Univ., Binghamton, NY
- 1040 Effects of Seawater on the Expression of *phz* gene cluster for Production of Pyocyanin in *Pseudomonas aeruginosa***  
S-P. Huang<sup>1</sup>, T-S. Huang<sup>2</sup>, T-H. Wang<sup>1</sup>, C-R. Wang<sup>1</sup>; <sup>1</sup>Dept. of Med. Lab. Sci. and Biotechnology, Fooyin Univ., Kaohsiung City, Taiwan, <sup>2</sup>Section of Microbiol., Dept. of Pathology and Lab. Med., Kaohsiung Veterans Gen. Hosp., Kaohsiung City, Taiwan
- 1041 Identification and Application of a Bacterial Model for Toxicity Studies of Perfluorooctanoic Acid and Erfluorooctane Sulfonic Acid**  
M. Suwansaard<sup>1</sup>, A. Snyder<sup>1</sup>, J. Zeilstra-Ryalls<sup>1</sup>, B. Ranson-Olson<sup>2</sup>; <sup>1</sup>Bowling Green State Univ., Bowling Green, OH, <sup>2</sup>Lake Superior State Univ., Marie, MI
- 1042 Characterization of a Novel Bacteriophytochrome from *Ramlibacter tataouinensis***  
A. W. Baker, K. T. Forest; Univ. of Wisconsin-Madison, Madison, WI
- 1043 Antibacterial Effects of Low-Intensity Extremely High Frequencies Electromagnetic Irradiation on *Escherichia coli*: Morphology Study**  
H. Torgomyan<sup>1</sup>, K. Hovnanyan<sup>2</sup>, A. Trchounian<sup>1</sup>; <sup>1</sup>Yerevan State Univ., Yerevan, Armenia, <sup>2</sup>Inst. of Molecular Biol., Natl. Academy of Sci. of Armenia, Yerevan, Armenia
- 1044 Hydrocarbon Unsaturation in the Cyanobacterium *Synechococcus sp.* PCC 7002**  
D. Mendez-Perez<sup>1</sup>, B. F. Pfeleger<sup>1,2</sup>; <sup>1</sup>Univ. of Wisconsin-Madison, Madison, WI, <sup>2</sup>Great Lakes Bioenergy Res. Ctr., Madison, WI
- 1045 The *Rhodobacter sphaeroides* 2.4.1 CrpO regulon and the Role of Choline**  
M. Suwansaard, J. Zeilstra-Ryalls; Dept. of Biol. Sci., Bowling Green, OH

- 1046 Eep Confers Lysozyme Resistance to *Enterococcus faecalis* via the Activation of an Extra Cytoplasmic Function (ECF) Sigma Factor**  
S. Varahan, V. Iyer, L. E. Hancock; Kansas State Univ., Manhattan, KS

**1047 WITHDRAWN**

- 1048 Antagonistic Activities of Extremophile Kazakhstan Extracts against Drug-Resistant Hospital-Associated Pathogens**  
M. Baksh<sup>1</sup>, L. Trenozhnikova<sup>2</sup>, S. Albert<sup>1</sup>, L. Seaton<sup>1</sup>, A. Patel<sup>1</sup>, C. Faza<sup>1</sup>, J. Whitaker<sup>3</sup>, C. Mayer<sup>4</sup>, J. Roberts<sup>1</sup>, Y. Pathak<sup>4</sup>, S. Zhou<sup>4</sup>, L. Calcut<sup>5</sup>, A. Azizan<sup>1</sup>; <sup>1</sup>Univ. Of South Florida-Coll. of Publ. Hlth., Tampa, FL, <sup>2</sup>Inst. of Microbiol. and Virology, Kazakhstan, <sup>3</sup>Florida Hosp., Tampa, FL, <sup>4</sup>Univ. Of South Florida-Coll. of Pharmacy, Tampa, FL, <sup>5</sup>Florida Ctr. of Excellence for Drug Discovery and Innovation, Tampa, FL

**097 Unusual Microorganisms/Unusual Environments (Division I)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1049 *Exiguobacterium caborojensis* sp. nov., A Moderate Halophile From The Cabo Rojo Salterns Microbial Mats**  
L. Casillas, R. Rabelo, A. Villafane, D. Nieves; UPR-Humacao, Humacao, Puerto Rico
- 1050 Genetic and Metabolic Profiles of Microbial Isolates from the Mars Exploration Rovers**  
K. Arora-Williams<sup>1,2</sup>, W. Schubert<sup>1</sup>, S. Smith<sup>3</sup>, S. Childers<sup>4</sup>, A. Paszczynski<sup>3</sup>, J. N. Benardini<sup>1</sup>; <sup>1</sup>Jet Propulsion Lab., Pasadena, CA, <sup>2</sup>Stony Brook Univ., Stony Brook, NY, <sup>3</sup>Univ. of Idaho, Moscow, ID, <sup>4</sup>Colby Coll., Waterville, ME
- 1051 *Hensula anomala* is a Metal Specific Berkeley Pit Extremophile**  
M. VanSickle<sup>1</sup>, M. Friedlander<sup>1</sup>, A. Stierle<sup>2</sup>, C. L. Rush<sup>1</sup>; <sup>1</sup>Salish-Kootenai Coll., Pablo, MT, <sup>2</sup>Univ. of Montana, Missoula, MT
- 1052 Isolation and Characterization of a Novel Bacteriophage from the Great Salt Lake that Infects *Halomonas***  
M. J. Domek<sup>1</sup>, L. E. Johnson<sup>1</sup>, M. D. Culumber<sup>1</sup>, D. M. Belnap<sup>2</sup>, C. J. Oberg<sup>1</sup>; <sup>1</sup>Weber State Univ., Ogden, UT, <sup>2</sup>Univ. of Utah, Salt Lake City, UT
- 1053 Bacterial Growth on Deliquescent Lithium and Perchlorate Salts Potentially Relevant to Mars**  
J. D. Crisler<sup>1</sup>, T. T. Mai<sup>1</sup>, Z. Ahmad<sup>1</sup>, F. Chen<sup>2</sup>, B. C. Clark<sup>3</sup>, M. A. Schneegurt<sup>1</sup>; <sup>1</sup>Wichita State Univ., Wichita, KS, <sup>2</sup>NASA Jet Propulsion Lab., Pasadena, CA, <sup>3</sup>Space Sci. Inst., Boulder, CO
- 1054 Sucrotolerance in Oligosaline Soils and Halotolerant Bacteria**  
D. B. Moore, C. Fredsgaard, T. L. Kurz, M. A. Schneegurt; Wichita State Univ., Wichita, KS
- 1055 Bioburden Levels from Saphenous and Femoral Vein Grafts Recovered for Transplant: 2007-2011**  
M. McCarthy<sup>1</sup>, M. Hackel<sup>1</sup>, M. Bailey-Person<sup>1</sup>, M. Neudorf<sup>1</sup>, T. Stevens<sup>2</sup>, A. Jordan<sup>2</sup>; <sup>1</sup>Intl. Hlth. Management, Assoc., Schaumburg, IL, <sup>2</sup>Vascular Transplant Services, Schaumburg, IL
- 1056 Bedbugs (*Cimex lectularius*): A Possible Reservoir of *Chlamydia pneumoniae***  
A. R. Oller, B. S. Connacher; Univ. of Central Missouri, Warrensburg, MO
- 1057 How Smart is Your Smart Phone: Bacterial Contamination of Mobile Phones**  
H. Young-Oxendine, S. Watts, D. Locklear, D. Van Wart, M. E. Santos; Univ. of North Carolina at Pembroke, Pembroke, NC
- 1058 Isolation of Purple Non-Sulfur Bacteria from the Phytotelmata of Heliconia and Zingiber**  
L. Rodriguez-Colon, P. M. Soto-Justiniano, C. Rios-Velazquez; Univ. of Puerto Rico at Mayaguez, Mayaguez, PR



**098 Cell Surfaces and Biofilms (Division J)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1059 Genome-wide Studies of *Escherichia coli* Cell Stiffness Identifies New Regulators of Cell Wall Assembly**  
G. K. Auer<sup>1</sup>, K. Huang<sup>2</sup>, D. B. Weibel<sup>1</sup>; <sup>1</sup>Univ. of Wisconsin-Madison, Madison, WI, <sup>2</sup>Stanford Univ., Stanford, CA
- 1060 Impact of Cardiolipin on Cell Morphology of *E. coli***  
E. Yoon<sup>1</sup>, N. Vinayavekhin<sup>2</sup>, A. Saghatelian<sup>2</sup>, D. Weibel<sup>1</sup>; <sup>1</sup>Univ. of Wisconsin-Madison, Madison, WI, <sup>2</sup>Harvard Univ., Cambridge, MA
- 1061 The Crystal Structure of BamA-BamB Fusion Protein from *E. coli***  
K. B. Jansen, S. L. Baker, M. C. Sousa; Univ. of Colorado at Boulder, Boulder, CO
- 1062 Coordinated Assembly of the Coat and Cortex During Sporulation in *Bacillus subtilis***  
C. A. Weiss<sup>1,2</sup>, I. Tan<sup>1,2</sup>, K. Ramamurthi<sup>1,2</sup>; <sup>1</sup>NIH, Bethesda, MD, <sup>2</sup>Lab. of Molecular Biol., Natl. Cancer Inst., NIH, Bethesda, MD
- 1063 The C-terminal Half of SpoIVA Harbors a Polymerization Domain that Is Required for Coat Assembly During Sporulation in *Bacillus subtilis***  
S. Lee, J.-P. Castaing, V. Anantharaman, L. Aravind, K. S. Ramamurthi; NIH, Bethesda, MD
- 1064 Peptidoglycan Transformations during *Bacillus subtilis* Sporulation Point to a Layered Architecture of Gram-Positive Cell Wall**  
E. Tocheva<sup>1</sup>, K. Pogliano<sup>2</sup>, G. Jensen<sup>1</sup>; <sup>1</sup>Caltech, Pasadena, CA, <sup>2</sup>UCSD, La Jolla, CA
- 1065 Defining the Role of the PilJ Periplasmic Domain on Chp Chemotaxis System Outputs**  
G. T. Riddell, V. Y. Potharla, S. L. Bardy; Univ. of Wisconsin Milwaukee, Milwaukee, WI
- 1066 The Slime Nozzle of *Myxococcus xanthus* is Required for Adventurous Motility**  
D. M. Zuckerman, E. Hoiczky; Johns Hopkins Sch. of Publ. Hlth., Baltimore, MD
- 1067 Measuring and Imaging the Local-scale Changes to Biomechanical and Surface Electric Properties of *E. coli* Cells With and Without Exposure to Hematite Nanoparticles**  
W. Zhang<sup>1</sup>, J. Hughes<sup>2</sup>, Y. Chen<sup>3</sup>; <sup>1</sup>New Jersey Inst. of Technology, Newark, NJ, <sup>2</sup>Drexel Univ., Philadelphia, PA, <sup>3</sup>Georgia Inst. of Technology, Atlanta, GA
- 1068 The *Flavobacterium johnsoniae* Chitinase ChiA is Required for Chitin Utilization and is Secreted by a Type IX Secretion System**  
S. S. Kharade, M. J. McBride; Univ. of Wisconsin, Milwaukee, Milwaukee, WI
- 1069 YlxM: A Novel Protein Component of the *Streptococcus mutans* Signal Recognition Particle Pathway**  
M. L. Williams, L. J. Brady; Univ. of Florida, Gainesville, FL
- 1070 Detailed Analysis of C-di-GMP Mediated Regulation of CsgD Expression in *Salmonella typhimurium***  
I. Ahmad, T. Beske, U. Römling; Dept. of Microbiol., Tumor and Cell Biol., Karolinska Inst., Stockholm, Sweden
- 1071 Identification of Inhibitors of C-di-gmp-specific Diguanylate Cyclases and Phosphodiesterase Using a FRET-based HTS Screen**  
H. D. Kulasekara, M. Christen, C. Kamischke, T. Kline, S. Miller; Univ. of Washington, Seattle, WA
- 1072 Wiring Electroactive Biofilms with Pilus Nanowires**  
R. J. Steidl, G. Reguera, S. Lampa-Pastirk; Michigan State Univ., East Lansing, MI

- 1073 Identifying a Collagen-like Protein on the Surface of *Trichodesmium erythraeum* using Scanning Electron Microscopy**  
S. Price, S. Anandan; Drexel Univ., Philadelphia, PA

**099 Bacterial Stress Responses (Division K)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1074 Rida is Required to Prevent Damage of Key Pyridoxal-5'-phosphate-containing Enzymes in *Salmonella enterica***  
J. M. Flynn<sup>1</sup>, M. Christopherson<sup>1</sup>, D. Downs<sup>2</sup>; <sup>1</sup>Univ. of Wisconsin, Madison, WI, <sup>2</sup>Univ. of Georgia, Athens, GA
- 1075 Pyocyanin with Iron, Fe(II/III), Enhances Anaerobic Killing of *Pseudomonas aeruginosa* through Radical Form Generated by Electron Transfer**  
Y. Wang, Y. Lee; Northwestern Univ., Evanston, IL
- 1076 *In vitro* Transcription Sequencing Based on Modified Tn10 Transposon Library for Understanding Salt Stress Response Mechanism in *Shewanella Oneidensis* MR-1**  
M. Xie, D. Qiu, J. Chen, A. Zhou, Z. He, L. Wu, J. Van Nostrand, J. Zhou; Inst. for Environmental Genomics, Univ. of Oklahoma, Norman, OK
- 1077 The *dnaK* Gene and Survival of *Sodalis Glossinidius* During Thermal Stress and Heat Shock**  
J. S. Roma, L. J. Runyen-Janecky; Univ. of Richmond, Richmond, VA
- 1078 Protection against Disulfide Stress Requires Genome-wide Involvement in *Mycobacterium smegmatis***  
R. Orkusyan, C. Johnson, M. Rawat; California State Univ. Fresno, CA
- 1079 *Pseudomonas aeruginosa* Osmoregulated Periplasmic Glucans Modulate Envelope Stress Response Under Water-limiting Conditions**  
S. J. Wenner, L. J. Halverson; Dept. of Plant Pathology and Microbiol. Iowa State Univ., Ames, IA
- 1080 Transcriptional Profiling of *Staphylococcus aureus* During Growth in 2 M NaCl Leads to Clarification of Physiological Roles for Kdp and Ktr K<sup>+</sup> Uptake Systems**  
A. Price-Whelan<sup>1</sup>, C. Poon<sup>1</sup>, M. A. Benson<sup>2</sup>, C. M. Roux<sup>3</sup>, P. M. Dunman<sup>3</sup>, V. J. Torres<sup>2</sup>, T. A. Krulwich<sup>1</sup>; <sup>1</sup>Mount Sinai Sch. of Med., New York, NY, <sup>2</sup>New York Sch. of Med., New York, NY, <sup>3</sup>Univ. of Rochester, Rochester, NY
- 1081 Proteomic Elucidation of the Mechanisms of *Bacillus Endospores* Tolerance to Hydrogen Peroxide and Heat**  
M. Burbank, A. Checinska, A. Paszczynski; Univ. of Idaho, Moscow, ID
- 1082 Low Molecular Weight Thiols Protect Cyanobacteria from Environmental Stress**  
A. Strankman, M. Rawat; California State Univ.-Fresno, Fresno, CA
- 1083 The DNA Damage Transcriptome of *Acinetobacter* Species Reveals Induced Gene Clusters in Genetic Islands Containing Virulence Genes in *A. baumannii***  
J. C. Ferrell, J. A. Bradley, J. M. Hare; Morehead State Univ., Morehead, KY
- 1084 From Transcriptional Landscapes to Monitoring Hyperosmotic Stress Response in *Streptococcus mutans* UA159**  
C. C. Liu<sup>1</sup>, Y. L. Niu<sup>2</sup>, X. D. Zhou<sup>1</sup>, K. K. Zhang<sup>1</sup>, X. Xu<sup>1</sup>; <sup>1</sup>State Key Lab. of Oral Disease, Sichuan Univ., Chengdu, China, <sup>2</sup>Coll. of Life Sci., Sichuan Univ., Chengdu, China
- 1085 *Escherichia coli* Laboratory Evolution and Anaerobic Survival in Acid**  
M. M. Harden, Jr., M. J. Narvaez, K. A. Martinez, J. L. Slonczewski; Kenyon Coll., Gambier, OH



- 1086 Cardiopilin is not Essential for Respiration-Dependent ATP Synthesis that Supports Malate Growth of an Alkaliphilic *Bacillus* at pH 7.5 to 10.5**  
J. Liu<sup>1</sup>, O. J. Fackelmayer<sup>1</sup>, S. Ryabichko<sup>2</sup>, M. Bogdanov<sup>2</sup>, W. Dowhan<sup>2</sup>, T. A. Krulwich<sup>1</sup>; <sup>1</sup>Mount Sinai Sch. of Med., New York, NY, <sup>2</sup>Univ. of Texas Med. Sch. at Houston, Houston, TX
- 1087 WITHDRAWN**
- 1088 A Potassium Cycle Is Compatible with the Antiport Profile of Native *Bacillus alcalophilus* Membranes and Properties of Its Two Mrp Cation/proton Antiporters**  
M. Morino<sup>1</sup>, M. Ito<sup>2,3</sup>, T. A. Krulwich<sup>1</sup>; <sup>1</sup>Mount Sinai Sch. of Med., New York, NY, <sup>2</sup>Toyo Univ., Oura-Gun, Japan, <sup>3</sup>Bio-Nano Electronics Res. Ctr., Kawagoe, Japan
- 1089 Plsx is Involved in Fatty Acid Synthesis and the Acid-adaptive Response of *Streptococcus Mutans***  
B. W. Cross, A. Garcia, R. C. Faustoferri, R. G. Quivey, Jr.; Univ. of Rochester, Rochester, NY
- 1090 *Sodalis glossinidius* TonB-mediated Iron Acquisition**  
W. S. Farmer, L. J. Runyen-Janecky; Univ. of Richmond, Richmond, VA
- 1091 The RNA Esre Is Not Essential for the Survival of *Escherichia coli***  
K. Kutumbaka, W. S. Grayburn, R. Meganathan; Northern Illinois Univ., DeKalb, IL
- 1092 The Impact of Systemic and Copper Fungicides on the Phyllosphere Bacterial Microflora of Tomatoes**  
S. R. Gorham, J. Pettengill, A. Gonzalez, R. Knight, S. Rideout, E. Brown, A. Ottesen; FDA-CFSAN, College Park, MD
- 1093 Type II System MqsR/MqsA Controls Type V Toxin/Antitoxin GhoT/GhoS Through Differential mRNA Decay**  
H-Y. Cheng<sup>1</sup>, X. Wang<sup>2</sup>, D. M. Lord<sup>3</sup>, D. O. Osbourne<sup>1</sup>, S. Hong<sup>4</sup>, W. Peti<sup>3</sup>, M. J. Benedik<sup>4</sup>, R. Page<sup>3</sup>, T. K. Wood<sup>1</sup>; <sup>1</sup>Pennsylvania State Univ., University Park, PA, <sup>2</sup>South China Sea Inst. of Oceanology, Guangzhou, China, <sup>3</sup>Brown Univ., Providence, RI, <sup>4</sup>Texas A & M Univ., College Station, TX
- 1094 Impacts of Zinc Nanoparticles on EmmdR: A Multidrug Efflux Pump of *Enterobacter cloacae***  
G-X. He<sup>1</sup>, W. Zhang<sup>1</sup>, H. Chen<sup>2</sup>, H. Pan<sup>2</sup>, S. Saliba<sup>1</sup>, C. Thorpe<sup>1</sup>; <sup>1</sup>Univ. of Massachusetts Lowell, Lowell, MA, <sup>2</sup>Natl. Ctr. for Toxicological Res., Jefferson, AR
- 100 Phage-Phage Interactions, Phage-Host Interactions and Pathogenesis (Division M)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1095 Phage Resistant Factors of *Acinetobacter baumannii***  
J-R. Chen<sup>1</sup>, L-R. Huang<sup>2</sup>, J-L. Wang<sup>3,4</sup>, I-W. Chang<sup>2,5</sup>, C-H. Hung<sup>2</sup>; <sup>1</sup>Dept. of Biol. Sci. and Technology, I-Shou Univ., Kaohsiung, Taiwan, <sup>2</sup>Inst. of Biotechnology and Chemical Engineering, I-Shou Univ., Kaohsiung, Taiwan, <sup>3</sup>Sch. of Chinese Med. for Post Baccalaureate, I-Shou Univ., Kaohsiung, Taiwan, <sup>4</sup>Dept. of Internal Med., E-Da Hosp., Kaohsiung, Taiwan, <sup>5</sup>Dept. of Pathology, E-Da Hosp., Kaohsiung, Taiwan
- 1096 Isolation and Partial Characterization of Three Bacteriophages of *Acinetobacter baumannii* ATCC 17978**  
L. V. Bentancor<sup>1</sup>, P. D. Ghiringhelli<sup>2</sup>, A. Routray<sup>1</sup>, G. B. Pier<sup>1</sup>, T. Maira-Litran<sup>1</sup>; <sup>1</sup>Harvard Med. Sch., Boston, MA, <sup>2</sup>Univ. de Quilmes, Argentina
- 1097 The Trojan Horse of the Microbiological Arms Race: Phage Encoded Bacterial Toxins as a Weapon against Eukaryotic Predators**  
J. W. Arnold<sup>1</sup>, D. Spacht<sup>2</sup>, G. B. Koudelka<sup>1</sup>; <sup>1</sup>SUNY at Buffalo, Amherst, NY, <sup>2</sup>Mercyhurst Univ., Erie, PA
- 1098 Subcellular Decision Making in *E. coli* upon Infection by Phage Lambda**  
L. Zeng; Texas A&M Univ., College St, TX

- 1099 Partitioning System of Mycobacteriophage RedRock Increases Plasmid Maintenance in *M. smegmatis***  
M. R. Olm, L. M. Oldfield, D. Jacobs-Sera, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA
- 1100 Metagenomics and Metatranscriptomics Offer a Rare View of the Co-Evolutionary Interactions Between Phage and Cyanobacterial Host in an Extremely Low Diversity Environment**  
A. A. Voorhies, S. Jain, M. D. Duhaime, G. Dick; Univ. of Michigan, Ann Arbor, MI
- 1101 Genetic Variation Between *Escherichia coli* O157 Strains that Are Susceptible and those that Are Resistant to T7 Typing Phage Replication Point to a Tail Fibre Immunity Mechanism Present in Resistant Strains**  
L. Cowley<sup>1</sup>, P. Ashton<sup>1</sup>, J. Wain<sup>1,2</sup>, C. Jenkins<sup>1</sup>, T. Dallman<sup>1</sup>, D. Gally<sup>3</sup>; <sup>1</sup>Hlth. Protection Agency, London, United Kingdom, <sup>2</sup>Univ. of East Anglia, United Kingdom, <sup>3</sup>Univ. of Edinburgh, Edinburgh, United Kingdom
- 1102 A Toxic Ride Through the Pumpkin Patch: Identification of Cytotoxic Genes in Mycobacteriophage Pumpkin**  
E. Cox, V. M. McDonough, J. Stuke; Hope Coll., Holland, MI
- 1103 The Agricultural Antibiotic Carbadox Induces Prophage and Antibiotic Resistance Gene Transfer in Multidrug-Resistant *Salmonella enterica* serovar Typhimurium DT104**  
B. L. Bearson<sup>1</sup>, B. W. Brunelle<sup>2</sup>, H. K. Allen<sup>2</sup>, D. O. Bayles<sup>2</sup>, T. B. Stanton<sup>2</sup>; <sup>1</sup>USDA, ARS, NLA, Ames, IA, <sup>2</sup>USDA, ARS, NADC, Ames, IA
- 1104 Borrowing Weapons from Your Enemy's Enemies: Identification and Studying of Mycobacteriophage-encoded Cytotoxic Genes to Mycobacteria**  
C-C. Ko, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA
- 1105 Characterization of the Role of PhuZ in the Phage 201phi2-1 Infection Process**  
J. Coker, M. Erb, J. Pogliano; Univ. of California, San Diego, La Jolla, CA
- 1106 Weapons of Cellular Destruction: Investigating the Cytotoxic Effects of Mycobacteriophage Vix Gene 80**  
D. Goodman<sup>1</sup>, D. Obregon<sup>2</sup>, M. Ludwig<sup>1</sup>, V. McDonough<sup>1</sup>, J. Stuke<sup>1</sup>; <sup>1</sup>Hope Coll., Holland, MI, <sup>2</sup>Loyola Univ., IL
- 1107 Isolation and Characterization of a Novel Bacteriophage, ASC10, that Lyses *Francisella tularensis***  
A. Al Harby, C. Gentry-Weeks; Colorado State Univ., Fort Collins, CO
- 101 Ecological Theory in Microbial Ecology (Division N)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1108 Species-area Relationship of Forest Soil Microbial Communities Across Multiple Ecosystems**  
L. Shen, M. E. Kaspari, J. Zhou, J. E. Czekanski, Y. Qin, C. Wen; Univ. of Oklahoma, Norman, OK
- 1109 Niche vs. Neutrality in Microbial Communities**  
A. Venkataraman, T. M. Schmidt; Michigan State Univ., East Lansing, MI
- 1110 A Tradeoff Between Growth Rate and Efficiency Contributes to the Life Histories of Bacteria**  
B. R. Roller<sup>1</sup>, T. M. Schmidt<sup>2</sup>; <sup>1</sup>Michigan State Univ., East Lansing, MI, <sup>2</sup>Univ. of Michigan, Ann Arbor, MI
- 1111 Scaling to Microbial Ecosystems in the National Ecological Observatory Network**  
J. Parnell<sup>1</sup>, E-L. Hinckley<sup>1</sup>, C. Meier<sup>1</sup>, D. Barnett<sup>1</sup>, K. Krause<sup>1</sup>, S. Owens<sup>2</sup>, J. Marcell<sup>2</sup>, J. Gilbert<sup>2</sup>; <sup>1</sup>Natl. Ecological Observatory Network, Boulder, CO, <sup>2</sup>Argonne Natl. Lab., Argonne, IL

**1112 Population Genomics of Experimentally Evolved *Pseudomonas* Biofilms Provides Insight into the Molecular Mechanisms of Ecological Specificity**  
K. M. Flynn, V. S. Cooper; Univ. of New Hampshire, Durham, NH

**1113 Characterizing Microbial Diversity at Local and Continental Scales**  
K. Blevins<sup>1</sup>, J. Parnell<sup>1</sup>, A. Thorpe<sup>1</sup>, J. Spear<sup>2</sup>; <sup>1</sup>Natl. Ecological Observatory Network, Boulder, CO, <sup>2</sup>Colorado Sch. of Mines, Golden, CO

**1114 Exploring the Role of Conditional Rarity for Microbial Community Temporal Dynamics**  
A. Shade<sup>1</sup>, S. E. Jones<sup>2</sup>, J. G. Caporaso<sup>3</sup>, J. Handelsman<sup>1</sup>, R. Knight<sup>4</sup>, N. Fierer<sup>4</sup>, J. Gilbert<sup>5</sup>; <sup>1</sup>Yale Univ., New Haven, CT, <sup>2</sup>Univ. of Notre Dame, Notre Dame, IN, <sup>3</sup>Northern Arizona Univ., Flagstaff, AZ, <sup>4</sup>Univ. of Colorado at Boulder, Boulder, CO, <sup>5</sup>Argonne Natl. Lab., Lemont, IL

**1115 Biodiversity and Productivity in Competitive Communities**  
W. Liu, H. Jiang, L. Wu, Z. He, J. Zhou; Inst. for Environmental Genomics, Norman, OK

**1116 Stochasticity, Succession and Environmental Perturbations in Fluidic Ecosystems**  
J. Zhou<sup>1,2,3</sup>, Y. Deng<sup>1</sup>, P. Zhang<sup>1</sup>, K. Xue<sup>1</sup>, J. D. Van Nostrand<sup>1</sup>, Y. Yang<sup>3</sup>, Z. He<sup>1</sup>, D. A. Stahl<sup>4</sup>, T. C. Hazen<sup>5,6</sup>, J. M. Tiedje<sup>7</sup>, A. P. Arkin<sup>2</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>3</sup>Tsinghua Univ., Beijing, China, <sup>4</sup>Univ. of Washington, Seattle, WA, <sup>5</sup>Univ. of Tennessee, Knoxville, TN, <sup>6</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>7</sup>Michigan State Univ., East Lansing, MI

**1117 Dispersal and Habitat Limitations Detected in a Bacterial Metacommunity From Connected Freshwater Ecosystems**  
L. M. Rodriguez-R, D. Tsementzi, C. Luo, K. T. Konstantinidis; Georgia Inst. of Technology, Atlanta, GA

## 102 Microbiome of Aquatic Animals (Division N) 10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1118 The Diversity of Coral-associated Bacteria and Nitrogen-fixing Bacteria**  
Y. Zhang, L. Chen, J. Dong, J. Ling; Key Lab. of Marine Bio-resources Sustainable Utilization and State Key Lab. of Tropical Oceanography, South China Sea Inst. of Oceanology, Chinese Academy of Sci., Guangzhou, China

**1119 A Microbiological Assessment of Digestive Tract of Queen Conch from Biosphere Reserve Seaflower**  
C. X. Moreno Herrera<sup>1,2</sup>, M. M. Higuaita<sup>1</sup>, J. Cuartas<sup>1</sup>, E. Márquez<sup>1,3</sup>, O. I. Montoya<sup>1</sup>, E. Castro<sup>4</sup>; <sup>1</sup>Univ. Natl. de Colombia, Medellin, Colombia, <sup>2</sup>Microbiodiversity and Bioprospecting Group, Colombia, <sup>3</sup>Lab. of Molecular and Cell Biol., Colombia, <sup>4</sup>Secretaría de Agricultura y Pesca, Archipiélago de San Andres, Colombia

**1120 Association of the Bryozoan *Bugula neritina* with a Defensive Endosymbiont along the American East Coast**  
J. Linneman<sup>1</sup>, D. Paulus<sup>2</sup>, G. E. Lim-Fong<sup>2</sup>, N. B. Lopanik<sup>1</sup>; <sup>1</sup>Georgia State Univ., Atlanta, GA, <sup>2</sup>Randolph-Macon Coll., Ashland, VA

**1121 Characterization of Phages Against Coral-pathogenic *Serratia marcescens***  
B. R. Frydenborg, K. Montgomery, E. K. Lipp; Univ. of Georgia, Athens, GA

**1122 *Vibrio coralliilyticus* Strain OCN008 Inhibits the Growth of Resident Bacteria and Induces Tissue Loss in the Coral *Montipora capitata***  
B. Ushijima<sup>1</sup>, P. Videau<sup>1</sup>, A. Shore-Maggio<sup>1</sup>, C. M. Runyon<sup>1</sup>, M. Sudek<sup>2</sup>, G. S. Aeby<sup>3</sup>, S. M. Callahan<sup>1</sup>; <sup>1</sup>Univ. of Hawaii at Manoa, Honolulu, HI, <sup>2</sup>Victoria Univ. of Wellington, Kelburn, New Zealand, <sup>3</sup>Hawaii Inst. of Marine Biol., Kaneohe, HI

**1123 Seasonality of *Vibrio vulnificus* and *V. parahaemolyticus* in Oyster and Water Samples from Various Sites in the Lower Chesapeake Bay**  
C. Audemard, H. I. Kator, K. S. Reece; Virginia Inst. of Marine Sci., Gloucester Point, VA

**1124 *Vibrio* Bacteria Associated with White Pox Disease Affecting the Critically Threatened Elkhorn Coral, *Acropora palmata***  
K. M. Goodman, A. M. Wong, E. K. Lipp; Univ. of Georgia, Athens, GA

**1125 The Metabolism of Symbionts Transitions During Development of the Squid-*Vibrio* Mutualism**  
J. A. Schwartzman, E. G. Ruby; Univ. of Wisconsin-Madison, Madison, WI

**1126 Gut Microbiome Disruption by Environmental Toxicants in Fish**  
M. Albuti-Lantz, A. B. Narrowe, T. M. Roane, C. S. Miller, A. M. Vajda; Univ. of Colorado Denver, Denver, CO

**1127 High Variability and Low Site Specific Microbial Communities Occur on Black Tip Reef Sharks (*Carcharinus melanopterus*) in the Southern Line Islands**  
M. P. Doane<sup>1</sup>, A. M. Friedlander<sup>2</sup>, F. Rohwer<sup>1</sup>, E. Dinsdale<sup>1</sup>; <sup>1</sup>San Diego State Univ., San Diego, CA, <sup>2</sup>Univ. of Hawaii, Honolulu, HI

**1128 Competition by Macroalgae Alters the Microbiome of the Coral Species *Montastraea faveolata***  
T. Bark<sup>1</sup>, R. Vega Thurber<sup>1</sup>, D. Burkepille<sup>2</sup>, R. McMinds<sup>1</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Florida Intl. Univ., Miami, FL

**1129 Microbial Diversity Associated with Rhodophyta *Galaxaura filamentosa* Found in Pacific Intertidal Zone**  
T-Y. Chen<sup>1</sup>, T-N. Hsieh<sup>1</sup>, H-C. Ho<sup>2</sup>, C-Y. Chen<sup>1</sup>; <sup>1</sup>Dept. of Life Sci., Tzu Chi Univ., Hualien, Taiwan, <sup>2</sup>Dept. of Anatomy, Tzu-Chi Univ., Hualien, Taiwan

**1130 Next-Generation 16s Profiles of White Band Disease in the Threatened Coral *Acropora cervicornis***  
S. A. Gignoux-Wolfsohn, S. V. Vollmer; Northeastern Univ., Nahant, MA

**1131 Preliminary Characterization of Bacterial Flora Associated with the Sea Cucumber *Parastichopus californicus***  
H. Starcevic, J. Nestler; Walla Walla Univ., College Place, WA

## 103 Tools and Techniques (Division O) 10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1132 Expression of Codon-optimized Phosphoenolpyruvate Carboxylase Gene Derived From Marine Bacteria in *Escherichia coli* and its Application for C4 Chemical Production**  
S. Park<sup>1</sup>, S. Pack<sup>2</sup>, J. Lee<sup>1</sup>; <sup>1</sup>Sogang Univ., Seoul, Republic of Korea, <sup>2</sup>Korea Univ., Jochiwon, Republic of Korea

**1133 Development and Implementation of a Genetic Tool Box for Metabolic Engineering of *Clostridium ljungdahlii* for Production of Organic Commodities from Carbon Dioxide**  
C. Leang, T. Ueki, A. Banerjee, T. Zhang, K. P. Nevin, D. R. Lovley; Univ. of Massachusetts, Amherst, MA

**1134 New Synthetic Biology Tools for Chemical Production in Cyanobacteria**  
M. B. Begemann, A. L. Markley, E. K. Zess, B. F. Pfeleger; Univ. of Wisconsin-Madison, Madison, WI

**1135 Metabolic Engineering Tools to Control Gene Expression in Cyanobacteria**  
E. K. Zess, M. B. Begemann, B. F. Pfeleger; Univ. of Wisconsin-Madison, Madison, WI

**1136 Evaluation of Proteomic Analysis of Cellulosomal and Noncellulosomal Proteins in *Clostridium cellulovorans***  
K. Kuroda<sup>1</sup>, K. Matsui<sup>1</sup>, K. Esaka<sup>1</sup>, H. Morisaka<sup>1</sup>, H. Miyake<sup>2</sup>, M. Ueda<sup>1</sup>; <sup>1</sup>Graduate Sch. of Agriculture, Kyoto Univ., Kyoto, Japan, <sup>2</sup>Graduate Sch. of Bioresources, Mie Univ., Tsu, Japan

**1137 Polycistronically Expressing the Bacterial Bioluminescence Cassette *luxCDABEfrp* in Human Cells Using Viral 2A Elements**

T. Xu<sup>1</sup>, S. L. Price<sup>2</sup>, D. M. Close<sup>3</sup>, S. A. Ripp<sup>3,4</sup>, G. S. Saylor<sup>1,3,4</sup>, <sup>1</sup>The Joint Inst. for Biological Sci., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Dept. of Molecular and Comparative Pathobiology, Johns Hopkins Univ. Sch. of Med., Baltimore, MD, <sup>3</sup>BioTech Inc., Knoxville, TN, <sup>4</sup>The Ctr. for Environmental Biotechnology, Univ. of Tennessee, Knoxville, TN

**1138 *Mycoplasma arginini*: Detection, Inactivation, and Control**  
T. Swanger, M. Kopp; Amgen, Inc., Seattle, WA

**1139 Comparative RNA-seq Analysis Of Cellulosome-producing *Clostridium cellulovorans* Cultivated In Different Sugar Media**

K. Takashima<sup>1</sup>, T. Ishikawa<sup>1</sup>, R. Tanaka<sup>1,2</sup>, T. Shibata<sup>1,2</sup>, K. Kuroda<sup>3</sup>, M. Ueda<sup>3</sup>, H. Miyake<sup>1,2,4</sup>, <sup>1</sup>Dept. of Life Sci., Graduate Sch. of Bioresources, Mie Univ., Mie, Japan, <sup>2</sup>Industrial Technology Innovation Inst., Mie Univ., Mie, Japan, <sup>3</sup>Div. of Applied Life Sci., Graduate Sch. of Agriculture, Kyoto Univ., Kyoto, Japan, <sup>4</sup>Dept. of Bioinformatics, Mie Univ. Life Sci. Res. Ctr., Mie, Japan

**1140 Use of Continuous Flow Chemostat Selection of *Enterobacter aerogenes* for Conversion of Crude Glycerol Byproduct from Biodiesel Production to Ethanol**

E. Villalon, B. J. Mohar, D. R. Caprioglio; Colorado State Univ. Pueblo, Pueblo, CO

**1141 Characterization of a Self-Phosphopantetheinylation Activity in an Acyl Carrier Protein from a Polyunsaturated Fatty Acid Synthase**

U. Trujillo<sup>1</sup>, E. Vázquez-Rosa<sup>2</sup>, D. Oyola-Robles<sup>1</sup>, C. González-Freire<sup>2</sup>, I. E. Vega<sup>2</sup>, O. Quesada<sup>2</sup>, A. Baerga-Ortiz<sup>1</sup>, <sup>1</sup>Univ. of Puerto Rico, Med. Sci. Campus, San Juan, PR, <sup>2</sup>Univ. of Puerto Rico, Río Piedras Campus, San Juan, PR

**1142 Activation of Secondary Metabolite Pathways in Microalgae**  
E. C. Sonnenschein, M. D. Burkart; Univ. of California, San Diego, La Jolla, CA

**1143 A Comprehensive Comparison of RNA-Seq and DNA Microarray Analyses Comparing *Clostridium thermocellum* Fermenting Switchgrass or Populus**

C. M. Wilson<sup>1</sup>, C. M. Johnson<sup>1</sup>, M. J. Rodriguez<sup>1</sup>, D. M. Klingeman<sup>1</sup>, L. J. Hauser<sup>1</sup>, T-M. Chu<sup>2</sup>, S. L. Martin<sup>2</sup>, R. D. Wolfinger<sup>2</sup>, J. R. Mielenz<sup>1</sup>, S. D. Brown<sup>1</sup>, <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>SAS Inst. Inc., Cary, NC

**104 Foodborne Pathogens – Identification and Detection (Division P)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1144 Evolution of Botulinum Neurotoxin Detection from Mouse to MALDI**

M. J. Perry<sup>1</sup>, S. R. Kalb<sup>2</sup>, J. R. Barr<sup>2</sup>, C. T. Egan<sup>1</sup>, <sup>1</sup>New York State Dept. of Hlth., Albany, NY, <sup>2</sup>CDC, Atlanta, GA

**1145 WITHDRAWN**

**1146 Rapid Isolation and Identification of Toxin Producing *Bacillus cereus* from Dietary Supplements**

A. A. Khan<sup>1</sup>, S. Tallent<sup>2</sup>, T. Akiyama<sup>1,3</sup>, B. Gurley<sup>4</sup>, C. Summage West<sup>1</sup>, <sup>1</sup>FDA, Nat'l. Ctr. for Toxicol. Res., Jefferson, AR, <sup>2</sup>Office of Regulatory Sci., Div. of Microbiol., U. S. FDA, CFSAN, College Park, MD, <sup>3</sup>Molecular BioSci. Program, Montana State Univ., Bozeman, MT, <sup>4</sup>Coll. of Pharmacy, Univ. of Arkansas for Med. Sci., Little Rock, AR

**1147 Comparison of Methods for *Salmonella enterica* and *Listeria monocytogenes* Isolation to Measure Incidence in a Central California Watershed**

L. Gorski, A. S. Liang, S. Walker, K. M. Nguyen, D. Carychao, M. B. Cooley, J. Govoni, R. E. Mandrell; USDA, ARS, WRRRC, Albany, CA

**1148 Pathogen Detection in Food Microbiology Laboratories: An Analysis of Proficiency Test Performance**

C. C. Snabes<sup>1</sup>, D. C. Edson<sup>1</sup>, S. Empson<sup>1</sup>, L. D. Massey<sup>2</sup>, <sup>1</sup>American Proficiency Inst., Traverse City, MI, <sup>2</sup>N/A, Pomona, MO

**1149 NeoSEEK: A Novel Molecular Method for High Discrimination STEC Detection and Identification**

E. Hosking<sup>1</sup>, D. Petrik<sup>2</sup>, M. Mozola<sup>1</sup>, J. Rice<sup>1</sup>, <sup>1</sup>Neogen Corp., Lansing, MI, <sup>2</sup>GeneSeek, Lincoln, NE

**1150 Relative Sensitivities of Molecular (qPCR) and Cultural Methods for the Isolation and Detection of *Salmonella* in Animal Feed**

F. H. Benahmed<sup>1</sup>, H. Wang<sup>2</sup>, C. M. Cheng<sup>3</sup>, S. L. Ayers<sup>1</sup>, S. A. Gaines<sup>1</sup>, M. A. Rasmussen<sup>1,4</sup>, T. S. Hammack<sup>2</sup>, M. Davidson<sup>1</sup>, <sup>1</sup>FDA, Ctr. for Vet. Med., Laurel, MD, <sup>2</sup>FDA/Ctr. for Food Safety and Applied Nutrition, College Park, MD, <sup>3</sup>FDA, Pacific Regional Lab. Southwest, Admin., Irvin, CA, <sup>4</sup>Leopold Ctr. for Sustainable Agriculture, Ames, IA

**1151 Molecular Characterization of *Salmonella* Isolates Collected from Different Sources in Turkey**

B. Durul<sup>1</sup>, S. Yavas<sup>1</sup>, E. Bulut<sup>1</sup>, I. Uner<sup>2</sup>, M. Kur<sup>2</sup>, D. Avsaroglu<sup>3</sup>, H. A. Kirmaci<sup>2</sup>, Y. O. Tel<sup>2</sup>, F. Y. Zeyrek<sup>2</sup>, M. Dilsiz<sup>2</sup>, Y. Soyer<sup>1</sup>, <sup>1</sup>Middle East Technical Univ., Ankara, Turkey, <sup>2</sup>Harran Univ., Sanliurfa, Turkey, <sup>3</sup>Ahi Evran Univ., Kirsehir, Turkey

**1152 Simultaneous Detection and Quantification of *Salmonella enterica* Serovar Enteritidis, Heidelberg, and Typhimurium Isolated from Chicken Carcass and Farm**

S. Park<sup>1,2</sup>, S. C. Ricke<sup>1,2</sup>, <sup>1</sup>Univ. of Arkansas, Cell and Molecular Biol. Graduate Program, Fayetteville, AR, <sup>2</sup>Univ. of Arkansas, Dept. of Food Sci., Fayetteville, AR

**1153 Genomic Characterization of Novel *Listeria monocytogenes* Serotype 4b Variant Strains**

A. Datta<sup>1</sup>, P. Laksanalamai<sup>1</sup>, B. Huang<sup>2</sup>, J. Sabo<sup>3</sup>, L. Burall<sup>1</sup>, S. Zhao<sup>3</sup>, J. Bates<sup>2</sup>, <sup>1</sup>FDA, CFSAN, Laurel, MD, <sup>2</sup>Queensland Hlth., Forensic and Scientific Services, Queensland, Australia, <sup>3</sup>FDA, CVM, Laurel, MD

**1154 Identification and Molecular Subtyping of *Listeria* Species using 16S rRNA Partial Gene Sequencing**

R. S. Hellberg<sup>1</sup>, K. G. Martin<sup>2</sup>, A. L. Keys<sup>2</sup>, C. J. Haney<sup>2</sup>, Y. Shen<sup>3</sup>, R. D. Smiley<sup>2</sup>, <sup>1</sup>Chapman Univ., Orange, CA, <sup>2</sup>FDA, Office of Regulatory Affairs, Arkansas Regional Lab., Jefferson, AR, <sup>3</sup>FDA, Office of Regulatory Affairs, Office of Regional Operations, Div. of Field Sci., Rockville, MD

**1155 Optical Restriction Mapping as a Screening Tool for Identifying Food Pathogens**

J. C. Baldwin<sup>1</sup>, R. F. Escobar<sup>1</sup>, R. R. Chapleau<sup>2</sup>, D. C. Compton<sup>1</sup>, M. Y. Caballero<sup>1</sup>, C. R. Starr<sup>1</sup>, <sup>1</sup>USAFSAM, FHT, Wright-Patterson AFB, OH, <sup>2</sup>Prairie Quest Consulting, Fort Wayne, IN

**1156 Comparison of Standard Culture Media and Conventional PCR for the Detection of *Listeria monocytogenes* in Livestock Products**

D. Kim<sup>1</sup>, J. Chon<sup>1</sup>, H. Kim<sup>1</sup>, J. Park<sup>1</sup>, Y. Kim<sup>1</sup>, J. Moon<sup>2</sup>, Y. Kim<sup>2</sup>, K. Seo<sup>1</sup>, <sup>1</sup>KU Ctr. for Food Safety, Coll. of Vet. Med., Konkuk Univ., Seoul, Republic of Korea, <sup>2</sup>Livestock Product Standard and Vet. Epidemiology Div., Animal, Plant and Fisheries Quarantine and Inspection Agency, Anyang-si, Gyeonggi-do, Republic of Korea

**1157 Integration of NGS Data with LC-MS Proteomic Data for Foodborne Pathogen Detection**

R. Stones<sup>1</sup>, M. Mcfarland<sup>2</sup>, T. Croley<sup>2</sup>, J. Callahan<sup>2</sup>, N. Gonzalez-Escalona<sup>2</sup>, M. Allard<sup>2</sup>, E. Strain<sup>2</sup>, E. Brown<sup>2</sup>, S. Musser<sup>2</sup>, D. Andrzejewski<sup>2</sup>, <sup>1</sup>Food & Environment Res. Agency, York, United Kingdom, <sup>2</sup>FDA, College Park, MD

**1158 Capture Efficiency of Immunomagnetic Separation (IMS) as Applied to *Escherichia coli* STEC O-groups**

M. A. Calle, S. Pokharel, N. Pond, M. M. Brashears; Texas Tech Univ., Lubbock, TX

**1159 A Method for Norovirus Detection in Agricultural Water, Produce, and Hand Rinse Samples**

P. Collender<sup>1</sup>, M. Ward<sup>1</sup>, E. Cason<sup>1</sup>, F. Bartz<sup>1</sup>, A. Fabiszewski de Aceituno<sup>1</sup>, L-A. Jaykus<sup>2</sup>, J. Leon<sup>1</sup>, <sup>1</sup>Emory Univ., Atlanta, GA, <sup>2</sup>North Carolina State Univ., Raleigh, NC



- 1160 Isolation and Characterization of Fluoroquinolone Resistant *Vibrio parahaemolyticus* from Imported Shrimp**  
M. Nawaz<sup>1</sup>, K. Sung<sup>2</sup>, S. Nawaz<sup>3</sup>, S. Khan<sup>2</sup>, R. Steele<sup>2</sup>; <sup>1</sup>NCTR, FDA, Jefferson, AR, <sup>2</sup>NCTR, FDA, Jefferson, AR, <sup>3</sup>Hendrix Coll., Conway, AR
- 1161 Real-Time, On-Plate Rapid Detection and Identification of *Bacillus cereus*-group using Light Scattering Sensor**  
A. K. Singh, X. Sun, H. Kim, M. Abdelhaseib, E. Bae, A. K. Bhunia; Purdue Univ., West Lafayette, IN
- 1162 Rapid Detection and Serovar Identification of *Salmonella* by Real-Time PCR and Microarray from Environmental Irrigation Water Sources**  
B. Li<sup>1</sup>, J.-Q. Chen<sup>1</sup>, M. Jay-Russell<sup>2</sup>, G. Vellidis<sup>3</sup>, A. Wright<sup>4</sup>, Z. Hu<sup>1</sup>, J. Gangiredla<sup>1</sup>, J. Gangiredla<sup>1</sup>, S. Jackson<sup>1</sup>, C. A. Elkins<sup>1</sup>; <sup>1</sup>FDA, Laurel, MD, <sup>2</sup>Univ. of California, Davis Western Ctr. for Food Safety, Davis, CA, <sup>3</sup>Univ. of Georgia, Tifton, GA, <sup>4</sup>Univ. of Florida, Gainesville, FL
- 1163 Molecular Typing of *Escherichia coli* O157:H7 Using IS629 Polymorphisms**  
E. Stanton, D. Park, C. W. Kaspar; Univ. of Wisconsin-Madison, Madison, WI
- 1164 Rapid Detection of Norovirus from Fresh Lettuce Using Immunomagnetic Separation and a Quantum Dots Assay**  
D. Kim<sup>1</sup>, H.-M. Lee<sup>1</sup>, J. Kwon<sup>2</sup>, J.-S. Choi<sup>2</sup>, K.-H. Lee<sup>1</sup>, S. Yang<sup>3</sup>, S.-M. Ko<sup>1</sup>, J.-K. Chung<sup>4</sup>, S.-Y. Cho<sup>1</sup>, K. Baik<sup>2</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>Korea Basic Sci. Inst., Gwangju, Republic of Korea, <sup>3</sup>Gwanju Inst. of Sci. and Technology, Gwangju, Republic of Korea, <sup>4</sup>Hlth. & Environment Inst. of Gwangju, Gwangju, Republic of Korea
- 1165 Validating Pathatrix: A Complete AOAC-Approved Workflow for the Detection of *Salmonella* spp. in Pooled Food Samples**  
J. Wall<sup>1</sup>, E. Crowley<sup>2</sup>, R. Conrad<sup>1</sup>; <sup>1</sup>Life Technologies, Inc., Austin, TX, <sup>2</sup>Q Lab., Inc., Cincinnati, OH
- 1166 Molecular Strain Typing of Shiga-toxigenic *E. coli* (STEC) by Genome Sequence Scanning**  
M. Manoj Kumar<sup>1</sup>, M. Safranovitch<sup>1</sup>, K. Crissy<sup>1</sup>, M. Faggart<sup>1</sup>, S. Ohneswere<sup>1</sup>, J. Symonds<sup>1</sup>, S. Vyas<sup>1</sup>, R. Gilmanshin<sup>1</sup>, E. Trees<sup>2</sup>, A. Sabol<sup>2</sup>, E. Ribot<sup>2</sup>; <sup>1</sup>Pathogenetix Inc., Woburn, MA, <sup>2</sup>CDC, Atlanta, GA
- 1167 Detection of Shiga Toxin-Producing *Escherichia coli* (STEC) O157:H7, STEC Serogroups O26, O45, O103, O111, O121, and O145, and *Salmonella* in Naturally-Contaminated Ground Beef Using the BAX System-Based PCR Kits**  
P. M. Fratamico<sup>1</sup>, J. L. Wasilenko<sup>1,2</sup>, C. H. Sommers<sup>1</sup>, D. R. DeMarco<sup>3</sup>, S. Varkey<sup>3</sup>, K. Rhoden<sup>3</sup>, G. Tice<sup>3</sup>; <sup>1</sup>USDA ARS, Wyndmoor, PA, <sup>2</sup>USDA-ARS, Athens, GA, <sup>3</sup>DuPont Qualicon, Wilmington, DE
- 1168 Use of the Nicking Enzyme Amplification Reaction for Detection of Foodborne Pathogens**  
P. Norton<sup>1</sup>, E. Hosking<sup>1</sup>, B. Kraynack<sup>2</sup>, G. Johns<sup>2</sup>, O. Caballero<sup>1</sup>, M. Wendorf<sup>1</sup>, M. Mozola<sup>1</sup>, J. Rice<sup>1</sup>; <sup>1</sup>Neogen Corp., Lansing, MI, <sup>2</sup>Ionian Technologies, San Diego, CA
- 1169 Identification of Enterotoxigenic *Bacillus cereus* in Powdered Infant Formula and Retail Spices**  
L. Carter, B. Tall, A. R. Datta, A. A. Franco; FDA, Laurel, MD
- 1170 Development of a Rapid Loop-mediated Isothermal Amplification For Detection of Shigella**  
K.-L. Thong, P.-S. Liew, C. S. Teh; Univ. of Malaya, Kuala Lumpur, Malaysia
- 1171 Rapid Detection and Isolation of *E. coli* O157:H7 from Artificially Contaminated Ground Beef and Bean Sprouts**  
A. Tatavarthy<sup>1</sup>, P. Davenport<sup>1,2</sup>, V. Goff<sup>1,2</sup>, K. Nguyen<sup>1</sup>, A. Tapawan<sup>1,2</sup>, A. Cannons<sup>1,2</sup>, D. Mccluskey<sup>1</sup>; <sup>1</sup>Univ. of South Florida, Tampa, FL, <sup>2</sup>Florida Dept. of Hlth., Bureau of Lab., Tampa, FL
- 1172 A Duplex Real-Time PCR Assay for Rapid and Simultaneous Detection of *Salmonella* spp. and *Salmonella enteritidis***  
C.-M. Cheng<sup>1</sup>, J. A. Welch<sup>2</sup>, R. Burton<sup>2</sup>, J. Jean-Gilles Beaubrun<sup>3</sup>, K.-S. Chen<sup>1</sup>, S. Pierce<sup>1</sup>, L. D. Chatman<sup>2</sup>; <sup>1</sup>FDA, Irvine, CA, <sup>2</sup>FDA, Atlanta, GA, <sup>3</sup>FDA, Laurel, MD

## 105 Microbes in the Atmosphere and the Built Environment (Division Q)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1173 Characterization of Bioaerosol Diversity and Metabolic Potential**  
V. Krumins<sup>1</sup>, G. Mainelis<sup>1</sup>, L. J. Kerkhof<sup>1</sup>, V. Partee<sup>2</sup>, D. E. Fennell<sup>1</sup>; <sup>1</sup>Rutgers Univ., New Brunswick, NJ, <sup>2</sup>Univ. of Georgia, Athens, GA
- 1174 Analyses of Viable Airborne Bacteria in Bamako, Mali: Potential Sources and Transport Patterns**  
M. A. Velez-Quinones<sup>1</sup>, K. E. Nelson<sup>2</sup>, V. R. Morris<sup>1</sup>, C. J. Robinson<sup>1</sup>, O. Koita<sup>3</sup>, B. E. Eribo<sup>3</sup>; <sup>1</sup>Howard Univ., Washington, DC, <sup>2</sup>J. Craig Venter Inst., Rockville, MD, <sup>3</sup>Univ. of Bamako, Bamako, Mali
- 1175 Antibiotic-Resistant Bacteria found in Bioaerosols near Agricultural and Non-Agricultural Sites in California**  
H. M. Sanchez, C. Echeverria, A. Flores, V. Thulsiraj, J. A. Jay; Univ. of California, Los Angeles, CA
- 1176 Multiple Gene Targeted Pyrosequencing Enhanced Detection of Bacterial Hazards in Asian Dust**  
K. Yoo<sup>1</sup>, K. Ko<sup>2</sup>, L.-S. Chang<sup>3</sup>, J. M. Tiedje<sup>4</sup>, J. Park<sup>1</sup>; <sup>1</sup>Yonsei Univ., Seoul, Republic of Korea, <sup>2</sup>Sungkyunkwan Univ., Seoul, Republic of Korea, <sup>3</sup>Natl. Inst. of Environmental Res., Incheon, Republic of Korea, <sup>4</sup>Michigan State Univ., East Lansing, MI
- 1177 Proteomic Analysis of Aerosolized *Sphingomonas aerolata***  
V. Krumins<sup>1</sup>, S. Boeren<sup>2</sup>, P. Schaap<sup>2</sup>, H. Smidt<sup>2</sup>, G. Mainelis<sup>1</sup>, L. Kerkhof<sup>1</sup>, D. E. Fennell<sup>1</sup>; <sup>1</sup>Rutgers Univ., New Brunswick, NJ, <sup>2</sup>Wageningen Univ., Wageningen, Netherlands
- 1178 Phyllosphere Methylophilic Bacteria of Forest Trees Exposed to Different Air Pollution in Mexico City**  
I. Rosas<sup>1</sup>, E. Salinas<sup>1</sup>, L. Martínez<sup>1</sup>, D. Álvarez<sup>2</sup>, M. Granada<sup>2</sup>, R. Torres<sup>1</sup>, C. Amabile-Cuevas<sup>3</sup>; <sup>1</sup>Ctr. de Ciencias de la Atmósfera, UNAM, México, D.F., Mexico, <sup>2</sup>Posgrado en Ciencias de la Tierra, UNAM, México, D.F., Mexico, <sup>3</sup>Fundación LUSARA, México, D.F., Mexico
- 1179 Effect of Fungal Barcode Selection on the Interpretation of the Indoor Microbiome**  
K. A. Kinney<sup>1</sup>, A. Hoisington<sup>1</sup>, J. P. Maestre<sup>1</sup>, J. Siegel<sup>2</sup>; <sup>1</sup>Univ. of Texas at Austin, Austin, TX, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada
- 1180 Distribution and Characteristics of Microorganisms Associated with Automobile Air Conditioning Systems**  
J. Kim, K. Park; Univ. of Ulsan, Ulsan, Republic of Korea
- 1181 Molecular Identification of Environmental Fungi at Clinic Dentistry**  
D. Villalpando-Grajeda, E. Limas-Payán, L. Elías-Ogaz, F. Zavala-Díaz de la Serna, L. N. Muñoz-Castellanos; Univ. Autónoma de Chihuahua, Chihuahua, Mexico
- 1182 Molecular Analysis of the Microbiology of 17 Different Drinking Water Distribution Systems Across the South-Central United States**  
E. P. Holinger, K. A. Ross, C. E. Robertson, M. Stevens, J. K. Harris, N. R. Pace; Univ. of Colorado, Boulder, CO
- 1183 Dynamics of Microbial Communities in Drinking Water Treatment and Distribution**  
Y. Zhang, Q. He; The Univ. of Tennessee, Knoxville, TN
- 1184 Evaluation of Low-cost Disposable Hollow Fiber Ultrafilters for Simultaneous Concentration of Diverse Bacteriophages for Metagenomic Analysis**  
Y. Kim, T. G. Aw, J. B. Rose; Michigan State Univ., East Lansing, MI
- 1185 Bacterial Community in Vegetable Compartment of Refrigerator and on Surface of Toilets Seat**  
Y.-S. Jeon<sup>1,2</sup>, J. Chun<sup>1,2,3</sup>, B.-S. Kim<sup>1</sup>; <sup>1</sup>Chunlab., Inc., Seoul, Republic of Korea, <sup>2</sup>Interdisciplinary Graduate Program in Bioinformatics, Seoul Natl. Univ., Seoul, Republic of Korea, <sup>3</sup>Sch. of Biological Sci., Seoul Natl. Univ., Seoul, Republic of Korea



**1186 Genetic Characterization of Microorganisms on Highly Touched and Untouched Fomites**  
A. B. Herzog<sup>1</sup>, T. Stedtfeld<sup>1</sup>, P. Bhaduri<sup>1</sup>, C. P. Gerba<sup>2</sup>, J. B. Rose<sup>1</sup>, S. A. Hashsham<sup>1</sup>; <sup>1</sup>Michigan State Univ., East Lansing, MI, <sup>2</sup>Univ. of Arizona, Tucson, AZ

**1187 A Collection of Microbes Associated with Spacecraft Assembly**  
W. W. Schubert, J. N. Benardini, III; Jet Propulsion Lab., Pasadena, CA

**1188 WITHDRAWN**

**1189 Comparison of Isolates Collected from Mars Bound Pre-Launch Spacecraft: Survival of Microorganisms Under Extreme Conditions**  
S. A. Smith<sup>1</sup>, J. N. Benardini, III<sup>2</sup>, A. Tenuto<sup>1</sup>, D. Anderl<sup>1</sup>, M. Ford<sup>3</sup>, K. Arora-Williams<sup>2</sup>, E. Wear<sup>1</sup>, M. Schrader<sup>1</sup>, W. Schubert<sup>2</sup>, L. DeVeaux<sup>4</sup>, S. E. Childers<sup>5</sup>, A. Paszczynski<sup>1</sup>; <sup>1</sup>Univ. of Idaho, Moscow, ID, <sup>2</sup>Jet Propulsion Lab., California Inst. of Technology, Pasadena, CA, <sup>3</sup>Idaho State Univ., Pocatello, ID, <sup>4</sup>South Dakota Sch. of Mines and Technology, Rapid City, SD, <sup>5</sup>Colby Coll., Waterville, ME

## 106 Microbial Indicators of Fecal Contamination (Division Q)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1190 Simultaneous Quantification of Multiple Food and Waterborne Pathogens by Use of Microfluidic Quantitative PCR**  
S. Ishii<sup>1</sup>, T. Segawa<sup>2</sup>, S. Okabe<sup>1</sup>; <sup>1</sup>Hokkaido Univ., Sapporo, Japan, <sup>2</sup>Natl. Inst. of Polar Res., Tokyo, Japan

**1191 *Sphaerotilus natans* Blooms as Indicators of Fecal Pollution in an Urban Stream**  
W. T. Pecher, R. Levery, S. J. Kemp, Z. Huang; Univ. of Baltimore, Baltimore, MD

**1192 Predominant *Enterococcus* Species Found Among Eelgrass and Seawrack at Beaches in San Diego, California**  
D. M. Ferguson<sup>1,2</sup>, C. Hagedorn, III<sup>3</sup>, J. F. Griffith<sup>1</sup>; <sup>1</sup>SCCWRP, Costa Mesa, CA, <sup>2</sup>UCLA, Los Angeles, CA, <sup>3</sup>Virginia Tech, Blacksburg, VA

**1193 Habitat-Specific Gene Signatures Differentiate Human-Associated *Enterococcus faecalis* from Closely Related Environmental Isolates**  
M. R. Weigand<sup>1</sup>, K. T. Konstantinidis<sup>1</sup>, N. J. Ashbolt<sup>2</sup>, J. W. Santo Domingo<sup>2</sup>; <sup>1</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>EPA, Cincinnati, OH

**1194 Genotypic and Phenotypic Assays to Differentiate Clinical and Environmental *Vibrio vulnificus* Strains**  
J. Dickerson, Jr<sup>1</sup>, J. Gooch Moore<sup>2</sup>, J. B. Mott<sup>1</sup>; <sup>1</sup>James Madison Univ., Harrisonburg, VA, <sup>2</sup>Natl. Oceanic and Atmospheric Admin., Charleston, SC

**1195 Distribution of *Bacteroidales* Relative to Traditional Markers of Fecal Pollution from Water to Backshore Sand at Two Urban Lake Michigan Beaches**  
D. D. Cloutier<sup>1,2</sup>, J. L. VandeWalle<sup>2</sup>, S. L. McLellan<sup>1,2</sup>; <sup>1</sup>Univ. of Wisconsin - Milwaukee, Milwaukee, WI, <sup>2</sup>Water Inst., Milwaukee, WI

**1196 Isolation and Characterization of *Escherichia coli* from Sand Used in Cow Paddocks**  
S. M. Bornstein-Forst, P. V. Truong; Marian Univ., Fond Du Lac, WI

**1197 DNA Fingerprinting and Watershed Mapping to Determine Geographic Sources of *E. coli* Discharges to a Recreational Beach**  
V. Sigler, A. Pekalska, J. Lis; Univ. of Toledo, Toledo, OH

**1198 Change in Population Structure of *E. coli* During a Habitat Transition from Animal Host to Marine Sediment**  
C. Lun, S. C. K. Lau; Hong Kong Univ. of Sci. and Technology, Hong Kong, Hong Kong

**1199 Seasonal Change and Genotypical Separation of *Escherichia coli* Phylogenetic Groups in the Yeongsan River Basin of South Korea**  
J. Jang, H-G. Hur; Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea

**1200 Evaluation of Aquachrom Ecc, a New Chromogenic Culture Broth for the Detection of *E. coli* and other Coliforms**  
A. Lerner<sup>1</sup>, J. Coral<sup>1</sup>, L-C. CHAI<sup>2</sup>; <sup>1</sup>CHROMagar, Paris, France, <sup>2</sup>Faculty of Sci., Univ. of Malaya, Kuala Lumpur, Malaysia

**1201 Improvement of Quantification of Bacterial Genetic Markers by Using a Genetically-engineered Strain of *Escherichia coli* as a Process Control**  
A. Kobayashi, D. Sano, S. Ishii, S. Okabe; Hokkaido Univ., Sapporo, Japan

**1202 Correlations of Fecal Indicator Bacteria with *Salmonella* in Freshwater Streams**  
D. W. Buckalew<sup>1</sup>, T. M. Smith, Jr.<sup>1</sup>, S. F. Lucento<sup>1</sup>, Z. Jakab<sup>2</sup>; <sup>1</sup>Longwood Univ., Farmville, VA, <sup>2</sup>George Washington Univ., Washington, DC

**1203 Microbial Source Tracking and the Impact of an Intermittently Breaching Lagoon at Arroyo Burro Beach, Santa Barbara, CA**  
J. S. Ervin, L. C. Van De Werfhorst, P. A. Holden; Univ. of California, Santa Barbara, CA

**1204 Development of Multiple Regression Models to Predict Sources of Fecal Pollution in the Watauga River Watershed in Northeast Tennessee**  
K. K. Hall<sup>1</sup>, P. R. Scheuerman<sup>2</sup>; <sup>1</sup>The Univ. of Findlay, Findlay, OH, <sup>2</sup>East Tennessee State Univ., Johnson City, TN

**1205 Fecal Source Identification in Impaired Waters in the National Capitol Region**  
A. H. Lawrence<sup>1</sup>, B. Crozier<sup>2</sup>, R. Farris<sup>1</sup>, C. Hagedorn<sup>1</sup>; <sup>1</sup>Virginia Tech, Blacksburg, VA, <sup>2</sup>Roanoke Coll., Salem, VA

**1206 Occurrence and Distribution of Bacteria in the Water and Sediment Samples of Royapuram Coast, Bay of Bengal-North East Coast of India**  
K. Revathy<sup>1</sup>, B. Mahalaxmi<sup>1</sup>, C. Raghunathan<sup>2</sup>; <sup>1</sup>Ethiraj Coll., Chennai, India, <sup>2</sup>Zoological Survey of India, Andaman, India

**1207 Factors Influencing Diarrheal Pathogen Presence in Groundwater Tubewells of Bangladesh**  
K. A. Ayers<sup>1</sup>, A. C. Layton<sup>1</sup>, L. D. McKay<sup>1</sup>, A. S. Ferguson<sup>2</sup>, B. J. Mailloux<sup>3</sup>, A. E. Smartt<sup>1</sup>, P. S. Knappett<sup>2</sup>, A. van Geen<sup>4</sup>, G. S. Saylor<sup>1</sup>; <sup>1</sup>Univ. of Tennessee, Knoxville, TN, <sup>2</sup>Columbia Univ., NY, <sup>3</sup>Barnard Coll., NY, <sup>4</sup>Lamont-Doherty Earth Observatory of Columbia Univ., Palisades, NY

**1208 Suspension of Recreational Beach Sediment of a Chesapeake Bay Tributary**  
J. J. Calomiris; Sotiria Sci., Arnold, MD

**1209 Characterization of Intestinal Microbiota and Species Diversity of *Campylobacter* and *Helicobacter* in Migrating Shorebirds in Delaware Bay, USA**  
H. Ryu<sup>1</sup>, K. Grond<sup>2</sup>, M. Elk<sup>1</sup>, B. Verheijen<sup>2</sup>, D. Buehler<sup>3,4</sup>, J. Santo Domingo<sup>1</sup>; <sup>1</sup>EPA, Cincinnati, OH, <sup>2</sup>Kansas State Univ., Manhattan, KS, <sup>3</sup>Royal Ontario Museum, Toronto, ON, Canada, <sup>4</sup>Univ. of Toronto, Toronto, ON, Canada

**1210 Detection of Waterborne Pathogenic Bacteria in Lake Ponchartrain**  
M. Al Jawasim, A. Gupta, J-W. Park; Troy Univ., Troy, AL

**1211 Identifying Fecal Sources in Waters with Low Load of Pollution by Inductive Learning Methods and Library-Independent Indicators**  
A. R. Blanch<sup>1</sup>, A. Casanovas-Massana<sup>1</sup>, M. Gómez-Doñate<sup>1</sup>, D. Sánchez-Mendoza<sup>2</sup>, L. A. Belanche-Muñoz<sup>2</sup>, M. Muniesa<sup>1</sup>; <sup>1</sup>Univ. of Barcelona, Barcelona, Spain, <sup>2</sup>Technical Univ. of Catalonia, Barcelona, Spain

- 1212 Wrack, Regrowth, Neither or Both? A Microbial Source Tracking Case Study at Mission Bay, CA**  
B. A. Layton, Y. Cao, M. Raith, J. F. Griffith; Southern California Coastal Water Res. Project, Costa Mesa, CA
- 1213 Molecular Anthropogenic Microbial Source Tracking in Bayou Lafourche Louisiana**  
S. M. Martinez, A. L. Corbin, B. Ramachandran, R. Nathaniel, M. B. Kilgen; Nicholls State Univ., Thibodaux, LA
- 1214 Applying Microbial Source Tracking Methods in Evaluating Water Quality in Four Arizona Watersheds**  
B. Rivera, C. Rock; Univ. of Arizona, Tucson, AZ
- 1215 Characterization of the Microbial Community in Alligator Fecal Samples Using a Metagenomics-Based Approach**  
S. Young<sup>1</sup>, B. Nayak<sup>1</sup>, C. Staley<sup>2</sup>, M. J. Sadowski<sup>2</sup>, V. J. Harwood<sup>1</sup>; <sup>1</sup>Univ. of South Florida, Tampa, FL, <sup>2</sup>Univ. of Minnesota, St. Paul, MN
- 1216 An Epidemiological Survey of Toothbrush Contamination in Communal Bathrooms**  
J. Verdi, M. McAlice, G. Bythrow; Quinnipiac Univ., Hamden, CT
- 1217 Assessment of Human Health Risks from Adenoviruses, Hepatitis A Virus, Rotaviruses and Enteroviruses in the Buffalo River and Three Source Water Dams in the Eastern Cape Province, South Africa**  
V. N. Chigor<sup>1,2</sup>, A. I. Okoh<sup>3</sup>; <sup>1</sup>Univ. of Nigeria, Nsukka, Nigeria, <sup>2</sup>Univ. of Fort Hare, Alice, South Africa, <sup>3</sup>Univ. of Fort Hare, Alice, South Africa
- 1218 Diversity and Inactivation of Phages Infecting a Human-specific *Enterococcus* MST Host Strain**  
S. Purnell, J. Ebdon, H. Taylor; Univ. of Brighton, Brighton, United Kingdom
- 1219 Specificity and Performance of the Covalently Linked Immunomagnetic Separation/Adenosine Triphosphate (Cov-IMS/ATP) Technique for Rapid Assessment of Coastal Water Quality**  
V. Thulsiraj<sup>1</sup>, A. G. Zimmer-Faust<sup>1</sup>, D. M. Ferguson<sup>1,2</sup>, J. A. Jay<sup>1</sup>; <sup>1</sup>Univ. of California Los Angeles, Los Angeles, CA, <sup>2</sup>Southern California Coastal Water Res. Project, Costa Mesa, CA
- 107 Pathogens in the Environment and Their Survival in Human Influenced Systems (Division Q)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1220 Chemical Analysis of Community Water Sources in South Florida as a Risk Assessment for Legionellosis**  
A. Phillisair, S. Boland, L. Hernandez, J. Coffman; Barry Univ., Miami, FL
- 1221 Molecular Epidemiology Of *Legionella pneumophila* Isolated From Water Supply Systems Of Public Utilizing Facilities In Northern Gyeonggi-do, Korea**  
Y. O. Kwon, H. G. Hong, S. J. Bang, J. K. Kim, Y. S. Lim, S. J. Nam, G. H. Kim, J. B. Lee; North branch Gyeonggi-Do Inst. of Hlth. & Environment, Uijeongbu-Si, Republic of Korea
- 1222 Survival of *Legionella* in Drinking Water Distribution Systems**  
D. O. Schwake, M. Abbaszadegan, A. Alum; Arizona State Univ., Tempe, AZ
- 1223 Effectiveness of Secondary Treatment on the Occurrence of *Legionella pneumophila* serogroup 1, *Mycobacterium avium*, and *M. intracellulare* in a Hospital Setting**  
S. Pfaller, D. King, J. Hoelle, L. Boczek, R. Revetta, M. Rodgers; EPA, Cincinnati, OH
- 1224 Comparaison of Fatty Acid Methyl Ester Analysis and Latex Agglutination Test for *Legionella pneumophila* and sp. Confirmations**  
G. Marchand, C. Pépin, N. Lacombe, Y. Cloutier; Québec Occupational Hlth. and Safety Res. Inst., Montréal, QC, Canada

- 1225 Characterization of the Viable but Non-Culturable *Legionella pneumophila* in Water and the Role of 3-Hydroxybutyrate Dehydrogenase in Its Formation**  
B. Al-Bana, M. Haddad, A. Cohen, S. Lee, R. Garduno; Dalhousie Univ., Halifax, NS, Canada
- 1226 Analysis of the Presence of *Salmonella* spp. and *E. coli* O157:H7 in Rivers of the Eastern Mexico**  
Y. Lugo-Melchor<sup>1</sup>, E. N. Marino-Marmolejo<sup>1</sup>, L. De Anda-Trujillo<sup>1</sup>, M. A. Morales-Cabrera<sup>2</sup>, J. Gallardo-Valdez<sup>1</sup>, J. Díaz-Torres<sup>1</sup>, G. Davila-Vazquez<sup>1</sup>; <sup>1</sup>Ctr. de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, Guadalajara, Mexico, <sup>2</sup>Facultad de Ciencias Químicas, Univ. Veracruzana-Región Poza Rica-Tuxpan, Mexico
- 1227 Health Risk Assessment of Drinking Water Sources in Ado-Ekiti Metropolis, Nigeria**  
J. O. Oluyegbe; Ekiti State Univ., Ado Ekiti, Nigeria
- 1228 Microbial Quality of Freshwater Bodies used for Recreation in the Northeast of Puerto Rico**  
L. M. Garcia Peterson, D. M. Lopez Gonzalez, E. Morales Colon, M. E. Perez Velez; Univ. del Este, Carolina, Puerto Rico
- 1229 Environmental Investigation of Community Household Contamination of *Clostridium difficile***  
M. J. Alam<sup>1</sup>, A. Anu<sup>2</sup>, K. W. Garey<sup>1</sup>; <sup>1</sup>Univ. of Houston Coll. of Pharmacy, Houston, TX, <sup>2</sup>Univ. of Houston Coll. of Pharmacy, Bellaire High Sch., Houston, TX
- 1230 Geological Dispersal of Human Adenoviruses (HAdVs) in Taiwan**  
H-W. D. Kuo, M-H. Shih; Tunghai Univ., Taichung, Taiwan
- 1231 Presumptive Identification of Potentially Pathogenic Bacteria in Saharan Dust Using MALDI-ToF Mass Spectrometry**  
A. D. Allen, B. Eribo, M. Velez-Quinones, V. Morris; Howard Univ., Washington, DC
- 1232 WITHDRAWN**
- 1233 The Virulence Factor Genes Tdh, Trh and Tlh Occur at High Frequency in *Vibrio parahaemolyticus* Strains Isolated from a Pristine Estuary**  
C. K. Gutierrez West, S. L. Klein, C. R. Lovell; Univ. of South Carolina, Columbia, SC
- 1234 Serological Cross-reaction between O-antigens of *Shigella dysenteriae* Type 4 and an Environmental *Escherichia albertii* Isolate**  
M. Z. Rahman<sup>1,2,3,4</sup>, S. Akhter<sup>2</sup>, N. Azmuda<sup>2</sup>, M. Sultana<sup>2</sup>, F-X. Weill<sup>4</sup>, S. I. Khan<sup>2</sup>, P. A. D. Grimont<sup>4</sup>, N. K. Birkeland<sup>3</sup>; <sup>1</sup>ICDDR, b, Ctr. for Hlth. and Population Res., Mohakhali, Bangladesh, <sup>2</sup>Dept. of Microbiol., Univ. of Dhaka, Dhaka, Bangladesh, <sup>3</sup>Dept. of Biol., Univ. of Bergen, Bergen, Norway, <sup>4</sup>Inst. Pasteur, Unite des Enterobacteriesde Biodiversité des Bactéries Pathogènes Emergentes, Paris, France
- 1235 Bacterial Composition in Sediment and Surface Water as Indicators for Pollution in a Mixed Watershed**  
A. M. Ibekwe<sup>1</sup>, J. Ma<sup>1</sup>, M. Leddy<sup>2</sup>, A. Graves<sup>3</sup>, S. Murind<sup>4</sup>; <sup>1</sup>USDA-ARS, Riverside, CA, <sup>2</sup>OCWD, Fountain Valley, CA, <sup>3</sup>NCSU, Raleigh, NC, <sup>4</sup>California State Polytechnic Univ., Pomona, CA
- 1236 WITHDRAWN**
- 1237 Aged Manures as Sources of Pathogens in Agricultural Runoff**  
M. Molina<sup>1</sup>, G. Whelan<sup>1</sup>, C. Fitzgerald<sup>2</sup>, C. Stevens<sup>1</sup>; <sup>1</sup>U.S. EPA, Athens, GA, <sup>2</sup>Student Services Contractor for the U.S. EPA, Athens, GA
- 1238 Persistence of Sewage *Enterococci* under Natural Conditions in Mississippi Coastal Waters**  
K. A. Lewis, S. Y. Wang; The Univ. of Southern Mississippi, Hattiesburg, MS

- 1239 Using Phenotypic and Genotypic Differences among the Culturable Populations of *Enterococci* Through Time to Predict a Recent Contamination Event in Recreational Waters of Mayagüez, Puerto Rico**  
M. F. Cuebas-Irizarry, G. Negrón-Talavera, L. A. Ríos-Hernández; Univ. of Puerto Rico-Mayagüez, Puerto Rico
- 1240 Spatial and Temporal Variations of *Enterococci* Abundance and Its Relationship with Microbial Community in Hawai'i Beach Sand and Water**  
T. Yan, H. Cui, K. Yang, E. Pagaling; Univ. of Hawaii at Manoa, Honolulu, HI
- 1241 Influence of Solar Radiation and Biotic Interactions on Bacterial and Eukaryotic Communities Associated with Sewage Decomposition in Ambient Water**  
A. Korajkic<sup>1</sup>, B. R. McMinn<sup>1</sup>, L. Wegener Parfrey<sup>2</sup>, R. Knight<sup>3</sup>, O. C. Shanks<sup>1</sup>; <sup>1</sup>EPA, Cincinnati, OH, <sup>2</sup>Univ. of Colorado, Boulder, CO, <sup>3</sup>Howard Hughes Med. Inst., Boulder, CO
- 1242 Human Health Risks Associated with *Ascaris lumbricoides* in a Threshold Country**  
A. Kundu; Univ. of California, Davis, Davis, CA
- 1243 Microbial & Chemical Quality of Drinking Water in the Navajo Nation, Arizona**  
A. M. Riggs, D. Swanke, M. Abbaszadegan; Arizona State Univ., Tempe, AZ
- 1244 Use of Salt Marsh Periwinkle, *Littorina irrorata*, as a Model Organism for the Assessment of Tidal Creek Health**  
J. L. Brown<sup>1</sup>, L. C. Braye<sup>1</sup>, W. DiBona<sup>2</sup>, J. E. Weinstein<sup>1</sup>, C. L. Rocha<sup>1</sup>; <sup>1</sup>The Citadel, Charleston, SC, <sup>2</sup>Academic Magnet High Sch., Charleston, SC
- 1245 WITHDRAWN**
- 1246 Are Gulls to Blame for Topanga State Beach's "Top Ten" Dirtiest Beach in California Ranking?**  
T. E. Riedel<sup>1</sup>, A. G. Zimmer-Faust<sup>1</sup>, V. Thulsiraj<sup>1</sup>, R. Dagit<sup>2</sup>, J. A. Jay<sup>1</sup>; <sup>1</sup>UCLA, Los Angeles, CA, <sup>2</sup>Resource Conservation District, Los Angeles, CA
- 1247 Water Leader: Improving Water Services Through Monitoring and Assessment**  
K. J. Schwab<sup>1</sup>, L. H. MacDonald<sup>2</sup>; <sup>1</sup>Johns Hopkins Sch. of Publ. Hlth., Baltimore, MD, <sup>2</sup>Johns Hopkins Univ., Baltimore, MD
- 108 Viral Replication and Host-Cell Interactions (Division T)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1248 CD16+ Monocyte Subset as a Reservoir of HIV in Patients Receiving Suppressive Antiretroviral Therapy**  
F. Irizarry-Delgado; Ponce Sch. of Med. & Hlth. Sci., Ponce, PR
- 1249 Novel Mutation in an HIV Co-Receptor Gene from an African-American Family**  
K. M. Jones, S. F. Mares, B. G. Long, A. A. Lilly, E. M. McCallister, A. L. Clarke; Lorain County Community Coll., Elyria, OH
- 1250 CCR5 Δ32 as a Potential Gene Therapy for AIDS**  
A. M. Worcester, V. Soewarna, M. N. Sheldon, A. Fulton, C. J. Anderson; Lorain County Community Coll., Elyria, OH
- 1251 AUG to U5 Interaction Promotes HIV-2 Replication**  
M. Hernandez<sup>1</sup>, Y. Liu<sup>2</sup>, V. Ramakrishnan<sup>2</sup>, A. Vega<sup>3</sup>, M. F. Summers<sup>3</sup>; <sup>1</sup>Univ. of South Florida, Tampa, FL, <sup>2</sup>Univ. of Maryland Baltimore County, Baltimore, MD, <sup>3</sup>Univ. of Maryland Baltimore County, Maryland, MD
- 1252 Affinity-tagging HIV-1 Using a High Resolution Mutagenic Map of the Viral Genome**  
V. Shi, L. Al-Mawsawi, R. Sun; UCLA, Los Angeles, CA

- 1253 Identification of Signaling Motifs Responsible for Reovirus Entry**  
A. K. Haj, W. L. Schulz, L. B. Lahti, L. A. Schiff; Univ. of Minnesota, Minneapolis, MN
- 1254 Endoribonuclease Cleavage Sites in Host and Viral RNAs**  
D. A. Cooper<sup>1</sup>, R. H. Silverman<sup>2</sup>, H. R. Rosen<sup>1</sup>, J. R. Hesselberth<sup>1</sup>, D. J. Barton<sup>1</sup>; <sup>1</sup>Univ. of Colorado Sch. of Med., Aurora, CO, <sup>2</sup>Lerner Res. Inst., Cleveland Clinic, Cleveland, OH
- 1255 Hepatitis C Virus Structure Proteins Regulate TLR7 and TLR8 Expression and Activation in Hepg2 Cells**  
T.-M. Lin<sup>1</sup>, Y.-C. Wu<sup>1</sup>, C.-H. Wang<sup>1</sup>, H.-C. Liu<sup>2</sup>, H.-L. Eng<sup>3</sup>; <sup>1</sup>I-SHOU Univ., Kaohsiung, Taiwan, <sup>2</sup>Natl. Chang Kung Univ., Tainan, Taiwan, <sup>3</sup>Chang Gung Mem. Hosp., Kaohsiung Med. Ctr., Kaohsiung, Taiwan
- 1256 Alanine Scanning Mutagenesis of Hepatitis C Virus E2 Cysteine Residues**  
W. Wang, Q. Xu, D. Wu, M. Guan, H. Ren, P. Zhao, Z.-T. Qi; Dept. of Microbiol., Second Military Med. Univ., Shanghai, China
- 1257 Tyrosine Phosphorylation of M1 Protein is Crucial for Influenza Virus Replication by Controlling its Nuclear Import**  
S. Wang, Z. Zhao, X. Liu, W. J. Liu; Inst. of Microbiol., Chinese Academy of Sci., Beijing, China
- 1258 Generating Reverse Genetics Sendai Virus for Use in Virulence Studies**  
V. Martinez, N. McQueen; California State Univ., Los Angeles, CA
- 1259 Susceptibility of Mouse Macrophage and Dendritic Cells to Infection with La Crosse Virus**  
M. C. Caballero, K. K. Gray, B. Tigabu, A. N. Freiberg; Univ. of Texas Med. Branch, Galveston, TX
- 1260 Mutations in Prohibitin Protein Contributing to Mosquito Vector Competency for Dengue Virus**  
K. A. Filcek, J. R. Anderson; Radford Univ., Radford, VA
- 109 Mycobacterial Virulence and Pathogenesis (Division U)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 1261 *Mycobacterium Tuberculosis* Virulence Factors Contributing to the Host Cell Necrosis**  
L. Danelishvili, L. E. Bermudez; Oregon State Univ., Corvallis, OR
- 1262 The Serine/Threonine Kinase PknB is a Major Regulator of the *M. tuberculosis* Latency Switch**  
C. Ortega<sup>1,2</sup>, R. Liao<sup>2</sup>, A. Wright<sup>3</sup>, D. Sherman<sup>1,2</sup>, C. Grundner<sup>1,2</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Seattle BioMed. Res. Inst., Seattle, WA, <sup>3</sup>Pacific Northwest Natl. Lab., Richland, WA
- 1263 Characterization of *Mycobacterium avium* Genes Involved in Microaggregate Formation Required for Efficient Invasion of the Respiratory Mucosa**  
L. Babrak, L. E. Bermudez; Oregon State Univ., Corvallis, OR
- 1264 Nutrient Starvation Produces a State of Drug Resistance, ROS Generation, and Altered Lipids in a Persistent Population of *M. bovis* BCG**  
M. E. McBee<sup>1</sup>, Y. H. Chionh<sup>1,2</sup>, M. L. Sharaf<sup>1</sup>, F. Hia<sup>1</sup>, P. C. Dedon<sup>1,3</sup>; <sup>1</sup>Singapore-MIT Alliance for Res. & Technology, Singapore, Singapore, <sup>2</sup>Natl. Univ. of Singapore, Singapore, Singapore, <sup>3</sup>Massachusetts Inst. of Technology, Cambridge, MA
- 1265 The Role of Lsr2 in the Adaptation to Oxygen Availability in *Mycobacterium Tuberculosis***  
I. L. Barteck<sup>1</sup>, L. K. Woolhiser<sup>2</sup>, R. J. Basaraba<sup>2</sup>, A. J. Lenaerts<sup>2</sup>, M. I. Voskuil<sup>1</sup>; <sup>1</sup>CU-Denver Anschutz Med. Campus, Aurora, CO, <sup>2</sup>Colorado State Univ., Ft. Collins, CO
- 1266 The Paradox of Glutathione: Mycobacterial Growth Inhibitor or Stimulator?**  
N. D. Patel, J. Blair, J. Rivera, M. A. Peteroy-Kelly; Pace Univ., New York, NY

**1267 The Importance of Fructose Bisphosphate Aldolase for Growth of *Mycobacterium Tuberculosis* in Various Carbon Sources**  
S. Puckett<sup>1</sup>, D. Schnappinger<sup>1</sup>, J. Spencer<sup>2</sup>, M. Jackson<sup>2</sup>, S. Ehrh<sup>1</sup>;  
<sup>1</sup>Weill Cornell Med. Coll., New York, NY, <sup>2</sup>Colorado State Univ., Fort Collins, CO

**1268 *Mycobacterium Tuberculosis* Rv0955: An Integral Membrane Protein Required for Persistence *In vivo* and Survival in Reduced Magnesium**  
N. Goodsmith, X. V. Guo, O. H. Vandal, S. Ehrh; Weill Cornell Med. Coll., New York, NY

**1269 A Conserved Hypothetical Protein Rv0574c Is Required for Cell Wall Integrity and Virulence of *Mycobacterium Tuberculosis***  
R. Garg<sup>1</sup>, D. Tripathi<sup>1</sup>, S. Kant<sup>2,3</sup>, H. Chandra<sup>4,5</sup>, R. Bhatnagar<sup>1</sup>, N. Banerjee<sup>6</sup>; <sup>1</sup>Jawahar Lal Nehru Univ., New Delhi, India, <sup>2</sup>Intl. Ctr. for Genetic Engineering and Biotechnology, New Delhi, India, <sup>3</sup>The Ohio State Univ., Columbus, OH, <sup>4</sup>Intl. Ctr. for Genetic Engineering and Biotechnology, New Delhi, India, <sup>5</sup>Univ. of Cincinnati Coll. of Med., Cincinnati, OH, <sup>6</sup>Sch. of Life Sci., Jawahar Lal Nehru Univ., New Delhi, India

**1270 Contribution of *Mycobacterium* spp. Derived Advanced Glycation End Products to Inflammation**  
J. D. Haugen, D. Ackart, B. K. Podell, R. J. Basaraba; Colorado State Univ., Fort Collins, CO

**1271 RNA Sequence Analysis of Alternative Sigma Factor, SigH Regulated Genes in *Mycobacterium avium* subsp. *paratuberculosis*: A Role in Tissue Persistence for sigH**  
P. Ghosh, A. M. Talaat; Univ. of Wisconsin-Madison, Madison, WI

**1272 Role of Mutations in the rpsL and rpoB Genes in Fitness of *Mycobacterium Tuberculosis***  
P. E. Almeida da Silva<sup>1</sup>, F. S. Spies<sup>2</sup>, A. Von Groll<sup>1</sup>, A. Martin<sup>3</sup>, J. C. Palomino<sup>4</sup>, M. R. Rossetti<sup>2</sup>, A. Zaha<sup>2</sup>; <sup>1</sup>Univ. Federal do Rio Grande, Rio Grande, Brazil, <sup>2</sup>Univ. Federal do Rio Grande do Sul, Porto Alegre, Brazil, <sup>3</sup>Univ. of Ghent, Ghent, Belgium, <sup>4</sup>Univ. of Ghent, Belgium

**1273 Isolation and Purification of *Mycobacterium Tuberculosis* from H37Rv Infected Guinea Pig Lungs**  
L. Shi, S. Bhamidi, G. J. Ryan, J. Trout, A. Amin, A. Izzo, A. J. Lennaerts, M. R. McNeil, J. T. Belisle, D. C. Crick, D. Chatterjee; Colorado State Univ., Fort Collins, CO

**1274 Development and Characterization of a BSL-2 Wistar Rat Model of Pulmonary Mycobacterial Infection**  
B. S. Russell, S. Sirirungruang, M. E. McBee, P. C. Dedon; MIT, Cambridge, MA

**1275 Changing Phenotypes of *Mycobacterium avium* subsp. *paratuberculosis* and the Implications on Pathogenicity and Inflammation**  
J. L. Everman<sup>1</sup>, J. Bannantine<sup>2</sup>, J. McGarvey<sup>3</sup>, L. E. Bermudez<sup>1</sup>;  
<sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>USDA, Ames, IA, <sup>3</sup>USDA, Albany, CA

**1276 PDIMs and PGLs Contribute to BCG Virulence and Protection against *Mycobacterium Tuberculosis***  
V. Tran, J. Liu; Univ. of Toronto, Toronto, ON, Canada

**1277 Phospholipids Induce the Secretion of IgM Anti-phospholipid Antibodies by Peritoneal Cavity Cells**  
C. Ordoñez<sup>1</sup>, C. Weeks<sup>1</sup>, M. Ramos<sup>1</sup>, R. Rivera<sup>1</sup>, P. Llanes<sup>1</sup>, L. Riley<sup>2</sup>, A. Goodridge<sup>1</sup>; <sup>1</sup>INDICASAT-AIP, Panama, Panama, <sup>2</sup>Univ. of California, Berkeley, CA

**1278 Differential Expression of Vaccine Derived Efficacy in C3Heb/FeJ and C3H HeOuJ Mice Exposed to *Mycobacterium Tuberculosis***  
M. I. Henao-Tamayo, A. Obregon-Henao, E. Creissen, R. Basaraba, I. M. Orme, D. J. Ordway; Colorado State Univ., Fort Collins, CO

**1279 The Role of *Mycobacterium Tuberculosis* Complex in HIV Susceptibility**  
C. Skerry, S. M. Thayil, K. R. Page, P. C. Karakousis; Johns Hopkins Univ., Baltimore, MD

**1280 Immunogenic Potential of Recombinant Protein Antigens of *Mycobacterium Immunogenum*, an Etiological Agent of Hypersensitivity Pneumonitis**  
H. Chandra, J. S. Yadav; Univ. of Cincinnati, Coll. of Med., Cincinnati, OH

**1281 cAMP, Arginase 2 and Polyamines are Key Factors for *Mycobacterium Tuberculosis* Growth**  
D. Tate, J. Patterson, E. Porretta, A. Luna, J. Steves, A. H. Zea; Louisiana State Univ. Hlth. Sci. Ctr., New Orleans, LA

**110 Pathogenic Mechanisms, Disease Transmission, Vaccines and Therapeutics (Division Z)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1282 Toxic Effect of *Riemerella anatipestifer* on *Caenorhabditis elegans***  
S.-L. Hsu<sup>1</sup>, C.-S. Chen<sup>2</sup>, S.-H. Wang<sup>1</sup>; <sup>1</sup>Natl. Chiayi Univ., Chiayi City, Taiwan, <sup>2</sup>Natl. Cheng Kung Univ., Tainan, Taiwan

**1283 Therapeutic Vaccination Against John's Disease with *Lactobacillus casei* ATCC 334 in Mice**  
M. A. Cooney, J. L. Steele, A. M. Talaat; UW-Madison, Madison, WI

**1284 Evaluation of the Antiviral Activities of *Cassia filiformis* Extract against Newcastle Disease Virus (NDV) (kamarov) Using Embryonated Chicken Eggs**  
S. O. P. Obiorah<sup>1</sup>, G. O. Ezeifeke<sup>2</sup>, D. A. F. Obiorah<sup>3</sup>; <sup>1</sup>Anambra State Univ., Uli, Anambra St, Nigeria, <sup>2</sup>Michael Okpara Univ. of Agriculture, Umudike, Umudike, Nigeria, <sup>3</sup>Harry-Brian Intl. Company, Limited, Anambra St., Nigeria

**1285 Evaluation of a Live Attenuated-vaccine Candidate Expressing Enterotoxigenic *Escherichia coli* Adhesins for Colibacillosis Using a Pig Model**  
J. Lee; Chonbuk Natl. Univ., Coll. of Vet. Med., Jeonju, Republic of Korea

**1286 Comparison of Pathogenetic Differences After Experimental Infection of Calves with Noncytopathic BVDV-1 and BVDV-2 Isolated from Korean Fields Cases**  
K.-S. Choi, S.-K. Lee; Kyungpook Natl. Univ., Sangju, Republic of Korea

**1287 Viral Replication and Lesions in BALB/c Mice Experimentally Inoculated with Avian Metapneumovirus Subgroup C Isolated from Chickens**  
J. Liu; Inst. of Animal Husbandry and Vet. Med., Beijing Academy of Agriculture and Forestry Sci., Beijing, China

**1288 Development of Promising Vaccination Strategies to Reduce *Campylobacter* Colonization in Chickens**  
L. Jones, X. Zeng, J. Lin; Univ. of Tennessee, Knoxville, TN

**1289 Abortion Associated with *Mycoplasma bovis* in a Bison (*Bison bison*) Herd**  
K. B. Register<sup>1</sup>, M. R. Woodbury<sup>2</sup>, J. L. Davies<sup>3</sup>, J. D. Trujillo<sup>4</sup>, J. Perez-Casal<sup>5</sup>, P. H. Burrage<sup>6</sup>, E. G. Clark<sup>3</sup>, C. Windeyer<sup>3</sup>; <sup>1</sup>USDA, ARS, Natl. Animal Disease Ctr., AMES, IA, <sup>2</sup>Univ. of Saskatchewan, Saskatoon, SK, Canada, <sup>3</sup>Univ. of Calgary, Calgary, AB, Canada, <sup>4</sup>Iowa State Univ., AMES, IA, <sup>5</sup>VIDO, Univ. of Saskatchewan, Saskatoon, SK, Canada, <sup>6</sup>Burrage Vet. Services, Bluffton, AB, Canada

**1290 Cytotoxicity of *Clostridium perfringens* Poultry Isolates from Diseased and Healthy Chickens**  
D. Lepp<sup>1</sup>, J. Gong<sup>1</sup>, J. F. Prescott<sup>2</sup>; <sup>1</sup>Agriculture and Agri-Food Canada, Guelph, ON, Canada, <sup>2</sup>Univ. of Guelph, Guelph, ON, Canada

**1291 Registration Analysis of Diagnostic PCR Kit for Identification of Avian Influenza Virus H5N1**  
A. Golovko<sup>1</sup>, V. Postoienko<sup>2</sup>, M. Karpulenko<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>SSCIBMS, Kyiv, Ukraine

**1292 *Flavobacterium columnare* Virulence Factors in Zebra Fish *R. Conradi***  
D. W. Hunnicutt<sup>1</sup>, M. J. McBride<sup>2</sup>, A. M. Staroscik<sup>3</sup>, D. R. Nelson<sup>3</sup>, M. Pereira<sup>3</sup>, M. Rotunno<sup>3</sup>; <sup>1</sup>St. Norbert Coll., De Pere, WI, <sup>2</sup>Univ. of Wisconsin-Milwaukee, WI, <sup>3</sup>Univ. of Rhode Island, RI



**1293 Effects of Yeast Commercial Probiotic (*Saccharomyces cerevisiae*) on Broiler Chickens Growth Performance and Salmonella Inhibition**  
O. Olatoye, M. P. Oluide; Univ. of Ibadan, Ibadan, Nigeria

**1294 Characterization of Newcastle Disease Viruses in Wild and Domestic Birds in Ukraine from 2002 to 2011**  
A. Golovko<sup>1</sup>, V. Bolotin<sup>2</sup>, A. Gerilovych<sup>2</sup>, D. Muzyka<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IECVM, NAAS, Kharkiv, Ukraine

**1295 Using In-house Windrowing and Hydrogen Peroxide Treatment Improves Feed Conversion Ratio**  
D. W. Sammons<sup>1</sup>, K. Burdett<sup>2</sup>, M. Kempf<sup>2</sup>; <sup>1</sup>Sammons Poultry Services, Union City, TN, <sup>2</sup>Univ. of Tennessee at Martin, Martin, TN

**1296 Induction of Avian Defensins 2, 4, and 5 in the Chicken Respiratory Tract in Response to *Escherichia coli* Infection**  
R-M. Ramirez, A. Muñoz, J. García, P. Miranda, S. Sánchez, A. Enríquez, L. Vidales; Univ. Autónoma de Zacatecas, Zacatecas, Mexico

## 111 Eukaryotic Pathogens (Division AA)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1297 *Toxoplasma gondii* Cell Division: Kinetochores, Centrosomes, and Daughter Budding**  
C-T. Chen, M. Farrell, M-J. Gubbels; Boston Coll., Chestnut Hill, MA

**1298 Characterization of a Mammalian Homolog of Antimicrobial and Antimalarial Drug Target IspD**  
M. H. Black, A. R. Odom; Washington Univ. Sch. of Med. Dept. of Pediatrics and of Molecular Microbiol., St. Louis, MO

**1299 A pH switch Regulates Cytolytic Activity of *Toxoplasma gondii*'s Lytic Egress Factor**  
M. S. Roiko, V. B. Carruthers; Univ. of Michigan, Ann Arbor, MI

**1300 Inhibition of *Entamoeba histolytica* Alcohol Dehydrogenase 2 (EhADH2) by Pyrazoline Derivatives**  
A. Mitchell, L. Ashley-Przondo, M. Phay, L. Rossi, A. Espinosa; Roger Williams Univ., Bristol, RI

**1301 Degradation and Utilization of Complex Carbohydrates by *Trichomonas vaginalis***  
R. D. Huffman, L. D. Nawrocki, T. J. Nielsen, A. Brittingham, W. A. Wilson; Des Moines Univ., Des Moines, IA

**1302 Geohelminthiasis and *Schistosoma mansoni* Infections and Associated Risk Factors Among School Children in Umolantie, South Ethiopia**  
M. A. Alemu<sup>1</sup>, M. H. Hailu<sup>2</sup>, F. T. Nigus<sup>2</sup>; <sup>1</sup>Mekelle Univ., Mekelle, Ethiopia, <sup>2</sup>Addis Ababa Univ., Addis Ababa, Ethiopia

**1303 Three Long-chain Acyl-CoA Synthetases (ACs) in Zoonotic Pathogen *Cryptosporidium parvum***  
F. Guo<sup>1</sup>, H. Zhang<sup>1</sup>, G. Zhu<sup>1</sup>; <sup>1</sup>Coll. of Vet. Med. & BioMed. Sci., Texas A&M Univ., College Station, TX

**1304 Evaluation of Natural Compounds as Potential Novel Chemotherapeutic Agents against *Cryptosporidium parvum***  
L. McDuffie<sup>1</sup>, J. McAllister<sup>2</sup>, S. Li<sup>1</sup>, J. M. Fritzel<sup>2</sup>; <sup>1</sup>Natl. Ctr. for Pharmaceutical Crops, Nacogdoches, TX, <sup>2</sup>Weber State Univ., Ogden, UT

**1305 The Function of *Pneumocystis carinii* S-Adenosylmethionine: Sterol C-24 Methyltransferase in *Saccharomyces cerevisiae***  
E. S. Kaneshiro<sup>1</sup>, L. Q. Johnston<sup>1</sup>, E. A. Wright<sup>1</sup>, M. Niang<sup>1</sup>, B. Romero<sup>2</sup>, J-L. Giner<sup>2</sup>; <sup>1</sup>Univ. of Cincinnati, Cincinnati, OH, <sup>2</sup>State Univ. of New York, ESF, Syracuse, NY

**1306 Clinical and Microbiological Features of *Blastocystis hominis* in Children Suspected to Suffer A Parasitic Gastrointestinal Illness: A Comparison of *Blastocystis hominis* and *Giardia lamblia* Infections**

A. Empain<sup>1</sup>, A. Bart<sup>2</sup>, O. Vandenberg<sup>3,4</sup>, A. Dediste<sup>3</sup>, C. Moens<sup>3</sup>, J. Levy<sup>1</sup>, T. van Gool<sup>2,4</sup>; <sup>1</sup>Saint-Pierre Univ. Hospit, Brussels, Belgium, <sup>2</sup>Section Parasitology, AMC, Amsterdam, Netherlands, <sup>3</sup>Dept Med. Microbiol., IRIS-Lab, Brussels, Belgium, <sup>4</sup>Publ. Hlth. Sch., Univ. Libre de Bruxelles, Brussels, Belgium

**1307 Incomplete Developmental Cycle of Amoebal Endosymbiotic Primitive *Chlamydia Parachlamydia* into Human Immortal HEp-2 Cells at Low Culture Temperature**  
C. Yamane<sup>1</sup>, T. Yamazaki<sup>1</sup>, Y. Hayashi<sup>1</sup>, J. Matsuo<sup>1</sup>, S. Nakamura<sup>2</sup>, H. Yamaguchi<sup>3</sup>; <sup>1</sup>Hokkaido Univ, Sapporo, Japan, <sup>2</sup>Juntendo Univ, Tokyo, Japan

**1308 Investigating the Role of ADP-forming Acetyl-CoA Synthetase in *Entamoeba histolytica***  
C. P. Howell, K. S. Smith, C. Ingram-Smith; Clemson Univ., Clemson, SC

**1309 Effect of Climate Variability on the Incidence and Transmission Patterns of Malaria in Kumasi-Ghana**  
A. W. Basing<sup>1</sup>, S. C. K. Tay<sup>1</sup>, S. K. Danuor<sup>2</sup>, L. Amekudzi<sup>2</sup>; <sup>1</sup>Dept. of Microbiol., School of Med. Sci., Knust, Kumasi, Ghana, <sup>2</sup>Dept. of Physics, Knust, Kumasi, Ghana

## 231 Late Breaker Diagnostic Microbiology and Epidemiology (Divisional Group I)

(Late Breakers will be available for viewing throughout all Poster Sessions)

10:45 a.m. – 12:30 p.m.; Poster Hall

**LB-01 Identification of Gram-Positive Bacteria from Episodes of Pediatric Bacteremia using the BacT/ALERT Blood Culture Bottles and the Verigene BC-GP Assay**  
C. Haag<sup>1</sup>, S. Young<sup>1</sup>, D. Lacey<sup>1</sup>, S. Abuzaid<sup>1</sup>, C. Doern<sup>2</sup>; <sup>1</sup>Children's Med. Ctr., Dallas, TX, <sup>2</sup>Univ. of Texas Southwestern Med. Ctr., Dallas, TX

**LB-02 Community Associated Methicillin-Resistant *Staphylococcus aureus* Clonal Complex 80 Type IV (CC80-MRSA-IV): The Middle Eastern Clone!**  
S. Tokajian, H. Harastani; Lebanese American Univ., Byblos Campus, Lebanon

**LB-03 Evaluation of the Film Array Gastrointestinal Panel to Detect *Giardia duodenalis* and *Cryptosporidium* Species**  
M. Niebel<sup>1</sup>, K. M. Bourzac<sup>2</sup>, B. Jones<sup>1</sup>, C. L. Alexander<sup>1</sup>; <sup>1</sup>Scottish Parasite Diagnostic and Reference Lab., Glasgow, United Kingdom, <sup>2</sup>BioFire Diagnostics, Inc., Salt Lake City, UT

**LB-04 Evaluation of the Carba-NP test for Rapid Detection of Carbapenemase-Producing *Enterobacteriaceae* and *Pseudomonas***  
N. Tijet, D. J. Farrell, S. N. Patel, R. G. Melano; Publ. Hlth. Ontario Lab., Toronto, ON, Canada

**LB-05 Detection and Quantification of the Neonatal Meningitis-causing Agent *Streptococcus Agalactiae/gbs* by the Use of the Fast-track Diagnostics Real Time Multiplex PCR**  
T. Sendzik<sup>1,2</sup>, U. Nollen, W. F. Carman, V. Baillie, M. Madzivhandila and P.V. Adrian; <sup>1</sup>Fast-track Diagnostics, Junglinster, Luxembourg, <sup>2</sup>Univ. of the Witwatersrand, Johannesburg, South Africa

**LB-06 Evaluation of the Fast-track Diagnostics Real-time Multiplex PCR for Simultaneous Detection of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Mycoplasma genitalium*, *Trichomonas vaginalis*, *Mycoplasma hominis*, *Ureaplasma urealyticum* and *Ureaplasma parvum***  
T. Sendzik<sup>1,2</sup>, S. Balbier, M. Hofmann, M. Steimer, S. Büch, K. Kneweler and W. F. Carman; <sup>1</sup>Fast-track Diagnostics, Junglinster, Luxembourg, <sup>2</sup>Laboratoires Reunis, Junglinster, Luxembourg

**LB-07 Direct Real-time PCR Detection of *Streptococcus pneumoniae* Serotypes from Predominantly Culture-Negative Pediatric Pleural Empyemas Suggests 13-valent Conjugated Pneumococcal Vaccine may Prevent Empyema in Children**  
R. Slinger<sup>1</sup>, L. Hyde<sup>2</sup>, I. Moldovan<sup>3</sup>, F. Chan<sup>2</sup>, N. Barrowman<sup>3</sup>, J. Pernica<sup>4</sup>; <sup>1</sup>Univ. of Ottawa, Ottawa, ON, Canada, <sup>2</sup>Children's Hosp. of Eastern Ontario, Ottawa, ON, Canada, <sup>3</sup>CHEO Res. Inst., Ottawa, ON, Canada, <sup>4</sup>McMaster Univ., Hamilton, ON, Canada

**LB-08 Treatment and Outcome Prognosis of *E. coli* Infections by Clonal Molecular Diagnostics**  
V. L. Tchesnokova<sup>1</sup>, M. Billig<sup>1</sup>, S. Chattopadhyay<sup>1</sup>, E. Linardopoulou<sup>1</sup>, P. Aprikian<sup>1</sup>, P. L. Roberts<sup>1</sup>, V. Skrivankova<sup>1</sup>, B. Johnston<sup>2</sup>, A. Gileva<sup>1</sup>, I. Igusheva<sup>1</sup>, K. Riddell<sup>3</sup>, P. Rogers<sup>3</sup>, X. Qin<sup>4</sup>, S. Butler-Wu<sup>4</sup>, B. T. Cookson<sup>1</sup>, F. C. Fang<sup>1</sup>, B. Kahl<sup>5</sup>, L. B. Price<sup>6</sup>, S. Weissman<sup>4</sup>, A. Limaye<sup>1</sup>, D. Scholes<sup>3</sup>, J. R. Johnson<sup>2</sup>, E. V. Sokurenko<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN, <sup>3</sup>Group Hlth. Co., Seattle, WA, <sup>4</sup>Children's Hosp., Seattle, WA, <sup>5</sup>Univ. Sklinikum Münster, Muenster, Germany, <sup>6</sup>TGen, Flagstaff, AZ

**LB-09 Development and Optimization of a Novel Extraction Method for Identification of Mycobacteria Using MALDI-ToF MS**  
J. B. Dalton<sup>1</sup>, P. Salee<sup>1</sup>, K. Dionne<sup>2</sup>, K. Carroll<sup>1</sup>, N. Parrish<sup>1</sup>; <sup>1</sup>Johns Hopkins Univ. Sch. of Med., Baltimore, MD, <sup>2</sup>Johns Hopkins Univ. Hosp., Baltimore, MD

**LB-10 First Report of *cfr*-Mediated Resistance to Linezolid among *Staphylococcus epidermidis* Strains in Brazil**  
J. Monteiro<sup>1</sup>, C. Tieppo<sup>1</sup>, J. S. Werneck<sup>1</sup>, R. L. V. Mello<sup>2</sup>, P. A. Oliveira<sup>2</sup>, H. M. V. Pereira<sup>2</sup>, S. Tufik<sup>1</sup>; <sup>1</sup>Associação Fundo de Incentivo a Pesquisa, São Paulo - SP, Brazil, <sup>2</sup>Associação Beneficente de Campo Grande - Santa Casa, Campo Grande, Brazil

**LB-11 Bacteriophage Amplification and MALDI-ToF MS as a Means of Rapid *Burkholderia pseudomallei* Diagnostic Identification and Antibiotic Resistance Determination**  
C. R. Cox<sup>1</sup>, N. R. Saichek<sup>1</sup>, B. H. Kvitko<sup>2</sup>, H. P. Schweizer<sup>2</sup>, K. J. Voorhees<sup>1</sup>; <sup>1</sup>Colorado Sch. of Mines, Golden, CO, <sup>2</sup>Colorado State Univ., Fort Collins, CO

**LB-12 Purification of Cell-bound and Free Circulating Bacterial, Fungal and Viral Nucleic Acids from Large Blood Volumes Using the QIAamp UCP Pure Pathogen Blood Kit**  
M. Polidori<sup>1</sup>, R. Kist<sup>2</sup>, J. Springer<sup>3</sup>, R. Söller<sup>4</sup>, J. Löffler<sup>5</sup>, J. Löffler<sup>6</sup>, T. Doedt<sup>6</sup>; <sup>1</sup>QIAGEN, Hilden, Germany, <sup>2</sup>R&D Dept. QIAGEN GmbH, Hilden, Germany, <sup>3</sup>Univ. sklinikum Würzburg, Medizinische Klinik & Poliklinik II, Würzburg, Germany, <sup>4</sup>R&D Dept. QIAGEN Hamburg GmbH, Hamburg, Germany, <sup>5</sup>Univ. Sklinikum Würzburg, Medizinische Klinik & Poliklinik II, Würzburg, Germany, <sup>6</sup>R&D Dept. QIAGEN GmbH, Hilden, Germany

**LB-13 Development and Optimization of a High Throughput Assay to Measure Neutralizing Antibodies against *Clostridium difficile* Binary Toxin**  
J. Xie, M. Horton, J. Zorman, Y. Zhang, J. Antonello, B. Arnold, S. Secore, R. F. Xoconostle, S. Wang, M. Miezeiwski, J. M. Skinner, J. H. Heinrichs; Merck & Co. Inc., West Point, PA

**LB-14 Age-induced Susceptibility to Autoimmunity is Due to Compromised Negative Selection in the Thymus Rather Than Defects in Regulatory T-Cells**  
B. Coder<sup>1</sup>, H. Wang<sup>2</sup>, J. Shaw<sup>1</sup>, L. Mu<sup>1</sup>, P. Burnley<sup>1</sup>, D-M. Su<sup>1</sup>; <sup>1</sup>UNT Hlth. Sci. Ctr., Fort Worth, TX, <sup>2</sup>Jilin Med. Coll., Jilin Province, China

**LB-15 Production and Characterization of *C. difficile* Binary Toxin Monoclonal Antibodies**  
S. X. Su, Y. Li, C. Dunlap; Thermo Fisher Scientific, Fremont, CA

**LB-16 Potential Virulence Factors in Enterococcal *E. coli* isolated from Thailand, Nepal and Cambodia**  
O. Serichantalergs<sup>1</sup>, P. Nobthai<sup>1</sup>, S. Ruekit<sup>1</sup>, K. Supawat<sup>2</sup>, S. K. Shrestha<sup>3</sup>, A. Srijan<sup>1</sup>, L. Bodhidatta<sup>1</sup>, C. J. Mason<sup>1</sup>; <sup>1</sup>AFRIMS, Bangkok, Thailand, <sup>2</sup>Ministry of Publ. Hlth., Nonthaburi, Thailand, <sup>3</sup>Walter Reed AFRIMS Res. Unit-Nepal, Kathmandu, Nepal

**LB-17 *Salmonella* spp. Distribution in Armenian Farms**  
Z. Pepoyan<sup>1</sup>, A. Y. Hamid<sup>2</sup>, S. Soghomonyan<sup>1</sup>, A. Pepoyan<sup>2</sup>; <sup>1</sup>Intl. Association for Human and Animals Hlth. Improvement, Yerevan, Armenia, <sup>2</sup>Armenian Natl. Agrarian Univ., Yerevan, Armenia

**LB-18 Correlation between Quinolone-Resistant Commensal *E. coli* in Dairy Calves and Enrofloxacin Use**  
L. P. Jones, W. M. Sischo, T. E. Besser, M. A. Davis; Washington State Univ., Pullman, WA

## Monday, May 20

1:00 p.m. – 2:45 p.m.

### 114 Biofilms and Virulence factors (Division A)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1310 Catalase and Superoxide Dismutase Production from Bacterial Biofilms Exposed to Electrical Current**  
M. J. Karau, R. Patel, J. Mandrekar; Mayo Clinic, Rochester, MN

**1311 Effects of Biofilm Formation by *Helicobacter pylori* on Antibiotics Susceptibility**  
H. Yonezawa, T. Osaki, T. Hanawa, S. Kurata, S. Kamiya; Kyorin Univ., Tokyo, Japan

**1312 Sensitivity Analysis and Visualization of Biofilms of Clinically Relevant Bacteria Exposed to Disinfectants**  
D. Del Re<sup>1</sup>, K. Dhyani<sup>1</sup>, R. Mair<sup>1</sup>, M. Legner<sup>2</sup>, D. G. Cvitkovitch<sup>2</sup>, D. Swift<sup>1</sup>; <sup>1</sup>Biolenia Lab., Toronto, ON, Canada, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada

**1313 An Examination of an Inc A/C Plasmid in *Salmonella typhimurium*, and its Effects on Fitness and Invasion**  
A. J. Kempf, H. J. Hulsebus, J. T. Gray, S. Akbar; Des Moines Univ., Des Moines, IA

**1314 Controllable Release of Nitric Oxide For Biofilm Control**  
J. Wu, D. Koley, M. E. Meyerhoff, C. Xi; Univ. of Michigan, Ann Arbor, MI

**1315 Identification of Small Molecules that Antagonize Diguanylate Cyclase Enzymes to Inhibit Biofilm Formation**  
J. M. Smith<sup>1</sup>, K. Sambanthamoorthy<sup>1</sup>, R. Sloup<sup>1</sup>, V. Parashar<sup>2</sup>, E. Kim<sup>3</sup>, M. Semmelhack<sup>3</sup>, M. Neiditch<sup>2</sup>, C. M. Waters<sup>1</sup>; <sup>1</sup>Michigan State Univ., East Lansing, MI, <sup>2</sup>New Jersey Med. Sch., Newark, NJ, <sup>3</sup>Princeton Univ., Princeton, NJ

**1316 Synthetic Flavonoid Analogs Show Bactericidal, Anti-sporulation And Toxin Reducing Properties against *Clostridium difficile***  
X. Wu<sup>1</sup>, Z. Alam<sup>1</sup>, L. Feng<sup>2</sup>, D. Sun<sup>2</sup>, J. G. Hurdle<sup>1</sup>; <sup>1</sup>Dept. of Biol., Univ. of Texas at Arlington, Arlington, TX, <sup>2</sup>Dept. of Pharmaceutical Sci., Coll. of Pharmacy, Univ. of Hawaii at Hilo, Hilo, HI

**1317 The Transcriptional Regulator BrIR Contributes to Tolerance of Biofilms to Cationic Antimicrobial Peptides through Repressing *pmrAB***  
J. R. Chambers, K. Sauer; Binghamton Univ., Binghamton, NY

**1318 Inhibitory Effect of Micafungin on Biofilm Formation in *Pseudomonas aeruginosa* at a Tertiary Care Center in Lebanon**  
W. Bazzi, A. Sabra, L. Zahreddine, M-T. Khairallah, M. Baroud, U. Hadi, G. M. Matar; American Univ. of Beirut, New York, NY

**1319 Activity of Topical Antimicrobial Agents against Biofilms of Multidrug-Resistant Bacteria Recovered from Burn Patients**  
S. K. Hardy<sup>1</sup>, C. J. Sanchez Jr<sup>1</sup>, R. Woodbury<sup>1</sup>, C. K. Murray<sup>2</sup>, J. C. Wenke<sup>1</sup>; <sup>1</sup>U.S. Army Inst. of Surgical Res., Ft. Sam Houston, TX, <sup>2</sup>San Antonio Military Med. Ctr., Ft. Sam Houston, TX

- 1320 New, Rapid, Low Cost System for Expression and Purification of Recombinant Lysostaphin from *Staphylococcus simulans* and Its Application to Combat Staphylococcal Biofilms**  
N. M. Elhossainy, **A. S. Attia**; Dept. of Microbiol. & Immunology, Faculty of Pharmacy, Cairo Univ., Cairo, Egypt

## 115 Combinations of Antimicrobials (Division A)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 1321 Anti-malarial and Statin Combination Therapy Eliminates Mortality Associated with Experimental Cerebral Malaria**  
N. O. Wilson, W. Solomon, L. Anderson, J. Patrickson, S. Pitts, V. Bond, M. Liu, J. Stiles; Morehouse Sch. of Med., Atlanta, GA
- 1322 Evaluation of Antimicrobial Synergy for Multi-Resistant Gram-Negative Blood Stream Isolates**  
L. M. Connors, U. Rajyaguru, **D. Amsterdam**; Erie County Med. Ctr., Buffalo, NY
- 1323 Combined Mixtures of Epigallocatechin Gallate (EGCG) and (EGCG)-Stearate with Ampicillin and the Resulting Effects on Bacterial Growth Inhibition**  
H. Tahir, U. Habiba, L. H. Lee; Montclair State Univ., Upper Montclair, NJ
- 1324 Linezolid Reduces the Emergence of Heteroresistant Vancomycin Resistance Among Vancomycin Intermediate *Staphylococcus aureus* (hvisa)**  
I. Alshami, **A. E. Alharbi**, K. I. Mohammed, R. A. M. Eltahlawi; Taibah Univ., Saudi Arabia
- 1325 Synergistic Activities of Azoles and K20 against Azole-resistant *Candida albicans* 10231**  
S. Shrestha, C. W. T. Chang, C. Dhiman, M. Grilley, J. Y. Takemoto; Utah State Univ., Logan, UT
- 1326 WITHDRAWN**
- 1327 Interaction Between Immune Serum and Gentamicin to Amplify Intracellular Elimination of *Francisella tularensis***  
M. Sutherland, A. Goodyear, K. Mosovsky, E. Silva, J. Belisle, S. Dow; Colorado State Univ., Fort Collins, CO
- 1328 Comparative Study of the Antimicrobial Effect of Different Antibiotics Mixed with CdS and Ag-Core Au-Shell Nanoparticles in *Staphylococcus aureus* and *Escherichia coli***  
M. Baez, B. Acevedo, G. Baez, E. Medina, L. Diaz, E. Ferrer; Interamerican Univ. of Puerto Rico, Ponce, Puerto Rico
- 1329 An Examination of the Inhibitory Effects of Antibiotic Combinations on Ribosome Biosynthesis in *Staphylococcus aureus***  
J. Beach, W. Champney; East Tennessee State Univ., Johnson City, TN
- 1330 *Candida Albicans* “Yeast/mold Switching” Inhibition by a Clotrimazole/metronidazole (1:5) Association**  
G. Petronio Petronio, P. M. Furneri, M. E. Maggiore, C. Genovese, V. Fuochi, G. Tempera; Univ. of Catania, Catania, Italy

## 116 Secretion Systems, Toxins, and Other Secreted Products – II (Division B)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 1331 Studies on the Role of SfaA and SbnD Efflux Proteins in Secretion of Staphyloferrins A and B in *Staphylococcus aureus***  
M. Hannauer, J. Sheldon, D. Heinrichs; Univ. of Western Ontario, London, ON, Canada
- 1332 *Stenotrophomonas maltophilia* Encodes a Functional Type II Secretion System That Targets Host Cells**  
S. M. Karaba, R. C. White, N. P. Cianciotto; Northwestern Univ. Feinberg Sch. of Med., Chicago, IL

- 1333 An Integrated Approach to Identify *Campylobacter* Proteins that Interact with the Chicken Immune System**  
X. Mu, A. Hung, B. John, **P. M. Smooker**; RMIT Univ., Bundoora, Australia

## 1334 EspC from EPEC Initially Cleaves Fodrin and then Focal Adhesion Proteins to Cause Cell Death

F. Navarro-Garcia, A. Serapio-Palacios, G. Tapia-Pastrana, M. I. Salazar, J. E. Vidal, O. Amezcua; CINVESTAV-IPN, Mexico City, Mexico

## 1335 *Pseudomonas aeruginosa* Exotoxin T Induces Anoikis Apoptosis and Blocks Apoptotic Compensatory Proliferation Signaling

S. Wood, G. Sivaramakrishnan, S. Shafikhani; Rush Univ. Med. Ctr., Chicago, IL

## 1336 Evidence for a Second *Legionella pneumophila* Siderophore

D. M. Burnside, N. P. Cianciotto; Northwestern Univ., Chicago, IL

## 1337 Role of Two Large, Secreted Proteins in *Bordetella avium* Virulence

N. T. Burkholder, S. Stockwell, L. Temple; James Madison Univ., Harrisonburg, VA

## 1338 Site-directed Mutagenesis Studies of Alternative Initiation of Translation of the *Clostridium difficile* *tcdE* Gene

A. Dhamad, S. B. Hollenberg, A. Crawley, **D. M. Ivey**; Univ. of Arkansas, Fayetteville, AR

## 1339 Avian Pathogenic *Escherichia coli* Strain SEPT362 Exhibits Enterotoxigenic-like Activity in the *In vivo* Rabbit Ligated Ileal Loop Assay

R. P. Maluta<sup>1</sup>, M. S. Gatti<sup>1</sup>, P. P. Joazeiro<sup>1</sup>, J. B. de Paiva<sup>1</sup>, T. C. G. Rojas<sup>1</sup>, F. Silveira<sup>1</sup>, R. K. T. Kobayashi<sup>2</sup>, **W. Dias da Silveira<sup>1</sup>**; <sup>1</sup>Campinas State Univ., Campinas, Brazil, <sup>2</sup>State Univ. of Londrina, Londrina, Brazil

## 1340 The IcmSW Adapter Complex of *Legionella pneumophila* Selectively Recognizes Dot/Icm Effector Proteins Through Binding to Distinct Partially Unfolded Domains

B. Doron<sup>1</sup>, M. Yang<sup>2</sup>, C. W. Akey<sup>2</sup>, E. D. Cambronne<sup>1</sup>; <sup>1</sup>Oregon Hlth. & Sci. Univ., Portland, OR, <sup>2</sup>Boston Univ. Sch. of Med., Boston, MA

## 1341 SecA2 Aids in Secretion of Proteins Involved in Both Pathogenesis and Housekeeping Function in Pathogenic and Nonpathogenic Bacteria

K. K. Mishra<sup>1</sup>, T. Bailey<sup>1</sup>, H. Kim<sup>2</sup>, T. Dikshit<sup>2</sup>, A. Bhunia<sup>2</sup>; <sup>1</sup>Ivy Tech Community Coll., Lafayette, IN, <sup>2</sup>Purdue Univ., West Lafayette, IN

## 1342 The T6SS Gene Cluster of *Vibrio cholerae* Encodes a Functional Toxin-Antitoxin Pair

D. Unterwiesing, T. Brooks, S. Pukatzki; Univ. of Alberta, Edmonton, AB, Canada

## 1343 Passive Immunization with an Anti – Alpha Toxin Monoclonal Antibody Reduces Disease Severity in a CA-MRSA Murine Intravenous Lethal Challenge Model

M. M. Hamilton, C. Tkaczyk, C. Stover, B. Sellman; MedImmune, Gaithersburg, MD

## 1344 Antibodies against Cytotoxic Necrotizing Factor 1 or Hemolysin Reduce Bladder Inflammation Caused by Uropathogenic *E. coli*

M. A. Smith, C. L. Ventura, A. D. O'Brien; Dept. of Microbiol. and Immunology, Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD

## 1345 Discovery and Characterization of Novel Bacterial Toxin Systems in Intra – and Inter-specific Conflicts

D. Zhang, L. M. Iyer, R. F. de Souza, V. Anantharaman, L. Aravind; NCBI, NLM, NIH, Bethesda, MD

## 1346 Recognition between *P. mirabilis* Clinical Isolates during Multicellular Swarming is T6S-dependent

S. Himpel, J. Zora, J. Miller, P. Arno, C. Alteri, H. L. T. Mobley; Univ. of Michigan Med. Sch., Ann Arbor, MI



**1347 Commensal *Escherichia coli* Strains May Have Contributed to Stx2 Production by the German *E. coli* O104:H4 Outbreak Strain**  
Y. Zhang<sup>1</sup>, K. Yang<sup>1</sup>, C. R. Laing<sup>1</sup>, R. Johnson<sup>2</sup>, V. P. J. Gannon<sup>1</sup>; <sup>1</sup>Lab. for Food-Borne Zoonoses, Lethbridge, AB, Canada, <sup>2</sup>Lab. for Food-Borne Zoonoses, Guelph, ON, Canada

**1348 Characterization of the *Chlamydia pneumoniae* Type III Secretion Translocator Proteins**  
D. C. Bulir, C. B. Stone, D. A. Waltho, K. A. Mwawasi, J. B. Mahony; McMaster Univ., Hamilton, ON, Canada

**1349 Two Novel Pertussis Toxin-Like Toxins Are Encoded by the Same Lambdoid Prophages That Encode the Heat-Labile Enterotoxins of Type II Enterotoxigenic *Escherichia coli***  
M. G. Jobling; Univ. of Colorado Sch. of Med., Aurora, CO

**1350 Biophysical Characterization for IpaD-IpaB Fusion Complex from *Shigella flexneri* as a Candidate Subunit Vaccine**  
X. Chen, N. E. Dickenson, F. X. Martinez-Becerra, S. P. Choudhary, J. C. Greenwood II, W. D. Picking, W. L. Picking; Oklahoma State Univ., Stillwater, OK

**1351 Biophysical Characterization and Stabilization of CagL, an Antigenic Protein from *Helicobacter pylori* as a Candidate Subunit Vaccine**  
S. P. Choudhary<sup>1</sup>, K. Pendleton<sup>1</sup>, J. D. Ramsey<sup>1</sup>, T. Blanchard<sup>2</sup>, W. D. Picking<sup>1</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Univ. of Maryland Sch. of Med., Baltimore, MD

**1352 Staphylococcal Gamma-Toxin May Contribute to Toxic Shock Syndrome through Enhancement of Mucosal Inflammation**  
A. N. Gillman<sup>1</sup>, L. M. Breshears<sup>1</sup>, P. M. Schlievert<sup>2</sup>, V. J. Torres<sup>3</sup>, M. L. Peterson<sup>1</sup>; <sup>1</sup>Coll. of Pharmacy, Univ. of Minnesota, Minneapolis, MN, <sup>2</sup>Carver Coll. of Med., Univ. of Iowa, Iowa City, IA, <sup>3</sup>New York Univ. Sch. of Med., New York, NY

**1353 Characterization and Purification of a Novel Bacteriocin from *Staphylococcus pasteurii* that against *Staphylococcus aureus***  
L-H. Quan, H. Lee, D. Lee, J-A. Lim, S. Heu, K. Jung, J. Yun, E. Roh; Natl. Academy of Agricultural Sci., Rural Dev. Admin., Suwon, Republic of Korea

## 117 Gram-Negative-Molecular Epidemiology (Division C)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1354 Two ST101 Subclones as Major Clonal Group of CTX-M-producing *K. pneumoniae* Isolates from Nigeria and the Spread of *bla*<sub>OXA-10</sub> and *bla*<sub>CMY-2</sub> ESBL**  
B. Ghebremedhin<sup>1</sup>, I. Aibinu<sup>2</sup>, T. Odugbemi<sup>3</sup>, W. Koenig<sup>1</sup>; <sup>1</sup>Clinical Microbiol., Magdeburg, Germany, <sup>2</sup>Med. Microbiol. & Parasitology, Lagos, Nigeria, <sup>3</sup>Med. Microbiol. & Parasitology, Lagos, Nigeria

**1355 Plasmid-Mediated Quinolone Resistance in Fluroquinolone-resistant *Escherichia coli* from Nigeria**  
A. O. Aboderin<sup>1,2</sup>, B. W. Odetoyin<sup>1</sup>, M. Braun<sup>3</sup>, N. E. Quartey<sup>3</sup>, O. Coburn-Flynn<sup>3</sup>, J. I. Otero-Vera<sup>3</sup>, I. N. Okeke<sup>3</sup>; <sup>1</sup>Obafemi Awolowo Univ., Ile-Ife, Nigeria, <sup>2</sup>Obafemi Awolowo Univ. Teaching Hosp. Complex, Ile-Ife, Nigeria, <sup>3</sup>Haverford Coll., Haverford, PA

**1356 Carbapenem Resistant *Klebsiella pneumoniae*, Epidemiological Screening and Evaluation in an Integrated Hospital System**  
C. L. Passaretti<sup>1</sup>, J. D. Dolloff<sup>1</sup>, R. L. Sautter<sup>1,2</sup>, R. V. Goering<sup>3</sup>; <sup>1</sup>Carolina Med. Ctr., Charlotte, NC, <sup>2</sup>Carolinas Pathology Group-Carolinas Med. Ctr., Charlotte, NC, <sup>3</sup>Dept. of Microbiol. and Immunology – Creighton Univ. Med. Ctr., Omaha, NE

**1357 Evaluation of a Real-Time PCR Assay for the Molecular Detection of Bacterial Gastrointestinal Pathogens**  
L. Chandramohan<sup>1,2</sup>, P. A. Revell<sup>1,2</sup>; <sup>1</sup>Baylor Coll. of Med., Houston, TX, <sup>2</sup>Texas Children's Hosp., Houston, TX

**1358 Rapid Detection of *Klebsiella pneumoniae* Carbapenemase (KPC) Producing Isolates Using the BACcel Digital Microscopy System**  
C-A. D. Burnham<sup>1</sup>, S. Metzger<sup>2</sup>, A. Shamsheeva<sup>2</sup>, R. Collins<sup>1</sup>, D. Howson<sup>2</sup>; <sup>1</sup>Washington Univ. Sch. of Med., Saint Louis, MO, <sup>2</sup>Accelerate Diagnostics, Tucson, AZ

**1359 Efficiency of Nasal and Pharyngeal Swabs in the Identification of *Neisseria Meningitidis* Carriers**  
S. Esposito, A. Giampiero, L. Terranova, V. Montinaro, W. Peves Rios, V. Assuini, N. Principi; Univ. Degli Studi di Milano, Milano, Italy

**1360 Clinical Significance and Characterization of *Haemophilus influenzae* Type B Genogroup Isolated from the Urine**  
T. C. Dingle<sup>1</sup>, J. E. Clarridge<sup>2,1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Puget Sound VA Med. Ctr., Seattle, WA

**1361 Comparison of Diarrhea Pathogen Profiles Between China and USA Children Using the Filmarray Gi Panel**  
R. Trausch<sup>1</sup>, B. Harrel<sup>1</sup>, C. Li<sup>1</sup>, M. Vaughn<sup>1</sup>, R. Wallace<sup>1</sup>, R. Crisp<sup>1</sup>, M. Rogatcheva<sup>1</sup>, A. Pavia<sup>2</sup>, T. Barney<sup>3</sup>, J. Daly<sup>3,2</sup>, S. Jeppsen<sup>2</sup>, M. Troy<sup>2</sup>, K. Case<sup>4</sup>, S. Lloyd<sup>2</sup>, D. C. Hale<sup>2</sup>; <sup>1</sup>BioFire Diagnostics, Salt Lake City, UT, <sup>2</sup>Univ. of Utah, Salt Lake City, UT, <sup>3</sup>Primary Children's Med. Ctr., Salt Lake City, UT, <sup>4</sup>ARUP, Salt Lake City, UT

**1362 Transcription-mediated Amplification-based *Mycoplasma genitalium* Screening of Primary Male Urine Specimens**  
D. Wenten<sup>1</sup>, P. Phipps<sup>1</sup>, R. Gremminger<sup>1</sup>, M. Schuknecht<sup>1</sup>, D. Hamer<sup>2</sup>, V. Boyd<sup>2</sup>, M. Napierala<sup>2</sup>, E. Munson<sup>2</sup>; <sup>1</sup>STD Specialties Clinic, Milwaukee, WI, <sup>2</sup>Wheaton Franciscan Lab., Milwaukee, WI

**1363 Detection of Diarrheagenic *Escherichia coli* (DEC) and Identification of Colonization Factor of Enterotoxigenic *Escherichia coli* (ETEC) from Children in Bhutan**  
P. Nobthai<sup>1</sup>, K. P. Tshering<sup>2</sup>, O. Serichantalergs<sup>1</sup>, A. Srijan<sup>1</sup>, S. Wangchuk<sup>3</sup>, L. Bodhidatta<sup>1</sup>, C. J. Mason<sup>1</sup>; <sup>1</sup>Armed Force Res. Inst. of Med. Sci., Bangkok, Thailand, <sup>2</sup>Jigme Dorji Wangchuk Natl. Referral Hosp., Thimphu, Bhutan, <sup>3</sup>Ministry of Hlth., Thimphu, Bhutan

**1364 *Serratia marcescens*: A Major Cause of Diarrhea in Low Income Countries?**  
J. B. Oeching<sup>1</sup>, N. Boisen<sup>2</sup>, B. R. Lindsay<sup>3</sup>, M. Antonio<sup>4</sup>, M. A. Hossain<sup>5</sup>, B. Tamabara<sup>6</sup>, S. Li<sup>7</sup>, M. M. Levine<sup>7</sup>, S. Panchalingam<sup>7</sup>, K. Kotloff<sup>7</sup>, U. Ikumapayi<sup>4</sup>, M. Adeyemi<sup>4</sup>, D. Ahmed<sup>5</sup>, J. Oundo<sup>1</sup>, R. Omoro<sup>1</sup>, A. W. Walker<sup>8</sup>, J. Parkhill<sup>8</sup>, R. F. Breiman<sup>1</sup>, D. Saha<sup>4</sup>, M. Pop<sup>9</sup>, O. C. Stine<sup>7</sup>, J. P. Nataro<sup>2</sup>; <sup>1</sup>Ctr. for Disease Res., Nairobi, Kenya, <sup>2</sup>Univ. of Virginia, Charlottesville, VA, <sup>3</sup>Univ. of Maryland Sch. of Med., Baltimore, MD, <sup>4</sup>Med. Res. Council, Basso, Gambia, <sup>5</sup>Intl. Ctr. for Diarrheal Res., Bangladesh, Dhaka, Bangladesh, <sup>6</sup>Ctr. for Vaccine Dev., Bamako, Mali, <sup>7</sup>Univ. of Maryland Sch. of Med., Baltimore, MD, <sup>8</sup>Wellcome Trust Sanger Inst., Hinxton, United Kingdom, <sup>9</sup>Univ. of Maryland, College Park, MD

**1365 Detection of a Low Abundance Pathogen in a Mixed Community Sample by Use of Multiple Sequencing Platforms**  
M. B. Scholz, C. Lo, B. Hu, P. Chain; Los Alamos Natl. Lab., Los Alamos, NM

**1366 Molecular Characterization of *Legionella pneumophila* serogroup 1 from the 2012 Quebec City Outbreak**  
S. Lévesque<sup>1</sup>, P-L. Plante<sup>2</sup>, N. Mendis<sup>3</sup>, H. Charest<sup>1</sup>, F. Raymond<sup>2</sup>, P. Cantin<sup>4</sup>, C. Huot<sup>5</sup>, I. Goupil-Sormany<sup>5</sup>, F. Desbiens<sup>5</sup>, S. Faucher<sup>3</sup>, J. Corbeil<sup>2</sup>, C. Tremblay<sup>1</sup>; <sup>1</sup>LSPQ, INSPQ, Sainte-Anne-de-Bellevue, QC, Canada, <sup>2</sup>Univ. Laval, QC, Canada, <sup>3</sup>McGill Univ., QC, Canada, <sup>4</sup>CEAEQ, MDDEFP, QC, Canada, <sup>5</sup>DSP de la Capitale-Natl., QC, Canada

**1367 Multiplex Bead Suspension Assay for Molecular Determination of Serogroup in Toxigenic *Vibrio cholerae***  
L. Gladney, L. S. Katz, M. Turnsek, M. Kanagawa, M. M. Parsons, C. L. Tarr; CDC, Atlanta, GA

**1368 Influence of Genospecies on Clinical Outcome in Patients with the *Acinetobacter baumannii-calcoaceticus* Complex Bacteremia**  
K. Park, J. Shin, S. Lee, H. Jang, S-I. Jung, M. Jang, S. Kang; Chonnam Natl. Univ. Med. Sch., Gwangju, Republic of Korea



**1369 Extended Spectrum Beta-Lactamase: Their Phenotypic and Genotypic Identification**  
D. R. Estrada, B. E. Rivera; Univ. Autonoma de Chihuahua, Chihuahua, Mexico

**1370 Multidrug-Resistant Acinetobacter Burn Unit Outbreak: Application of Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MS) in Determining Strain Differentiation**  
H. J. Houck, I. Santiago, J. P. Delano, L. Archibald, K. H. Rand; Univ. of Florida, Gainesville, FL

**1371 Cross Comparative Analyses of Acute Febrile Illness and Diarrheal Cases in Afghanistan Reveal Dominant Infectious Disease Pathogens Affecting Population**  
S. Ahmed<sup>1</sup>, N. Stanikzai<sup>1</sup>, R. Alami<sup>1</sup>, N. Babakerkhail<sup>1</sup>, W. Joyan<sup>1</sup>, B. Noormal<sup>2</sup>, K. Hassan<sup>1</sup>, I. Kamal<sup>1</sup>, M. Kamel<sup>1</sup>, T. Husain<sup>1</sup>; <sup>1</sup>U.S. Naval Med. Res., Cairo, Egypt, <sup>2</sup>Afghan Publ. Hlth. Inst., Ministry of Publ. Hlth., Islamic Republic of Afghanistan, Kabul, Afghanistan

## 118 Gram Positive-Molecular Epidemiology (Division C)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1372 Detection and Characterization of Ampicillin- and Vancomycin -Resistant *Enterococcus faecium* belonging to Clonal complex-17 in a Kuwait Hospital**  
E. E. Udo, T. Verghese, K. Al-Benwan, B. Noronha, B. Mathew; Kuwait Univ., Safat, Kuwait

**1373 Prevalence of Toxinogenic *Clostridium difficile* in Nosocomially Infected Patients at a Tertiary Care Center in Lebanon**  
R. Mukheiber, G. F. Araj, M. Baroud, G. M. Matar; American Univ. of Beirut, New York, NY

**1374 Superantigen Genes in *Staphylococcus aureus* causing Endocarditis**  
J. Chung<sup>1</sup>, M. Karau<sup>1</sup>, K. Greenwood-Quaintance<sup>1</sup>, G. Rajagopalan<sup>2</sup>, R. Patel<sup>1</sup>; <sup>1</sup>Div.s of Clinical Microbiol. and Infectious Diseases, Mayo Clinic, Rochester, MN, <sup>2</sup>Dept. of Immunology and Infectious Diseases, Mayo Clinic, Rochester, MN

**1375 Comparison of Double-Locus (*clfB* and *spa*) Sequence Typing with Pulsed-Field Gel Electrophoresis for Differentiating Methicillin-Resistant *Staphylococcus aureus* Isolates**  
J.-J. Lu<sup>1</sup>, C.-C. Huang<sup>2</sup>; <sup>1</sup>Chang Gung Mem. Hosp., Lin-Kou, Taoyuan, Taiwan, <sup>2</sup>Dept. of Internal Med., Taichung Hosp., Executive Yuan Dept. of Hlth., Taichung, Taiwan

**1376 Molecular Diversity Analysis of *Staphylococcus epidermidis* Strains Isolated from the Community and Hospital Environments of China**  
M. Li; Dept. of Lab. Med., Huashan Hosp., Fudan Univ., Shanghai, China

**1377 Defining Criteria for the Multiple-Locus Variable-Number Tandem Repeat Analysis (MLVA) of *Clostridium difficile* Outbreaks in Hospital Settings**  
Y. Uyanwune<sup>1,2,3</sup>, G. Broukhanski<sup>1,2</sup>; <sup>1</sup>PHO Lab., Toronto, ON, Canada, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada, <sup>3</sup>Univ. of Alberta, Edmonton, AB, Canada

**1378 Molecular Epidemiology and Antimicrobial Resistance of *Staphylococcus aureus* Infection Isolates in a Midwestern State, USA**  
R. Nair, T. C. Smith; The Univ. of Iowa, Coralville, IA

**1379 Decreasing Mupirocin Susceptibility over 7 Years in a Hospital System Using Mupirocin for Nasal Decolonization of Hospitalized Patients with MRSA Colonization and Pre-Surgical Patients with *S. aureus* Colonization**  
I. K. Dusch<sup>1</sup>, D. Schora<sup>1</sup>, L. R. Peterson<sup>1,2</sup>, R. B. Thomson, Jr<sup>1,2</sup>; <sup>1</sup>NorthShore Univ. Hlth. System, Evanston, IL, <sup>2</sup>Univ. of Chicago Pritzker Sch. of Med., Chicago, IL

**1380 Unique *Clostridium difficile* Pulsed-Field Gel Electrophoresis (PFGE) Types at Two Jamaican Hospitals**  
O. D. Heslop; Univ. of the West Indies, Kingston, Jamaica

**1381 Rearrangement of CRISPR Spacers is Correlated with Erythromycin Susceptibility in Group A Streptococcus**  
P.-X. Zheng<sup>1</sup>, C. Chiang-Ni<sup>2</sup>, S.-Y. Wang<sup>1</sup>, P.-J. Tsai<sup>1</sup>, W.-J. Chuang<sup>1</sup>, Y.-S. Lin<sup>1</sup>, C.-C. Liu<sup>1</sup>, J.-J. Wu<sup>1</sup>; <sup>1</sup>Natl. Cheng Kung Univ. Med. Coll., Tainan, Taiwan, <sup>2</sup>Chang Gung Univ. Med. Coll., Taoyuan, Taiwan

**1382 SCCmec Profile Changes of Coagulase Negative Staphylococci: A Ten Year Period in a Hospital from Porto Alegre, Brazil**  
C. F. Oliveira<sup>1</sup>, M. P. Mott<sup>1</sup>, B. G. Batista<sup>1</sup>, K. C. Reiter<sup>1</sup>, A. Rieger<sup>2</sup>, P. A. d'Azevedo<sup>1</sup>; <sup>1</sup>UFCSA, Porto Alegre, Brazil, <sup>2</sup>UNISC, Santa Cruz do Sul, Brazil

**1383 Multilocus Sequence Typing (MLST) Analysis of Daptomycin Non-susceptible *Enterococcus* Clinical Isolates**  
G. Wang, P. Makam Surendraiah, A. Dhand; New York Med. Coll., Valhalla, NY

**1384 Epidemiological and Molecular Characterization of Methicillin-Resistant *Staphylococcus aureus* (MRSA), among Local Clinical Isolates**  
H. A. Hemeg; King Abdulaziz Univ. Hosp., Jeddah, Saudi Arabia

**1385 Analysis Of Vancomycin Resistant *E. faecium* Meningitis Strains Using Molecular Epidemiological Tools**  
S. Antonara<sup>1</sup>, F. Stock<sup>1</sup>, S. Brooks<sup>2</sup>, R. Blakesley<sup>2</sup>, J. Gea-Banacloche<sup>3</sup>, J. Segre<sup>2</sup>, A. Zelazny<sup>1</sup>; <sup>1</sup>NIH, Bethesda, MD, <sup>2</sup>NHGR, Bethesda, MD, <sup>3</sup>NCI, Bethesda, MD

**1386 Validation of a Laboratory Developed Test for VanA on the BD MAXTM**  
R. Widen, C. Kubasek, V. Healer, E. Vendrone, S. Silbert; Tampa Gen. Hosp., Tampa, FL

**1387 Comparative Molecular Epidemiology by DNA Microarray Analysis of Clinical MRSA Isolates from Patient with Bacteremia Demonstrating Daptomycin Non-Susceptibility**  
M. D. Virata<sup>1</sup>, S. Monecke<sup>2</sup>, G. Sakoulas<sup>3</sup>; <sup>1</sup>Yale-New Haven Hosp., New Haven, CT, <sup>2</sup>Technical Univ. of Dresden, Dresden, Germany, <sup>3</sup>Univ. of California, San Diego, CA

**1387a Molecular Anatomy of Invasive Group A Streptococcal (iGAS) Isolates in England**  
B. Afshar<sup>1</sup>, A. Al-Shahib<sup>1</sup>, A. Underwood<sup>1</sup>, C. Turner<sup>2</sup>, S. Sriskandan<sup>2</sup>, M. Holden<sup>3</sup>, J. Parkhill<sup>3</sup>, A. Efstratiou<sup>1</sup>; <sup>1</sup>Hlth. Protection Agency, London, United Kingdom, <sup>2</sup>Imperial Coll., London, United Kingdom, <sup>3</sup>Wellcome Trust Sanger Inst., Cambridge, United Kingdom

## 119 Unusual Organisms and Case Studies (Division C)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1388 Infections Caused by *Chryseobacterium* spp. in Pediatric Patients in Kuwait**  
R. Dhar<sup>1</sup>, W. AlFouzan<sup>2,3</sup>, N. Al-Sweih<sup>1,3</sup>, M. J. Albert<sup>3</sup>; <sup>1</sup>Maternity Hosp., Kuwait, <sup>2</sup>Farwania Hosp., Kuwait, <sup>3</sup>Faculty of Med., Kuwait Univ., Kuwait

**1389 A Case of Streptobacillary Rat Bite Fever Presenting as Arthritis in a 5-Year-Old Male**  
R. F. Relich<sup>1</sup>, K. Boyd<sup>1</sup>, P. Lineback<sup>2</sup>, A. McFarland<sup>3</sup>, A. Louis<sup>3</sup>, C. Kaufman<sup>3</sup>; <sup>1</sup>IU Sch. of Med., Indianapolis, IN, <sup>2</sup>Wishard Hosp., Indianapolis, IN, <sup>3</sup>IU Hlth. Pathology Lab., Indianapolis, IN

**1390 Fatal Disseminated Aspergillosis in an Immunocompetent Adolescent**  
R. F. Relich<sup>1</sup>, J. R. Bradish<sup>1</sup>, R. E. Alexander<sup>1</sup>, J. Koehlinger<sup>2</sup>, D. A. Hawley<sup>1</sup>; <sup>1</sup>IU Sch. of Med., Indianapolis, IN, <sup>2</sup>IU Hlth. Pathology Lab., Indianapolis, IN

**1391 Infection-associated Ovarian Vein Thrombosis following Postpartal *Streptococcus pyogenes* Sepsis: A Case Report**  
**M. Karrasch<sup>1</sup>, B. Edel<sup>1</sup>, J. Rödel<sup>1</sup>, S. Sachse<sup>1</sup>, W. Pfister<sup>1</sup>, U. Schneider<sup>2</sup>, D. Schlembach<sup>2</sup>, E. Schleußner<sup>2</sup>, H.-J. Mentzel<sup>3</sup>, N. Mühler<sup>2</sup>**; <sup>1</sup>Inst. for Med. Microbiol., Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany, <sup>2</sup>Dept. of Obstetrics, Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany, <sup>3</sup>Inst. of Diagnostic and Interventional Radiology, Univ. Hosp. of Friedrich Schiller Univ., Jena, Germany

**1392 Polyphasic Identification of *Cellulosimicrobium cellulans* Isolated From Two Bacteremic Patients**  
**S. Buss, R. Noel-Hurst, A. L. Hewlett, P. C. Iwen**; Univ. of Nebraska Med. Ctr., Omaha, NE

**1393 *Nocardia exalbida* as a Cause of Disseminated Nocardiosis in a Patient with Chronic Lymphocytic Leukemia**  
**A. L. Roberts, P. C. Iwen**; Univ. of Nebraska Med. Ctr., Omaha, NE

**1394 Frequency of Isolation of *Clostridium* spp. from Cardiovascular Samples in a Tertiary Care Hospital**  
**R. Chaudhry, K. Prathyusha, A. Ghosh, B. Airan, U. Chowdhury, S. Choudhary**; AIIMS, Delhi, India

**1395 WITHDRAWN**

**1396 Documenting *In vivo* Acquisition of Antibiotic Resistance of a *Burkholderia multivorans* Strain in a Cystic Fibrosis Patient**  
**J. R. Stokell, D. C. Pittan, T. R. Steck**; Univ. of North Carolina at Charlotte, Charlotte, NC

**1397 *Mycobacterium fortuitum* Periprosthetic Knee Joint Infection**  
**M. Karki Maskey, T. C. Sharngoe, T. Fazili, W. Javaid**; SUNY Upstate, Syracuse, NY

**1398 Dural Sinus Thrombosis Associated With Lyme Neuroborreliosis: Second Case Report in USA**  
**M. Amin, M. Polhemus, D. Blair, T. Fazili, A. George, W. Javaid, T. Endy**; SUNY Upstate Med. Univ., Syracuse, NY

**1399 Adult Wound Botulism from a Food-borne Source: A Case Report**  
**M. Amin, A. George, W. Javaid, M. Polhemus, T. Fazili, D. Blair, T. Endy**; SUNY Upstate Med. Univ., Syracuse, NY

**1400 Pepto *Streptococcus* Bacteremia and Infective Endocarditis Complicated by Intracranial Hemorrhage: A Case Report**  
**C. Sharngoe, M. Maskey, T. Fazili, T. Endy**; SUNY Upstate Univ. Hosp., Syracuse, NY

**1401 *Raoultella planticola* Invading the Biliary Tract: A Growing Cause for Concern**  
**S. Hussain<sup>1</sup>, Q. Syed<sup>2</sup>, R. Al-Bawardy<sup>2</sup>**; <sup>1</sup>Fairview Hosp., Cleveland, OH, <sup>2</sup>Cleveland Clinic, Cleveland, OH

**1402 Matrix-Assisted Laser Desorption Ionization Time-Of-Flight Mass Spectrometry: Rapid but Not Always Right**  
**M. D. Martino, A. Marques, D. Krenke, T. Fornabaio, I. Siqueira, K. Santiago, J. Pasternak**; Hosp. Albert Einstein, São Paulo, Brazil

## 120 Models and Studies of Host Pathogen Interactions (Division D)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1403 The Toxins of *Bordetella pertussis* Illness and *B. pertussis* Infection**  
**J. D. Cherry<sup>1</sup>, C. D. Paddock<sup>2</sup>**; <sup>1</sup>David Geffen Sch. of Med. at UCLA, Mattel Children's Hosp., Los Angeles, CA, <sup>2</sup>Infectious Disease Pathology Branch, Div. of Rickettsial Diseases, CDC, Atlanta, GA

**1404 Epithelial Cell Recognition of the *Yersinia* Type III Secretion System is Dependent on the Pore Formation Function of YopD**  
**G. McCrann, R. Solomon, W. Zhang, J. Bliska, G. Viboud**; Stony Brook Univ., Stony Brook, NY

**1405 Regulation of Tight Junction Complexes in Brain Endothelium by Group B *Streptococcus***  
**B. J. Kim<sup>1</sup>, E. Reyes<sup>1</sup>, A. Banarjee<sup>1</sup>, K. S. Doran<sup>1,2</sup>**; <sup>1</sup>San Diego State Univ., San Diego, CA, <sup>2</sup>Univ. of California San Diego, San Diego, CA

**1406 Confrontations between Actinobacteria Isolated from *Cyphomyrmex minutus* and Microfungi with Pathogenic Potential**  
**E. C. Kelly Castro, M. Medina-Rivera, M. J. Cafaro**; Univ. of Puerto Rico, Mayagüez, Puerto Rico

**1407 Novel Proteins Involved in Agrobacterium-mediated Plant Transformation**  
**W. Ream<sup>1</sup>, L. Hodges<sup>1</sup>, S. Gelvin<sup>2</sup>, L.-Y. Lee<sup>2</sup>, Y. Wang<sup>2</sup>, W. Wei<sup>1</sup>**; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Purdue Univ., West Lafayette, IN

**1408 IL-18 Binding Protein Protects Mice against Experimental *Pseudomonas aeruginosa* Ulcerative Keratitis**  
**T. S. Zaidi, T. H. Zaidi, G. B. Pier**; Brigham and Women's Hosp. and Harvard Med. Sch., Boston, MA

**1409 Host Cell Phosphoinositide Metabolism during *Listeria monocytogenes* Infection**  
**J. Wang**; The Univ. of Manchester, Manchester, United Kingdom

**1410 Shiga Toxin Type 2 Dysregulates Coagulation Cascade in Mouse Kidney**  
**P. Saha, A. Vozenilek, T. Keepers, E. Hailemелеcot, L. Hippler, T. Obrig, F. Obata**; Univ. of Maryland, Baltimore, Baltimore, MD

**1411 Functional Analysis of YpkA Determinants Required for Inhibition of Gαq**  
**K. Pha, M. E. Wright, A. I. Aronov, C. C. Heu, T. M. Barr, M. L. Ma, L. Navarro**; Univ. of California, Davis, CA

**1412 Enterobactin Induces Pro-Inflammatory ERK Signaling that is Enhanced by Lcn2**  
**V. I. Holden, S. Lenio, M. A. Bachman**; Univ. of Michigan, Ann Arbor, MI

**1413 *Yersinia pestis* Passes Through a Bottleneck Early After Inoculation During Bubonic Plague**  
**R. J. Gonzalez, M. Lane, V. L. Miller**; UNC Chapel Hill, Chapel Hill, NC

**1414 Investigating Host/*Mycobacterium tuberculosis* Interactions with Metabolomics**  
**K. L. Resmer, H. Yang, D. Crick**; Colorado State Univ., Fort Collins, CO

**1415 Innate Immune Response to *Streptococcus iniae* Infection in Zebrafish Larvae**  
**E. A. Harvie<sup>1</sup>, J. M. Green<sup>1</sup>, M. N. Neely<sup>2</sup>, A. Huttenlocher<sup>1</sup>**; <sup>1</sup>Univ. of Wisconsin-Madison, Madison, WI, <sup>2</sup>Wayne State Univ. Sch. of Med., Detroit, MI

**1416 Effect of Aspergillosis on Wildtype and Arrhythmic *Drosophila melanogaster***  
**L. A. Ramirez-Camejo, P. Bayman-Gupta, J. L. Agosto-Rivera**; UPRRP, San Juan, PR

**1417 PcpA was Associated with Increased Inflammation and Cell Recruitment *In vivo* but not with Attachment of Pneumococci to Lung Epithelium**  
**M. M. Walker<sup>1</sup>, L. Novak<sup>1</sup>, M. T. Coats<sup>2</sup>, S. Mirza<sup>3</sup>, L. M. Myers<sup>4</sup>, M. Ochs<sup>5</sup>, J. Deshane<sup>1</sup>, D. E. Briles<sup>1</sup>**; <sup>1</sup>Univ. of Alabama at Birmingham, Birmingham, AL, <sup>2</sup>Alabama State Univ., Montgomery, AL, <sup>3</sup>Univ. of Texas Hlth. Sci. Ctr. Houston, Houston, TX, <sup>4</sup>R&D, Non-Clinical Product Performance Sanofi Pasteur, Lyon, France

**1418 Impact of the *Listeria monocytogenes* Protein InlC on Infection in Mice**  
**K. Ireton<sup>1</sup>, N. Leung<sup>2</sup>, A. Gianfelice<sup>1</sup>, S. D. Gray-Owen<sup>2</sup>**; <sup>1</sup>Univ. of Otago, Dunedin, New Zealand, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada

**1419 Evaluation of the Participation of Biomarkers in the Sepsis Induced by *Staphylococcus aureus***  
T. C. Oliveira<sup>1</sup>, A. T. Amorim<sup>1</sup>, H. B. Martins<sup>1</sup>, I. S. Rezende<sup>1</sup>, M. S. Barbosa<sup>1</sup>, E. F. Andrade<sup>1</sup>, G. N. Goncalves<sup>1</sup>, G. B. Campos<sup>2</sup>, J. Timenetsky<sup>2</sup>, **L. M. Marques<sup>1</sup>**; <sup>1</sup>Univ. Federal da Bahia, Vitoria da Conquista, Brazil, <sup>2</sup>Univ. de Sao Paulo, Sao Paulo, Brazil

**1420 The Transcriptional Landscape of a Foodborne Pathogen *Vibrio vulnificus* Exposed to Mucin**  
**K. Jang**, S. Choi; Seoul Natl. Univ., Seoul, Republic of Korea

**1421 Chlamydia Airway Infection Induces Hepoxilin Release and Infiltration of Histamine-producing Neutrophils in a Mouse Model**  
**W. C. Webley**, K. K. Patel; Univ. of Massachusetts, Amherst, MA

**1422 Zebrafish Embryo: A Model of *Bartonella henselae* Infection and Host Response**  
**A. Lima**, S. Lisa, B. Cha, B. Anderson; Univ. of South Florida, Tampa, FL

**1423 Inactivation of the *Borrelia burgdorferi* bba66 Gene Causes a Tick Transmission Defect Resulting in Attenuated Mouse Infection**  
K. S. Brandt<sup>1</sup>, T. G. Patton<sup>1</sup>, C. Nolder<sup>2</sup>, D. R. Clifton<sup>2</sup>, J. A. Carroll<sup>2</sup>, **R. D. Gilmore<sup>1</sup>**; <sup>1</sup>CDC, Fort Collins, CO, <sup>2</sup>Univ. of Pittsburgh Sch. of Med., Pittsburgh, PA

**1424 Role of Host Xanthine Oxidase in Induction of Shiga Toxin (Stx) Production from Shigatoxigenic *E. coli* and in Translocation of Stx Across Intestinal Epithelium**  
**J. K. Crane**, K. M. Mongiardo, J. E. Broome; Univ. at Buffalo, Buffalo, NY

**1425 Effective Population of *Streptococcus pneumoniae* During Nasopharyngeal Colonization**  
Y. Li<sup>1</sup>, C. M. Thompson<sup>1</sup>, K. Trzciński<sup>2</sup>, M. Lipsitch<sup>1</sup>; <sup>1</sup>Harvard Sch. of Publ. Hlth., Boston, MA, <sup>2</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands

**1426 A Comparative Analysis of Host-Pathogen Interactions Among Several *Salmonella* Serovars and *Caenorhabditis elegans***  
**K. E. Powell**, A. M. Lynne; Sam Houston State Univ., Huntsville, TX

**1427 A Product of Heme Catabolism Modulates Bacterial Function and Survival**  
**C. L. Nobles**, A. W. Maresso; Baylor Coll. of Med., Houston, TX

**1428 Immunological Relatedness of Cell Envelope Heme/Hemoglobin Binding Proteins from Gram-Positive Bacteria**  
J. S. Rosinski<sup>1</sup>, D. Mahale<sup>2</sup>, T. R. Buckles<sup>3</sup>, Y. Shipelskiy<sup>4</sup>, Z. Eichenbaum<sup>5</sup>, W. R. Usinger<sup>6</sup>, S. M. Newton<sup>4</sup>, **P. E. Klebba<sup>4</sup>**; <sup>1</sup>Univ. of Texas Southwestern Med. Sch., Dallas, TX, <sup>2</sup>Univ. of Oklahoma Hlth. Sci. Ctr., Oklahoma City, OK, <sup>3</sup>Univ. of Oklahoma, Norman, OK, <sup>4</sup>Kansas State Univ., Manhattan, KS, <sup>5</sup>Georgia State Univ., Atlanta, GA, <sup>6</sup>Trellis BioSci., San Francisco, CA

## 121 Adaptive Immune Responses to Pathogens (Division E)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1429 Characterization of Memory T-Cell Responses in *Vibrio cholerae* O1 Infected Patients**  
**S. Islam**; ICDDR,B, Dhaka, Bangladesh

**1430 Regulatory T-Cells Suppress Effector Immunity Induced by High Virulence Clinical Isolates of *Mycobacterium Tuberculosis***  
**A. Obregon**, M. Henao-Tamayo, I. M. Orme, D. J. Ordway; Colorado State Univ., Fort Collins, CO

**1432 Hindered Polarization of Th17 Cells and Inhibition of Trafficking Receptors on Plasmacytoid Dendritic Cells and Effector Memory T-Cells during *B. pertussis* Infection**  
**R. J. Ferguson**, T. M. Nguyen, V. Wu, C. S. Sequeira, S. Niknam, J. Wan, M. Taylor, T. Abramson; San Jose State Univ., San Jose, CA

**1433 B and T-Cell Responses to Disulfide Bond-Constrained Epitopes in Pfs48/45, a Malaria Transmission-Blocking Vaccine Antigen**  
**K. M. Merino**, V. Kumar, G. Bansal, N. Kumar; Tulane Univ., New Orleans, LA

**1434 IgA in the Response to *Aspergillus fumigatus* Fungal Inhalation**  
**B. N. Steffan**, S. A. Hoselton, J. M. Schuh; North Dakota State Univ., Fargo, ND

**1435 Identification of the *Vibrio cholerae* Antigens Recognized By the Protective Monoclonal IgA Antibody 2D6**  
**K. Levinson<sup>1</sup>**, N. Mantis<sup>2,1</sup>; <sup>1</sup>Dept. BioMed. Sci., Sch. of Publ. Hlth., SUNY Albany, Albany, NY, <sup>2</sup>Wadsworth Ctr., New York State Dept. of Hlth., Albany, NY

**1436 Do Cnidarians Remember Previous foe Attacks?**  
**T. Brown**, M. Rodriguez-Lanetty; Florida Intl. Univ., Miami, FL

**1437 Characterizing the Apobec3-dependent Retrovirus Neutralizing Antibody Response**  
**K. K. Halemano**, D. S. Smith, B. S. Barrett, K. J. Heilman, M. L. Santiago; Univ. of Colorado Denver, Aurora, CO

**1438 Immune Responses Induced by *Fasciola hepatica* Ferritin Protein (FhFtn-1) in a Rat Model of Fascioliasis**  
**K. Cabán-Hernández**, C. Ruiz-Jiménez, A. M. Espino; Univ. of Puerto Rico-Med. Sci. Campus, San Juan, Puerto Rico

**1439 HLA Association in HIV Exposed Children in Jamaica**  
**M. P. Smikle<sup>1</sup>**, N. A. Christian<sup>2</sup>, M. G. Brown<sup>2</sup>, O. Heslop<sup>1</sup>, I. E. Vickers<sup>1</sup>, R. Pierre<sup>3</sup>; <sup>1</sup>Dept. of Microbiol., The Univ. of the West Indies, Kingston, Jamaica, <sup>2</sup>Dept. of Microbiol., The Univ. of the West Indies, Kingston, Jamaica, <sup>3</sup>Dept. of Child Hlth., The Univ. of the West Indies, Kingston, Jamaica

**1440 Short Solubility Controlling Peptide Tags to Control Immune Responses**  
**M. Islam<sup>1</sup>**, M. Dhali<sup>1</sup>, W. K. Twan<sup>1</sup>, Y. Kuroda<sup>2</sup>; <sup>1</sup>Univ. of Chittagong, Chittagong, Bangladesh, <sup>2</sup>Tokyo Univ. of Agriculture and Technology, Tokyo, Japan

## 122 Mile High Mycoplasma (Division G)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1441 Fast-Gliding Mycoplasmas from Rodents**  
J. T. Newman, J. G. McChesney, S. L. Distelhorst, R. F. Relich, D. A. Jurkovic, A. M. Richards, **M. F. Balish**; Miami Univ., Oxford, OH

**1442 Genetic Diversity of Glycosidase Genes in the Canine Mycoplasmas**  
D. W. Dunne<sup>1</sup>, D. L. Michaels<sup>2</sup>, D. R. Brown<sup>2</sup>, **M. A. May<sup>1</sup>**; <sup>1</sup>Towson Univ., Towson, MD, <sup>2</sup>Univ. of Florida, Gainesville, FL

**1443 Genome Sequencing and Transcriptome Analysis of *Mycoplasma genitalium* Reveal Links Between Antigenic Variability, Cytadherence and Mucosal Inflammation**  
**P. M. Dehon**, C. L. McGowin; LSU Hlth. Sci. Ctr., New Orleans, LA

**1444 Genomic Analysis of *Mycoplasma ovipneumoniae* Y98**  
**M. J. Calcutt**, M. F. Foecking, T. Mutangadura; Univ. of Missouri, Columbia, MO

**1445 Multiple-Locus Variable-Number Tandem-Repeat Analysis of *Mycoplasma pneumoniae* Clinical Specimens and Proposal for Amendment of MLVA Nomenclature**  
**G. Xue**, Hongmei Sun, Chao Yan, Shaoli Li, Liqiong Wang, Hanqing Zhao, Yanling Feng; Capital Inst. of Pediatrics, Beijing, China

**1446 *Mycoplasma genitalium* Promotes Transfer of HIV-1 Across Epithelial Barrier**  
**K. Das<sup>1</sup>**, G. D. Garza<sup>1</sup>, T. J. Whitworth<sup>2</sup>, V. L. Scofield<sup>1</sup>, S. Dhandayuthapani<sup>1</sup>; <sup>1</sup>Univ. of Texas Hlth. Sci. Ctr. at San Antonio, Edinburg, TX, <sup>2</sup>Univ. of Texas, El Paso, TX

**1447 Analysis of the Post-Vaccination Time Required by Two Live *Mycoplasma gallisepticum* Vaccines to Achieve Protection from Subsequent Virulent *M. gallisepticum* Challenge**  
S. A. Leigh, J. D. Evans, S. D. Collier, S. L. Branton; USDA-ARS, Mississippi State, MS

**1448 *Mycoplasma iowae* Catalase Opposes the Accumulation of Hydrogen Peroxide for Use as a Virulence Factor**  
R. E. Pritchard<sup>1</sup>, A. J. Prassinis<sup>1</sup>, J. T. Newman<sup>1</sup>, Z. Raviv<sup>2</sup>, M. F. Balish<sup>1</sup>; <sup>1</sup>Miami Univ., Oxford, OH, <sup>2</sup>The Ohio State Univ., Columbus, OH

**1449 *Mycoplasma genitalium* Infection Activates Host Defense And Inflammation Pathways of the Endocervix, and is Associated with Microscopic Signs of Cervical Inflammation in Louisiana Women**  
C. L. McGowin<sup>1</sup>, A. L. Radtke<sup>2</sup>, S. Favaloro<sup>1</sup>, P. M. Dehon<sup>1</sup>, D. H. Martin<sup>1</sup>, M. M. Herbst-Kralovetz<sup>2</sup>; <sup>1</sup>LSU Hlth. Sci. Ctr., New Orleans, LA, <sup>2</sup>Univ. of Arizona, Coll. of Med.-Phoenix, Phoenix, AZ

**1450 *Mycoplasma gallisepticum* Lipoproteins Initiate Inflammatory Responses in Primary Chicken Tracheal Epithelial Cells via an NF- $\kappa$ B Dependent Pathway**  
S. Majumder, L. K. Silbart; Univ. of Connecticut, Storrs, CT

**1451 Comparative Genomics and Phylogenomics of Hemotrophic Mycoplasmas**  
A. M. S. Guimaraes, A. P. Santos, N. C. do Nascimento, J. B. Messick; Purdue Univ., Coll. of Vet. Med., West Lafayette, IN

**1452 A Quantitative Taqman PCR Assay for the Detection of *Ureaplasma Diversum***  
A. T. Amorim<sup>1</sup>, H. B. Martins<sup>1</sup>, I. S. Rezende<sup>1</sup>, M. S. Barbosa<sup>1</sup>, G. B. Campos<sup>2</sup>, T. N. Lobao<sup>2</sup>, J. Timenetsky<sup>2</sup>, L. M. Marques<sup>1</sup>; <sup>1</sup>Univ. Federal da Bahia, Vitoria da Conquista, Brazil, <sup>2</sup>Univ. de Sao Paulo, Sao Paulo, Brazil

**1453 Detection of *Mycoplasma hominis*, *M. genitalium* and *M. penetrans* in the Urogenital Tract and their Association with Cytokines Genetic Polymorphism and Expression in Women In Vitoria Da Conquista, Brazil**  
G. B. Campos<sup>1</sup>, T. N. Lobao<sup>1</sup>, N. Selis<sup>2</sup>, F. G. Teixeira<sup>2</sup>, R. S. Gestinari<sup>2</sup>, L. M. Marques<sup>2</sup>, J. Timenetsky<sup>1</sup>; <sup>1</sup>Univ. de Sao Paulo, Sao Paulo, Brazil, <sup>2</sup>Univ. Federal da Bahia, Vitoria da Conquista, Brazil

**1454 Prevalence of Genital Mycoplasmas from the Vaginal Tracts of Adolescents in Newwi, South-Eastern, Nigeria**  
N. R. Agbakoba<sup>1</sup>, C. P. Chukwuka<sup>1</sup>, F. E. Emele<sup>1</sup>, C. Oguejiofor<sup>2</sup>, C. N. Akujobi<sup>1</sup>, D. A. Ezeagwuna<sup>3</sup>, M. C. Onwunzo<sup>3</sup>; <sup>1</sup>Nnamdi Azikiwe Univ., Nnewi Campus, Nnewi, Nigeria, <sup>2</sup>Nnamdi Azikiwe Univ. Teaching Hosp., Nnewi, Nnewi, Nigeria, <sup>3</sup>Nnamdi Azikiwe Univ. Teaching Hosp., Nnewi, Nnewi, Nigeria

**1455 Antibiotic Susceptibility of *Mycoplasma canis***  
D. L. Michaels<sup>1</sup>, J. A. Leibowitz<sup>1</sup>, M. T. Azaiza<sup>1</sup>, M. A. May<sup>2</sup>, D. R. Brown<sup>1</sup>; <sup>1</sup>Univ. of Florida, Gainesville, FL, <sup>2</sup>Towson Univ., Towson, MD

**1456 Comparison of *Ilumigene Mycoplasma* Assay and Culture for Detection of *Mycoplasma pneumoniae* in Respiratory Secretions**  
A. E. Ratliff, L. B. Duffy, K. B. Waites; Univ. of Alabama at Birmingham, Birmingham, AL

**1457 Detection of *Mycoplasma Pneumoniae* in Fresh Human Lung Using Reverse Transcriptase-quantitative PCR to Detect 16S rRNA Transcripts**  
A. H. Totten, L. Xiao, D. M. Crabb, A. E. Ratliff, K. B. Waites, T. P. Atkinson; UAB, Birmingham, AL

## 123 Genetic Tools, DNA Transformation and Mutagenesis (Division H)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1458 Antimicrobial Activity Comparison, Expression and Purification of C Terminal Histidine-tagged Thurincin H**  
G. Wang, J. J. Churey, R. W. Worobo; Cornell Univ., Geneva, NY

**1459 Transfer of Aminoglycoside Resistance from *Carnobacterium* sp. to *Aeromonas salmonicida* subsp. AS03**  
K. Tockes<sup>1</sup>, N. Markham<sup>2</sup>, M. Hyde<sup>2</sup>, E. Parry<sup>2</sup>, M. Meredith<sup>2</sup>, R. Barnhart<sup>2</sup>, E. Oster<sup>2</sup>, G. Danner<sup>2</sup>, F. Fekete<sup>2</sup>, K. Johnson<sup>1</sup>; <sup>1</sup>Bradley Univ., Peoria, IL, <sup>2</sup>Colby Coll., Waterville, ME

**1460 Regulation of Competence for Natural Genetic Transformation in Bovis Group Streptococci by ComR and ComS**  
D. A. Morrison<sup>1</sup>, E. Guedon<sup>2</sup>, P. Renault<sup>3</sup>; <sup>1</sup>Univ. of Illinois at Chicago, Chicago, IL, <sup>2</sup>INRA, UMR<sup>1319</sup> Micalis, Jouy-en-Josas, France., France, <sup>3</sup>INRA, UMR<sup>1319</sup> Micalis, Jouy-en-Josas, France, France

**1461 Development of a Markerless Genetic Exchange System for *Desulfovibrio vulgaris* Hildenborough Based on the trpE Gene**  
A. T. Burton, J. D. Wall; Univ. of Missouri, Columbia, MO

**1462 A Combination of Bacteriophage P1 Transduction and Transformation for Induction of Site-Specific Mutations in Potential Virulence Genes of *Cronobacter sakazakii***  
E. Welker, H. Vinson, N. Fisher, P. Gibbs; North Dakota State Univ., Fargo, ND

**1463 Genetic Toolbox Development for the Investigation of *Clostridium cellulolyticum* H10**  
Y. Li, T. Xu, J. Zhou; Inst. for Environmental Genomics, Dept. of Botany and Microbiol., Univ. of Oklahoma, Norman, OK

**1464 Development of Host Vector System and Antibiotic Production in *Rhodococcus* Species**  
W. Kitagawa<sup>1,2</sup>, T. Tamura<sup>1,2</sup>; <sup>1</sup>Natl. Inst. of Advanced Industrial Sci. and Technology (AIST), Sapporo, Japan, <sup>2</sup>Grad School of Agriculture, Hokkaido Univ., Sapporo, Japan

**1465 Directed Evolution of Protective Antigen Peptide Binders Using Bacteria Display Technology**  
B. L. Adams, D. A. Sarkes, A. S. Finch, D. N. Stratis-Cullum; U.S. Army Res. Lab., Adelphi, MD

**1466 Design and Validation of a Novel Microarray Representing the PanGenome of *Escherichia coli*: A Tool for Understanding Genomic Diversity and Molecular Epidemiology**  
S. A. Jackson, M. K. Mammel, I. R. Patel, J. Gangiredla, J. Lewis, D. W. Lacher, C. A. Elkins; FDA, Laurel, MD

**1467 Characterization of Metabolic Effectors of CidR-mediated Regulation in *Staphylococcus aureus***  
I. H. Windham, J. Bose, K. Bayles; Univ. of Nebraska Med. Ctr., Omaha, NE

**1468 Bacterial Two-Hybrid System Identifies Interacting Partners of Putative Regulatory RNA Helicase 6355 in *Nostoc punctiforme***  
J. B. Polin, C. Calderon, M. L. Summers; California State Univ., Northridge, Northridge, CA

**1469 Nuclear Encoded Expression of GFP in *Chlorella vulgaris* UTEX 259**  
M. Khasin, M. Kang, K. W. Nickerson, G. Oyler; Univ. of Nebraska-Lincoln, Lincoln, NE

## 124 General Microbiology II (Division I)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1470 Culture, Identification and Susceptibility Testing of *Clostridium difficile* from EIA Positive Faecal Samples**  
M. Stevens; Canterbury Hlth. Lab., Christchurch, New Zealand

**1471 Epidemiology, Antimicrobial Susceptibility and Co-infection of *Escherichia coli* in Blood and Urine at a Tertiary Care Hospital in Jamaica**  
A. Nicholson, D. Cheung, M. DaCosta; Univ. Hosp. of the West Indies, Kingston, Jamaica



- 1472 Evaluation and Application of a Multiplex Real-Time PCR Assay for Identification of *Acinetobacter baumannii* with Carbapenem Resistance from Gram-Negative Bacterial Isolates**  
D. Cash<sup>1</sup>, Y. Kwak<sup>1</sup>, W. Su<sup>1</sup>, M. Mills<sup>2</sup>, E. Lesho<sup>1</sup>, M. Nikolich<sup>1</sup>, X.-Z. Huang<sup>1</sup>; <sup>1</sup>Walter Reed Army Inst. of Res., Silver Spring, MD, <sup>2</sup>Walter Reed Natl. Military Med. Ctr., Bethesda, MD
- 1473 Antimicrobial Efficacy of Multipurpose Disinfecting Solutions against Clinical Isolates after Prolonged Storage**  
M. Milenkovic, N. Brady, A. Lam; Abbott Med. Optics, Santa Ana, CA
- 1474 The Effects of Crude Antifungal Compounds from Cocoa Pods (*Theobroma cacao* L.) Infected with *Phytophthora palmivora* on Some Phytopathogenic Fungi**  
E. D. Fagbohun<sup>1</sup>, O. S. Faleye<sup>2</sup>; <sup>1</sup>Ekiti State Univ., Ado-Ekiti., Ado Ekiti, Nigeria, <sup>2</sup>Federal Univ. of Technology, Akure, Ondo State., Nigeria
- 1475 Effect of Microbe-Microbe Interaction on Antibiotic Susceptibility Testing Using a Multiplexed Microfluidic Platform**  
R. Mohan, C. Sanpitakserree, S. E. Sevgen, A. Mukherjee, A. V. Desai, C. M. Schroeder, P. J. A. Kenis; Univ. of Illinois, Urbana-Champaign, Urbana, IL
- 1476 Culture Dependent and Functional Genomic Analysis of Bioprospects Capable of Producing Antibacterial Agents**  
W. R. Rodríguez Polanco, C. Ríos Velázquez; Univ. of Puerto Rico at Mayagüez, Mayagüez, PR
- 1477 Antimicrobial Activity of Fungi Isolated from Marine Organisms**  
S. Liamthong; Nakhon Si Thammarat Rajabhat Univ., Nakhon Si Thammarat, Thailand
- 1478 The Impact of Capsular Switching by Recombination in *Streptococcus pneumoniae***  
F. S. Johnson, D. B. Payne; Alabama State Univ., Montgomery, AL
- 1479 Molecular Differentiation Of *Acetobacter* Spp. Based on the Partial Heat Shock Protein 60 Gene (hsp60) Sequences**  
C.-H. Huang, L. Huang, W.-S. Chu; Bioresource Collection and Res. Ctr., Hsinchu, Taiwan
- 125 Diverse Anaerobic Metabolisms (Division K)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 1480 Identification of a Novel Interaction between Prx2 and Bcp, two Different Peroxiredoxins of *Vibrio vulnificus***  
Y.-J. Bang, B. Kim, S. Choi; Seoul Natl. Univ., Seoul, Republic of Korea
- 1481 2PMQ: Connecting an Enolase Function with Osmoregulation in Bacteria**  
R. Kumar; Univ. of Illinois, UC, Urbana, IL
- 1482 pH Stress in Biofilms and Aging Cells in *Escherichia coli***  
K. A. Martinez, II, A. Yie, J. L. Slonczewski; Kenyon Coll., Gambier, OH
- 1483 S01328, an OxyR Homologue, Has a Dual Role in Response to Oxidative Stress in *Shewanella oneidensis***  
Y. Dong, Y. Jiang, N. Li, H. Gao; Zhejiang Univ., Hangzhou, China
- 1484 Involvement of Cytochrome Oxidase in an Elemental Sulfur-Dependent Ferric Iron Reduction by *Acidithiobacillus ferrooxidans***  
T. Sugio; Sugio Inst. of Chemolithoautotrophy, Okayama, Japan
- 1485 Understanding the Syntrophic Metabolism of a Bacterial Co-culture for Hydrogen Production**  
Y. Jiao<sup>1</sup>, A. Navidi<sup>1</sup>, B. Stewart<sup>1</sup>, J. McKinlay<sup>2</sup>, M. Thelen<sup>1</sup>, J. Pett-Ridge<sup>1</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab., Livermore, CA, <sup>2</sup>Indiana Univ., Bloomington, IN
- 1486 Osmosensitivity of Hydrogenases in *Escherichia coli* during Glycerol Fermentation at Different pH**  
K. Trchounian, A. Trchounian; Yerevan State Univ., Yerevan, Armenia

- 1487 Dockerin-containing Protease Inhibitor Protects Key Cellulosomal Components from Proteolysis in *Clostridium cellulolyticum***  
T. Xu, Y. Li, Z. He, J. Zhou; Inst. for Environmental Genomics, Norman, OK
- 1488 Systems Biology Studies on the Response of *Desulfovibrio Alaskensis* G20 to Perchlorate, Chlorate, Oxidative and Nitrosative Stress**  
H. K. Carlson<sup>1</sup>, M. R. Mullan<sup>1</sup>, A. M. Deutschbauer<sup>2</sup>, M. N. Price<sup>2</sup>, A. P. Arkin<sup>2</sup>, J. D. Coates<sup>1</sup>; <sup>1</sup>UC Berkeley, Berkeley, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 1489 Target Metabolome Analysis of Anaerobic *Clostridium Cellulovorans* Useful for Cellulose Degradation**  
H. Morisaka, M. Shinohara, K. Kuroda, M. Ueda; Kyoto Univ., Kyoto, Japan
- 1490 Relationship Between Nitrate and Nitrite Stress Responses of *Desulfovibrio vulgaris* Hildenborough and *Desulfovibrio alaskensis* G20**  
H. L. Korte<sup>1</sup>, S. R. Fels<sup>1</sup>, A. M. Deutschbauer<sup>2</sup>, M. N. Price<sup>2</sup>, A. P. Arkin<sup>2</sup>, J. D. Wall<sup>1</sup>; <sup>1</sup>Univ. of Missouri, Columbia, MO, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA
- 1491 The EutT ATP:cob(I)alamin Adenosyltransferase Enzyme of *Salmonella enterica* is an Oxygen Labile Ferroprotein that Requires Ferrous Ions for Maximal Activity**  
T. Moore<sup>1</sup>, P. Mera<sup>1,2</sup>, J. Escalante-Semerena<sup>3</sup>; <sup>1</sup>Univ. of Wisconsin, Madison, WI, <sup>2</sup>Stanford Univ., CA, <sup>3</sup>Univ. of Georgia, Athens, GA
- 1492 Electrosynthesis in *Shewanella*: Production of Reducing Equivalents and ATP**  
N. J. Kotloski, J. A. Gralnick; Univ. of Minnesota, St. Paul, MN
- 1493 Increased Hydrogen Production by Genetic Manipulation of the Hyperthermophilic Bacterium *Thermotoga maritima***  
R. Singh<sup>1</sup>, D. White<sup>1</sup>, R. Kelly<sup>2</sup>, K. Noll<sup>3</sup>, P. Blum<sup>1</sup>; <sup>1</sup>Univ. of Nebraska, Lincoln, NE, <sup>2</sup>North Carolina State Univ., Raleigh, NC, <sup>3</sup>Univ. of Connecticut, Storrs, Storrs, CT
- 1494 Influence of *Escherichia coli* Hydrogenases on Hydrogen Fermentation from Glycerol**  
V. Sanchez Torres<sup>1</sup>, M. M. Yusoff<sup>2</sup>, C. Nakano<sup>3</sup>, T. Maeda<sup>3</sup>, H. I. Ogawa<sup>3</sup>, T. K. Wood<sup>4</sup>; <sup>1</sup>Univ. Industrial de Santander, Bucaramanga, Colombia, <sup>2</sup>Univ. Putra Malaysia, Serdang, Malaysia, <sup>3</sup>Kyushu Inst. of Technology, Kitakyushu, Japan, <sup>4</sup>Pennsylvania State Univ., University Park, PA
- 1495 Impact of Energy Availability and Methanogenic Partner on Syntrophic Metabolism of *Desulfovibrio alaskensis* str. G20**  
B. Meyer<sup>1</sup>, D. A. Stahl<sup>1</sup>, J. Kuehl<sup>2</sup>, A. Deutschbauer<sup>2</sup>, A. Arkin<sup>2</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>LBL, Berkeley, CA
- 1496 Tn-seq Analysis of the Response to Deep Starvation in the Photosynthetic Bacterium *Rhodospseudomonas palustris***  
K. B. Pechter, Y. Oda, L. A. Gallagher, C. Manoel, C. S. Harwood; Univ. of Washington, Seattle, WA
- 1497 Engineering Interspecies Electron Transfer Between *Shewanella* and *Geobacter***  
A. L. Kane, R. E. Sobel, D. R. Bond, J. A. Gralnick; Univ. of Minnesota, St. Paul, MN
- 1498 Characterization of Butyrate Kinase from *Listeria monocytogenes***  
S. Sirobushanam, L. P. Saunders, S. Sen, R. Jayaswal, C. Gatto, B. J. Wilkinson; Illinois State Univ., Normal, IL
- 1499 A non-pyrrolysine TMA methyltransferase homolog from *Desulfitobacterium hafniense* Y51 is a Novel Glycine Betaine:cob(I) Alamin Methyltransferase**  
T. Ticak<sup>1</sup>, D. J. Ferguson, Jr<sup>2,1</sup>, K. Girosky<sup>3</sup>, J. A. Krzycki<sup>3</sup>; <sup>1</sup>Miami Univ., Oxford, OH, <sup>2</sup>Miami Univ., Hamilton, OH, <sup>3</sup>The Ohio State Univ., Columbus, OH

**1500 The Effect of CbbR Binding Affinity to the Upstream of *cbbF* and *cfxB* on the Metabolic Effector in *Rhodobacter sphaeroides***  
H. Lee<sup>1</sup>, Y.-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Republic of Korea, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Republic of Korea

**1501 Electroautotrophic Metabolism of *Desulfobacterium autotrophicum* and *Rhodococcus opacus***  
J. M. Pisciotta<sup>1</sup>, Z. Zaybak<sup>2</sup>, B. E. Logan<sup>2</sup>; <sup>1</sup>West Chester Univ., West Chester, PA, <sup>2</sup>Pennsylvania State Univ., State College, PA

## 126 Healthcare Epidemiology (Division L)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1502 Influence of Indication of Catheter Placement on Microbiology of Indwelling Venous Catheter Infection**  
L. Shahani<sup>1</sup>, C. Noggle<sup>1</sup>, N. Khadori<sup>2</sup>; <sup>1</sup>Southern Illinois Univ. Sch. of Med., Springfield, IL, <sup>2</sup>Eastern Virginia Med. Sch., Norfolk, VA

**1503 Risk Assessment of Antimicrobial Central Venous Catheters for Microbial Resistance Development**  
N. Gupta, H. Weber, K. Giare-Patel; Teleflex, Inc., Reading, PA

**1504 Ribotyping of ESBL-producing *Escherichia coli* and *Klebsiella pneumoniae* isolated from Hospitalized and Community Patients**  
K. Zumaeta, M. Monteghirfo, M. A. Talledo; Natl. Univ. of San Marcos, Lima, Peru

**1505 Environmental prevalence of *Clostridium difficile* at a University-affiliated Teaching Hospital In Houston, Texas**  
S. L. Aitken<sup>1,2</sup>, M. J. Alam<sup>1</sup>, K. W. Garey<sup>1</sup>; <sup>1</sup>Univ. of Houston Coll. of Pharmacy, Houston, TX, <sup>2</sup>St. Luke's Episcopal Hosp., Houston, TX

**1506 Vancomycin and *In vitro* biofilms of *Clostridium difficile***  
R. J. Carman, S. L. Panchison, D. M. Lyerly; TechLab, Inc., Blacksburg, VA

**1507 Genomic Epidemiological Analysis of Carbapenem-Resistant *Acinetobacter* Strains Isolated from an 800-Bed Teaching Hospital**  
J. C. Childress<sup>1</sup>, J. Rodriguez<sup>2</sup>, A. W. Baffoe-Bonnie<sup>3</sup>, S. R. Houser<sup>1</sup>, W. B. McVaugh<sup>1</sup>, D. Grgurich<sup>4</sup>, B. Mukhopadhyay<sup>2</sup>, T. M. Kerkering<sup>5</sup>, J. Rao<sup>3</sup>; <sup>1</sup>BioMed. Sci. Program, Jefferson Coll. of Hlth. Sci., Roanoke, VA, <sup>2</sup>Virginia Bioinformatics Inst., Virginia Tech, Blacksburg, VA, <sup>3</sup>Section of Infectious Diseases, Carilion Clinic, Virginia Tech Carilion Sch. of Med., Roanoke, VA, <sup>4</sup>Carilion Clinic, Virginia Tech Carilion Sch. of Med., Roanoke, VA, <sup>5</sup>Section of Infectious Diseases, Carilion Clinic, Virginia Tech Carilion Sch. of Med., Hosp. Infection Control, Carilion Clinic, Roanoke, VA

**1508 Intraoperative Glove Contamination Rates Among Clinicians, Residents, and Students at a College of Veterinary Medicine**  
M. A. Borys, T. S. Frana; Iowa State Univ., Ames, IA

**1509 Antimicrobial Susceptibility Profile of MRSA Isolates from Ear Discharges of Patients Seen in Ear, Nose, and Throat (ENT) Practice and whether these Represent CA-MRSA Strains**  
N. Yoshida, A. Kanayama, I. Kobayashi; Dept. of Infection Control and Prevention, Sch. of Nursing, Faculty of Med., Toho Univ., Tokyo, Japan

**1510 Real-Time Cell Analysis Coupled with a Specimen Enrichment Accurately Detects and Quantifies *Clostridium difficile* Toxins in Stool Specimens**  
B. Huang<sup>1,2</sup>, D. Jin<sup>2</sup>, J. Zhang<sup>3</sup>, J. Sun<sup>4</sup>, X. Wang<sup>3</sup>, J. Stiles<sup>2</sup>, X. Xu<sup>3</sup>, M. Kamboj<sup>4</sup>, N. Babady<sup>2</sup>, Y.-W. Tang<sup>2,4</sup>; <sup>1</sup>Dept. of Lab. Med., The First Affiliated Hosp. of Sun Yat-sen Univ., Guangzhou, China, <sup>2</sup>Dept. of Lab. Med., Mem. Sloan-Kettering Cancer Ctr., New York, NY, <sup>3</sup>ACEA BioSci., San Diego, CA, <sup>4</sup>Dept. of Internal Med., Mem. Sloan-Kettering Cancer Ctr., New York, NY

**1511 Evaluation of the BD MAX™ CRE Research Use Only (RUO) Assay using Rectal Swab Samples Obtained from an Intensive Care Unit in Europe**  
P. Bouchy<sup>1</sup>, R. Labourdette<sup>1</sup>, V. Brochu<sup>1</sup>, S. Lapointe<sup>1</sup>, S. Roy<sup>1</sup>, H. Galarneau<sup>1</sup>, C. Roger-Dalbert<sup>1</sup>, P. Nordmann<sup>2</sup>, N. Fortineau<sup>2</sup>, D. Guirlich<sup>2</sup>; <sup>1</sup>BD Diagnostics, Quebec, QC, Canada, <sup>2</sup>Hosp. de Bicetre, Paris, France

**1512 Prevalence of Methicillin-Resistant *Staphylococcus aureus* at the Teofilo Davila Hospital in Machala, Ecuador**  
C. A. Monte, S. Hof, B. Soderholm, D. Herman; Univ. of Wisconsin, Eau Claire, WI

**1513 Long-Term Dissemination and Characterization of Clonal Complex 32: A Novel Clone in *Acinetobacter baumannii***  
L. Dijkshoorn<sup>1</sup>, K. Petersen<sup>2</sup>, T. v. d. Reijden<sup>1</sup>, N. Mendonça<sup>3</sup>, G. Jorge Da Silva<sup>3</sup>; <sup>1</sup>Leiden Univ. Med. Ctr., Leiden, Netherlands, <sup>2</sup>U.S. Naval Med. Res. Unit, No. 6, Peru, <sup>3</sup>Univ. Coimbra, Coimbra, Portugal

**1514 Clonal Relationships of Methicillin-Resistant *Staphylococcus aureus* from Nursing Home Residents**  
S. Warrack, M. Duster, D. Hoerres, A. Kaufman, E. Box, C. J. Crnich; Univ. of Wisconsin, Madison, WI

**1515 *Clostridium difficile*: Multidrug-Resistance Affects Ribotype Prevalence and Varies by Patient Population**  
K. W. Wickham, R. J. Carman, J. H. Boone; TechLab, Inc., Blacksburg, VA

**1516 Extent of Bacterial Contamination of Electronic Warm Water Bidet Toilets in a University Hospital Setting**  
A. Kanayama<sup>1</sup>, I. Kobayashi<sup>1</sup>, S. Yoshizawa<sup>2</sup>, K. Tateda<sup>2</sup>, A. Kaneko<sup>3</sup>; <sup>1</sup>Toho Univ., Faculty of Nursing, Dept. of Infection Control and Prevention, Tokyo, Japan, <sup>2</sup>Toho Univ., Tokyo, Japan, <sup>3</sup>Tokai Univ., Kanagawa, Japan

**1517 Priority of the Alleles of Multilocus Sequence Typing for Predicting Clonal Complexes**  
T. Saga, Y. Ishii, K. Tateda; Toho Univ., Tokyo, Japan

**1518 Ambulances as Reservoirs for Fomite-mediated Bacterial Disease Transmission: A Survey of Microbial-contamination of Multiple Surfaces within Operational Ambulances in Connecticut**  
J. L. Aldrich, D. M. Glenn, E. O'Connor, C. H. Eggers; Quinnipiac Univ., Hamden, CT

**1519 Mupirocin Decolonization of Patients with MRSA Colonization upon Hospital Admission was not Beneficial to a Comprehensive MRSA Infection Prevention Strategy**  
D. M. Schora, P. Patel, V. Komutanon, K. Peterson, A. Grayes, M. Wright, A. Robicsek, B. Smith, L. R. Peterson; NorthShore Univ. Hlth. System, Evanston, IL

**1520 Prevalence, Pre-disposing Factors & Epidemiology of MDRO's in a Tertiary Care Cancer Hospital in North India**  
J. Balani; Dharamshila Hosp. and Research Ctr., Delhi, India

**1521 Methicillin Resistance (*SCCmec*) Transfer in *Staphylococcus aureus* Populations by Transduction**  
C. R. Scharn<sup>1</sup>, F. C. Tenover<sup>2</sup>, R. V. Goering<sup>1</sup>; <sup>1</sup>Creighton Univ. Sch. of Med., Omaha, NE, <sup>2</sup>Cepheid, Sunnyvale, CA

**1522 Daptomycin Non-Susceptible (DNS) Organism in a Veterans Affairs Medical Center (VAMC)**  
E. S. Pearlman<sup>1</sup>, N. Yadak<sup>2</sup>, R. Nejati<sup>2</sup>, S. Boywid<sup>3</sup>; <sup>1</sup>VA MC, Memphis, TN, <sup>2</sup>Univ. of Tennessee Hlth. Sci. Ctr., Memphis, TN, <sup>3</sup>VA Med. Ctr., Memphis, TN

**1523 Prevention of Gram-Negative Bacterial Biofilm on Central Venous Catheters (CVCs) with Chlorhexidine-Minocycline/Rifampin by a Segregated Coating Method**  
M. A. Jamal, J. S. Rosenblatt, R. Y. Hachem, J. Ying, A.-M. P. Chafitani, I. I. Raad; UT MD Anderson Cancer Ctr., Houston, TX

# 127 Morphogenesis, Genomics, Evolution, and Ecology (Division M)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1524 Genetic and Phenotypic Variability Among Marine Viral Isolates Belonging to the Same Cyanophage Strain**  
L. A. Dushkin, M. F. Marston; Roger Williams Univ., Bristol, RI

**1525 Characterization of Two Thermophilic Bacteriophages of *Geobacillus kaustophilus***  
P. T. Hamilton<sup>1</sup>, T. J. Marks<sup>1,2</sup>; <sup>1</sup>North Carolina State Univ., Raleigh, NC, <sup>2</sup>Campbell Univ., Buies Creek, NC

**1526 Virulent Phages that Attack *Xylella fastidiosa* and Other Members of the Xanthomonadaceae**  
S. J. Ahern, M. Das, T. Bhowmick, R. F. Young, III, C. F. Gonzalez; Texas A&M Univ., College Station, TX

**1527 Isolation and Initial Genetic Characterization of Novel Actinophages and Bioinformatic Comparison to Existing Actinophage Sequences**  
R. Hale, A. Featherstone, L. E. Hughes; Univ. of North Texas, Denton, TX

**1528 Presence of the Phage-Encoded Antibiotic-Resistant Gene, *blaCTX-M1*, in Wastewater, River, and Estuarine Samples Collected near the US-Mexico Border**  
M. Hilleger, M. Galindo, V. Casas, S. Maloy; San Diego State Univ., San Diego, CA

**1529 PhamSequer, a Bioinformatic Toolkit for Generating Custom Metagenomic Microarrays for Bacteriophage Populations**  
L. N. Lorenz, R. Farrell, M. Dickinson, L. Temple, S. Cresawn; James Madison Univ., Harrisonburg, VA

**1530 Protein Interaction Networks in Bacteria and their Phage**  
P. Uetz<sup>1</sup>, S. V. Rajagopala<sup>2</sup>, R. Häuser<sup>3</sup>, S. Blasche<sup>3</sup>, R. L. Finley<sup>4</sup>, J. Parrish<sup>4</sup>, S. Wuchty<sup>5</sup>; <sup>1</sup>Virginia Commonwealth Univ., Richmond, VA, <sup>2</sup>JCVI, Rockville, MD, <sup>3</sup>DKFZ, Heidelberg, Germany, <sup>4</sup>Wayne State Univ., Detroit, MI, <sup>5</sup>NIH, Bethesda, MD

**1531 Complete Genome Sequence of Bacteriophage phiJLA23**  
L. A. Amarillas<sup>1</sup>, J. Leon-Felix<sup>1</sup>, C. Chaidez<sup>1</sup>, Y. Lugo-Melchor<sup>2</sup>, H. Carrillo<sup>1</sup>; <sup>1</sup>Ctr. de Investigación en Alimentación y Desarrollo, Culiacán, Mexico, <sup>2</sup>Ctr. de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, Guadalajara, Mexico

**1532 Mycobacteriophage Whirlwind: A Member of Cluster L**  
P. R. Williams, D. Jacobs-Sera, C. A. Bowman, D. A. Russell, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1533 Presence of Phage-Encoded Shiga Toxin Gene in Alternative Bacterial Hosts Cultivated from Human-Impacted Recreational Waters in San Diego, CA**  
V. Casas, M. A. Galindo, M. J. Martinez, R. Lemus, S. R. Maloy; San Diego State Univ., San Diego, CA

**1534 Isolation and Characterization of Three Novel Bacteriophages of *Bacillus cereus***  
J. Jensen, J. Fisher, J. Grose, S. Burnett, D. Breakwell; Brigham Young Univ., Provo, UT

**1535 Function and Horizontal Transfer of the Small Terminase Subunit of the Tailed Bacteriophage Sf6 DNA Packaging Motor**  
J. C. Leavitt, E. B. Gilcrease, K. Wilson, S. R. Casjens; Univ. of Utah, Salt Lake, UT

**1536 Evaluation of Coliphage Dynamics in Bighorn Sheep, Domestic Sheep, and Cattle: Implications for Bacteriophage Therapy**  
S. L. Potter<sup>1</sup>, C. R. Gentry-Weeks<sup>1</sup>, M. W. Miller<sup>2</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Colorado Parks and Wildlife, Fort Collins, CO

**1537 Viritas: A Virome Assembly and Analysis Environment in MetAMOS**  
M. Davison<sup>1,2</sup>, T. Treangen<sup>3,4</sup>, S. Koren<sup>3,5</sup>, S. Gosrani<sup>6</sup>, M. Pop<sup>3</sup>, D. Bhaya<sup>2</sup>; <sup>1</sup>Stanford Univ., Stanford, CA, <sup>2</sup>Carnegie Inst. for Sci., Stanford, CA, <sup>3</sup>Ctr. for Bioinformatics and Computational Biol., College Park, MD, <sup>4</sup>McKusick-Nathans Inst. of Genetic Med., Baltimore, MD, <sup>5</sup>Univ. of Maryland, College Park, MD, <sup>6</sup>San Jose State Univ., San Jose, CA

**1538 Genomic Diversity and Host Range in a Novel Collection of *Bacillus* Bacteriophages**  
M. R. Quinn<sup>1</sup>, S. G. Cresawn<sup>1</sup>, L. Temple<sup>1</sup>, C. Scott-Croshaw<sup>1</sup>, L. Lewis<sup>2</sup>, K. Loesser-Casey<sup>2</sup>, Z. Al-Atrache<sup>2</sup>; James Madison Univ., Harrisonburg, VA, <sup>2</sup>Univ. of Mary Washington, Fredericksburg, VA

**1539 Mycobacteriophage Genome Organization and Its Effect on Host Range**  
N. M. Roberto, A. Tracy, L. Hurst, H. Norian, S. G. Cresawn; James Madison Univ., Harrisonburg, VA

# 128 Microbial Interactions (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1540 Biofilm Formation and Bacterial Interactions of a Freshwater *Deinococcus* Species**  
K. Knox, S. Mueller-Spitz, T. Kostman; Univ. of Wisconsin Oshkosh, Oshkosh, WI

**1541 Pairwise Antagonism Assay of Clinical *Acinetobacter* Isolates**  
A. M. Summers, R. A. Heitkamp, B. C. Kirkup, Jr.; Walter Reed Army Inst. of Res., Silver Spring, MD

**1542 Interaction-induced Motility of *Pseudomonas fluorescens* Pf0-1 and *Pedobacter* V48**  
A. S. Bitzer<sup>1</sup>, S. C. Seaton<sup>2</sup>, S. B. Levy<sup>2</sup>, M. W. Silby<sup>1</sup>; <sup>1</sup>Univ. of Massachusetts Dartmouth, North Dartmouth, MA, <sup>2</sup>Tufts Univ. Sch. of Med., Boston, MA

**1543 Phylogenetic Relationships and Diversity of Endohyphal Bacteria in Tropical Seed-Associated Fungi**  
J. P. Shaffer, R. E. Gallery, D. A. Baltrus, A. E. Arnold; Univ. of Arizona, Tucson, AZ

**1544 Detecting the Ecological Niche of *Streptococcus mutans* and *Streptococcus sanguinis* Affected by Nicotine by Fluorescence *In situ* Hybridization**  
M. Li, X. Zheng, X. Xu, X. Zhou; State Key Lab. of Oral Diseases, West China Hosp. of Stomatology, Sichuan Univ., Chengdu, China

**1545 An Examination of Possible Probiotics to Mitigate Chytridiomycosis in the Panamanian Golden Frog**  
M. H. Becker<sup>1</sup>, J. B. Walke<sup>1</sup>, S. Cikanek<sup>2</sup>, K. P. C. Minbiole<sup>3</sup>, T. Umile<sup>3</sup>, R. N. Harris<sup>4</sup>, L. K. Belden<sup>1</sup>, B. Gratwicke<sup>2</sup>; <sup>1</sup>Virginia Tech, Blacksburg, VA, <sup>2</sup>Smithsonian Inst., Washington, DC, <sup>3</sup>Vilanova Univ., Vilanova, PA, <sup>4</sup>James Madison Univ., Harrisonburg, VA

**1546 Relationship Chemistry: Exploring the Effects of Frankia Bacteria on the Performance of Alnus- and Non-Alnus-Associated Ectomycorrhizal Fungi**  
J. Huggins, P. Kennedy; Lewis & Clark Coll., Portland, OR

**1547 Effect of *Lactobacillus* species on *Streptococcus mutans* Biofilm Formation**  
A. Ahmed; Univ. of Karachi, Karachi, Pakistan

# 129 Polar Environments & Climate Change Microbiology (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1548 Microbial Responses to Elevated CO2 and Increased Temperature in the Northern Mixed-Grass Prairie Unveiled by Functional Gene Analysis**  
L. Y. Wu<sup>1</sup>, H. Yu<sup>1</sup>, J. D. Van Nostrand<sup>1</sup>, Z. He<sup>1</sup>, Y. Deng<sup>1</sup>, E. Pendall<sup>2</sup>, M. Wallenstein<sup>3</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Univ. of Wyoming, Laramie, WY, <sup>3</sup>Colorado State Univ., Fort Collins, CO



**1549 Effect of Climate Change on Bacteria Isolated from the Rhizosphere of Switchgrass**  
M. Schicklberger, J. Huang, A. Pettenato, B. Smith, R. Chakraborty; Lawrence Berkeley Natl. Lab., Berkeley, CA

**1550 Microbial Carbon Cycling Across a Natural Permafrost Thaw Gradient, Via Biogeochemistry and Metaproteomics-inferred Microbial Activity**  
E-H. Kim<sup>1</sup>, B. J. Woodcroft<sup>2</sup>, R. M. Jones<sup>1</sup>, C. K. McCalley<sup>1</sup>, R. Mondav<sup>2</sup>, S. Hodgkins<sup>3</sup>, R. A. Wehr<sup>1</sup>, T. Logan<sup>4</sup>, P. M. Crill<sup>5</sup>, J. P. Chanton<sup>3</sup>, S. R. Saleska<sup>1</sup>, G. W. Tyson<sup>2</sup>, N. C. VerBerkmoes<sup>6</sup>, V. I. Rich<sup>1</sup>; <sup>1</sup>Univ. of Arizona, Tucson, AZ, <sup>2</sup>Univ. of Queensland, Brisbane, Australia, <sup>3</sup>Florida State Univ., Tallahassee, FL, <sup>4</sup>Abisko Scientific Res. Station, Abisko, Sweden, <sup>5</sup>Stockholm Univ., Stockholm, Sweden, <sup>6</sup>New England Biolabs, Ipswich, MA

**1551 One-Year Experimental Warming Altered Soil Microbial Functions and Compositions in Northern Permafrost**  
M. M. Yuan<sup>1</sup>, K. Xue<sup>1</sup>, L. Cheng<sup>1</sup>, F. Liu<sup>1</sup>, Y. Gu<sup>1</sup>, Q. Wang<sup>2</sup>, Y. Qin<sup>1</sup>, Y. Deng<sup>1</sup>, T. Yuan<sup>1</sup>, L. Wu<sup>1</sup>, J. D. Van Nostrand<sup>1</sup>, Z. He<sup>1</sup>, E. A. G. Schuur<sup>3</sup>, Y. Luo<sup>1</sup>, J. M. Tiedje<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Inst. for Environmental Genomics and Dept. of Microbiol. and Plant Biol., Univ. of Oklahoma, Norman, OK, <sup>2</sup>Ctr. for Microbial Ecology, Michigan State Univ., East Lansing, MI, <sup>3</sup>Dept. of Biol., Univ. of Florida, Gainesville, FL

**1552 Microbial Community Composition Alters the Response of Litter Decomposition to Global Change Simulations**  
K. L. Matulich, J. B. H. Martiny; Univ. of California, Irvine, Irvine, CA

**1553 Proteomics Reveal that Indigenous Microbial Consortia Are Revived in Thawing Permafrost and Likely Influence Carbon Cycling in the Cryosol**  
K. Chourey<sup>1</sup>, M. C. Y. Lau<sup>2</sup>, A. Layton<sup>3</sup>, B. Stackhouse<sup>2</sup>, T. Vishnivetskaya<sup>3</sup>, S. Pffifner<sup>3</sup>, N. Mykytczuk<sup>4</sup>, L. White<sup>4</sup>, R. L. Hettich<sup>1</sup>, T. C. Onstott<sup>2</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Princeton Univ., Princeton, NJ, <sup>3</sup>Univ. of Tennessee, Knoxville, TN, <sup>4</sup>McGill Univ., QC, Canada

**1554 MISEQ Illumina Sequencing of 16S rRNA Amplicons Reveals Changes of Soil Microbial Composition Under Warming Via Laboratory Incubation**  
H. Yin<sup>1</sup>, L. Wu<sup>1</sup>, Z. He<sup>1</sup>, B-G. Rosvel<sup>2</sup>, E. A. Schuur<sup>2</sup>, Y. Luo<sup>1</sup>, J. M. Tiedje<sup>3</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Inst. for Environmental Genomics and Dept. of Microbiol. and Plant Biol., Univ. of Oklahoma, Norman, OK, <sup>2</sup>Dept. of Biol., Univ. of Florida, Gainesville, FL, <sup>3</sup>Ctr. for Microbial Ecology, Michigan State Univ., East Lansing, MI

**1555 Subzero Growth, Metabolism, and Protein Expression of the Polar Marine Bacterium *Colwellia psychrerythraea***  
K. V. Slattery<sup>1</sup>, B. Nunn<sup>2</sup>, K. Cameron<sup>1</sup>, K. Junge<sup>1</sup>; <sup>1</sup>Polar Sci. Ctr., Applied Physics Lab., Univ. of Washington, Seattle, WA, <sup>2</sup>Genomic Sci. Dept., Univ. of Washington, Seattle, WA

**1556 Responses of Soil Microbial Communities to Multiple Global Change Factors**  
K. Xue<sup>1</sup>, C. Wen<sup>1</sup>, Y. Gu<sup>1</sup>, M. Yuan<sup>1</sup>, S. Zhou<sup>1</sup>, Y. Deng<sup>1</sup>, J. Nostrand<sup>1</sup>, L. Wu<sup>1</sup>, Z. He<sup>1</sup>, K. M. Docherty<sup>2</sup>, N. R. Chiariello<sup>3</sup>, C. B. Field<sup>4</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Inst. for Environmental Genomics, Norman, OK, <sup>2</sup>Western Michigan Univ., Kalamazoo, MI, <sup>3</sup>Stanford Univ., Stanford, CA, <sup>4</sup>Carnegie Inst. for Sci., Stanford, CA

**1557 Phylogenetic and Biogeochemical Characterization of Microbial Phototroph Communities on a Debris Covered Glacier**  
J. L. Darcy<sup>1</sup>, B. L. Todd<sup>1</sup>, A. J. King<sup>2</sup>, D. R. Nemergut<sup>1</sup>, B-L. Conciencia<sup>1</sup>, R. C. Lynch<sup>1</sup>, S. K. Schimdt<sup>1</sup>; <sup>1</sup>Univ. of Colorado, Boulder, CO, <sup>2</sup>CSIRO Black Mountain, Acton, Australia

**1558 Pyrosequencing Reveals the Influence of Elevated CO<sub>2</sub> and Nitrogen Deposition on the Composition of Soil Archaeal Communities in the Biocon Site**  
F. Liu<sup>1</sup>, Y. Qin<sup>1</sup>, H. Yu<sup>1</sup>, J. Van Nostrand<sup>1</sup>, K. Xue<sup>1</sup>, L. Wu<sup>1</sup>, Z. He<sup>1</sup>, S. Hobbie<sup>2</sup>, P. Reich<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Inst. for Environmental Genomics, Univ. of Oklahoma, Norman, OK, <sup>2</sup>Univ. of Minnesota, St. Paul, MN

**1559 Microbial Diversity and Ecophysiology of Cryoconite Sediments from the Dry Valleys, Antarctica**  
A. Schmit<sup>1</sup>, H. Smith<sup>1</sup>, R. Foster<sup>2</sup>, C. Foreman<sup>1</sup>; <sup>1</sup>Montana State Univ., Ctr. for Biofilm Engineering, Bozeman, MT, <sup>2</sup>Max-Planck Inst. for Marine Microbiol., The Biogeochemistry Group, Bremen, Germany

**1560 Relative Abundances of Bacteria and Archaea in Methane Rich Sediments of the Adelie Basin, Antarctica**  
S. A. Carr<sup>1</sup>, F. Schubotz<sup>2</sup>, R. Summons<sup>2</sup>, C. Mills<sup>3</sup>, R. Dias<sup>3</sup>, R. Dunbar<sup>4</sup>, C. Escutia<sup>5</sup>, H. Brinkhuis<sup>6</sup>, K. Mandernack<sup>7</sup>; <sup>1</sup>Colorado Sch. of Mines, Golden, CO, <sup>2</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>3</sup>U.S. Geological Survey, Denver, CO, <sup>4</sup>Stanford Univ., Stanford, CA, <sup>5</sup>Inst. Andaluz de Ciencias de la Tierra (CSIC-UGR), Granada, Spain, <sup>6</sup>Colorado Sch. of Mines, Utrecht Univ., Netherlands, <sup>7</sup>Indiana Univ., Purdue Univ., Indianapolis, IN

**1561 Long-Term Elevated CO<sub>2</sub> Decreases Microbial Biodiversity in a Grassland Ecosystem as Revealed by Metagenomics Sequencing**  
Q. Tu<sup>1</sup>, Z. He<sup>1</sup>, L. Wu<sup>1</sup>, H. Yu<sup>1</sup>, G. Xie<sup>2</sup>, P. Chain<sup>2</sup>, F. Liu<sup>1</sup>, Y. Gu<sup>1</sup>, M. Yuan<sup>1</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Los Alamos Natl. Lab, Los Alamos, NM

**1562 WITHDRAWN**

**1563 Seasonal Nitrogen Cycling Processes in Bed Sediments from the Yukon River at Pilot Station I: Activity Assays to Quantify Relative Rates of DIN and DON Turnover**  
D. A. Repert<sup>1</sup>, R. L. Smith<sup>1</sup>, J. C. Underwood<sup>1</sup>, B. Song<sup>2</sup>; <sup>1</sup>U.S. Geological Survey, Boulder, CO, <sup>2</sup>Virginia Inst. of Marine Sci., Gloucester Point, VA

### 130 Foodborne Pathogens – Biology (Division P) 1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1564 The Role of Glycoside Hydrolases in the Interactions of *Salmonella enterica* with Surfaces of Salad Vegetables**  
J. Glatz, A. G. Matthyse; Univ. of North Carolina at Chapel Hill, Chapel Hill, NC

**1565 Characterization of a Novel Cadmium Resistance Gene in *Listeria monocytogenes***  
C. Parsons, S. Lee, S. Kathariou; North Carolina State Univ., Raleigh, NC

**1566 Prevalence of Staphylococcal Enterotoxins and Toxin Genes in Recent Staphylococcal Food Poisoning Outbreaks**  
J. Hait, S. Tallent, R. Bennett; FDA, College Park, MD

**1567 Expression and Characterization of Recombinant *Campylobacter jejuni* Chemotactic Proteins**  
H-Y. Yeh, K. L. Hiett, J. E. Line, B. B. Oakley, B. S. Seal; USDA, ARS, PMSRU, Athens, GA

**1568 Prevalence and Antimicrobial Resistance Patterns of ESBL producing *Escherichia coli* and *Klebsiella pneumoniae* from RTE Vegetables**  
H-S. Kim, J-W. Chon, Y-J. Kim, D-H. Kim, J-S. Lim, J-H. Park, K-H. Seo; Ctr. for Food Safety, Coll. of Vet. Med., Konkuk Univ., Seoul, Republic of Korea

**1569 Antibiotic Resistance and Plasmid Carriage of *Salmonella* Typhi Isolated from Food and Food Handlers in a Nigerian University**  
A. O. Oluyeye, O. M. David; Ekiti State Univ., Ado-Ekiti, Nigeria

**1570 Molecular Analysis of Methicillin Resistant *Staphylococcus aureus* (MRSA) ST 398 from Animal and Human Sources**  
C. M. Logue<sup>1</sup>, V. Velasco<sup>2</sup>, J. S. Sherwood<sup>2</sup>, T. Meng<sup>1</sup>, C. Thompson<sup>1</sup>, I. Rohlwing<sup>1</sup>, A. Binnebose<sup>1</sup>; <sup>1</sup>Iowa State Univ., Ames, IA, <sup>2</sup>North Dakota State Univ., Fargo, ND

**1571 Prevalence and Diversity of *Salmonella* Associated with North Carolina Tomato Growing Environments**  
D. Ducharme<sup>1</sup>, J. Zheng<sup>2</sup>, S. Allard<sup>2</sup>, E. W. Burrows<sup>2</sup>, C. Y. Wang<sup>2</sup>, G. C. Arce<sup>2</sup>, T. Muruvanda<sup>2</sup>, C. E. Keys<sup>2</sup>, D. Melka<sup>2</sup>, O. D. Simmons<sup>1</sup>, C. C. Gunter<sup>1</sup>, P. Perkins-Veazie<sup>1</sup>, E. W. Brown<sup>2</sup>, R. L. Bell<sup>2</sup>; <sup>1</sup>North Carolina State Univ., Raleigh, NC, <sup>2</sup>FDA, College Park, MD



- 1572 Prevalence of *Listeria* spp. and *Listeria monocytogenes* in a Commercial Mushroom Processing Facility**  
L. Murugesan<sup>1</sup>, Z. Kucerova<sup>2</sup>, S. Knabel<sup>1</sup>, L. LaBorde<sup>1</sup>; <sup>1</sup>Penn State Univ., University Park, PA, <sup>2</sup>CDC, Atlanta, GA
- 1573 Differential Influence of Various Tomato Cultivars and Their Exudates on the Growth of *Salmonella enterica* Typhimurium**  
S. Han, S. A. Micallef; Univ. of Maryland, College Park, MD
- 1574 Distribution of a Genomic Island Harboring Arsenic Resistance Genes in *Listeria monocytogenes* and Other *Listeria* spp.**  
S. Lee, S. Kathariou; North Carolina State Univ., Raleigh, NC
- 1575 Virulence Plasmid Distribution and Their Potential Role in Pathogenesis in Non-O157 Shiga Toxin-producing *Escherichia coli***  
L. V. Rump<sup>1</sup>, J. Meng<sup>2</sup>, M. A. Toro<sup>1</sup>; <sup>1</sup>Univ. of Maryland, College Park, MD, <sup>2</sup>Joint Inst. for Food Safety and Applied Nutrition (JIFSAN), College Park, MD
- 1576 Role of the Intestinal Microbiota in Disease Due to Enterohemorrhagic *E. coli* in Germ Free Mice**  
K. A. Eaton<sup>1</sup>, K. A. Eaton<sup>1</sup>, B. M. McGill<sup>1</sup>, K. G. Skinner<sup>1</sup>, E. C. Martens<sup>1</sup>, C. A. Fontaine<sup>1</sup>, R. A. Britton<sup>2</sup>; <sup>1</sup>Univ. of Michigan, Ann Arbor, MI, <sup>2</sup>Michigan State Univ., East Lansing, MI
- 1577 Characterization of a Bacteriocin Produced by a *Salmonella enterica* Strain Isolated from a Child with Acute Diarrhea**  
D. F. Teles<sup>1</sup>, L. M. Farias<sup>1</sup>, J. S. Oliveira<sup>1</sup>, Y. S. Cardoso<sup>1</sup>, M. M. Santoro<sup>1</sup>, M. R. Nunes<sup>2</sup>, E. N. Mendes<sup>1</sup>, M. A. Sousa<sup>3</sup>, P. P. Magalhães<sup>1</sup>; <sup>1</sup>Univ. Federal de Minas Gerais, Belo Horizonte, Brazil, <sup>2</sup>Univ. Federal do Piauí, Teresina, Brazil, <sup>3</sup>Hermes Pardini, Belo Horizonte, Brazil
- 1578 Phenotypic Analysis of a Novel, Large Plasmid-carrying Avian *Salmonella* Senftenberg Isolate**  
S. R. Petermann<sup>1</sup>, J. S. Sherwood<sup>1</sup>, B. Nicholson<sup>2</sup>, C. M. Logue<sup>2</sup>; <sup>1</sup>North Dakota State Univ., Fargo, ND, <sup>2</sup>Iowa State Univ., Ames, IA
- 1579 Characterization of Non-O157:H7 Shiga Toxin-Producing *E. coli* Serovar O111 Strains Isolated from a Major Produce-Growing Region in the U.S.A.**  
M. E. Diodati, C. T. Parker, W. G. Miller, A. H. Bates, R. E. Mandrell, M. T. Brandt; USDA, ARS, WRRR, Albany, CA
- 1580 Identification of *Salmonella typhimurium* Genes Essential for Cold Temperature Survival on a Chicken Carcass Using a Tn-seq Method**  
T. Dawoud, T. Jiang, S. C. Ricke, Y. M. Kwon; Univ. of Arkansas, Fayetteville, AR
- 1581 Genomic Analysis of *L. monocytogenes* 1/2a Strains Involved in Two Cantaloupe Contamination Incidences**  
Y. Chen, R. Timme, E. Strain, P. Evans, T. Hammack, E. Brown; FDA, College Park, MD
- 1582 Molecular Typing of *Campylobacter jejuni* and *Campylobacter coli* Strains Isolated from Various Oklahoma Retail Meats by MLST and PFGE**  
A. Noormohamed, M. K. Fakhr; The Univ. of Tulsa, Tulsa, OK
- 1583 Polynucleotide Phosphorylase Regulates Shiga Toxin 2 Production in *Escherichia coli* O157:H7**  
J. Hu<sup>1</sup>, X. Fang<sup>2</sup>, M. Gomelsky<sup>2</sup>, M. J. Zhu<sup>3,1</sup>; <sup>1</sup>Dept. of Animal Sci., Univ. of Wyoming, Laramie, WY, <sup>2</sup>Department of Molecular Biol., Univ. of Wyoming, Laramie, WY, <sup>3</sup>Sch. of Food Sci., Washington State Univ., Pullman, WA
- 1584 Metagenomic Analysis of Cilantro for *Salmonella* Surveillance and Microbial Diversity Using 16S rRNA Amplicon Sequencing**  
K. Jarvis<sup>1</sup>, C. J. Grim<sup>2</sup>, J. Jean-Gilles Beaubrun<sup>1</sup>, L. Ewing<sup>1</sup>, K. Dudley<sup>1</sup>, A. Ottesen<sup>3</sup>, J. Pettengill<sup>3</sup>, E. Brown<sup>3</sup>, D. Hanes<sup>1</sup>; <sup>1</sup>FDA, Laurel, MD, <sup>2</sup>Oak Ridge Inst. for Sci. and Ed., Oak Ridge, TN, <sup>3</sup>FDA, College Park, MD
- 1585 Virulence Gene Expression of *Vibrio parahaemolyticus*: Effects of Viable-but-nonculturable State, Temperature and Nutrient**  
T. Tse, M. Yeung; California Polytechnic State Univ., San Luis Obispo, San Luis Obispo, CA
- 1586 Resistance Gene Distribution among Non-pathogenic *Listeriae* from Different Poultry Processing Plants**  
M. Rakic-Martinez, V. Dutta, S. Katharios, R. M. Siletsky, S. Kathariou; North Carolina State Univ., Raleigh, NC
- 1587 Epidemic Clones, Virulence Traits, and Genetic Relatedness among *Listeria monocytogenes* Strains of Serotype 4b from Human and Food Origin in Brazil**  
A. V. Barbosa<sup>1</sup>, D. C. V. Silva<sup>2</sup>, A. M. F. Cerqueira<sup>1</sup>, L. Rusak<sup>2</sup>, E. Hofer<sup>2</sup>; <sup>1</sup>Univ. Federal Fluminense, Niterói, RJ, Brazil, <sup>2</sup>Inst. Oswaldo Cruz - FIOCRUZ, Rio de Janeiro, RJ, Brazil
- 1588 The DiversiLab System is a Useful Tool for Subtyping *Salmonella enterica* and Differentiating Between Isolates of the Same Serotype**  
L. Ewing<sup>1</sup>, R. Pamboukian<sup>2</sup>, J. Jean-Gilles Beaubrun<sup>1</sup>, K. Jarvis<sup>1</sup>, K. Dudley<sup>1</sup>, FERN MCAP Cadre<sup>2</sup>, D. E. Hanes<sup>1</sup>; <sup>1</sup>FDA, Laurel, MD, <sup>2</sup>FDA, Rockville, MD
- 1589 Whole-Genome Sequencing Reveals Laboratory *Salmonella typhimurium* Strain 14028s as a Likely Source of Outbreak Isolates from 2009-2010**  
C. T. Parker, L. Gorski, S. Huynh, A. S. Liang, R. E. Mandrell; USDA ARS, Albany, CA
- 1590 Analysis of the Global Transcriptional Changes in *Salmonella enterica* serovar Typhimurium Exposed to Low Water Activity Conditions**  
A. Maserati, R. C. Fink, F. Hung Lee, Z. P. Metz, A. R. Amann, C. L. Radtke, F. Diez-Gonzalez; Univ. of Minnesota, Falcon Heights, MN
- 1591 Characterization of ArtAB from *Salmonella enterica* Typhimurium DT104**  
E. Price, B. Morris, J. Tinker; Boise State Univ., Boise, ID
- 131 Foodborne Pathogens - Control (Division P)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 1592 Concentration Dependent Effects of Grape Seed Extract against Human Enteric Viruses Over 24 H**  
S. S. Joshi, D. H. D'Souza; The Univ. of Tennessee-Knoxville, Knoxville, TN
- 1593 Reduction of *Cronobacter sakazakii* by Grape Seed, Pomegranate, and Cranberry Extracts**  
A. Cicco<sup>1</sup>, N. Moustaid-Moussa<sup>1</sup>, N. Siriwardhana<sup>1</sup>, A. Howell<sup>2</sup>, D. H. D'Souza<sup>1</sup>; <sup>1</sup>The Univ. of Tennessee-Knoxville, Knoxville, TN, <sup>2</sup>Rutgers Univ., Chatsworth, NJ
- 1594 Evaluation of the Antimicrobial Activities of *Solanum indicum* Berries**  
I. A. Kouadio; Univ. of Wisconsin-Madison, Madison, WI
- 1595 Anti-Rotavirus Activity of Soluble Flavonoids Glycosyl Hesperitin and Epigallocatechin in Cell-Free Suspension and Cell Culture**  
G. L. Sullivan<sup>1</sup>, S. Louis<sup>1</sup>, F. Ozen<sup>1,2</sup>, L. Karthikeyan<sup>3</sup>, S. M. Lipson<sup>1</sup>; <sup>1</sup>St. Francis Coll., Brooklyn Heights, NY, <sup>2</sup>Celsuk Univ., Konya, Turkey, <sup>3</sup>New York City Col. Technol., CUNY, Brooklyn, NY
- 1596 Ultraviolet Light (UV) and UV-Ozone Interventions Reduce Shiga Toxin-Producing *Escherichia coli* (STEC) on Contaminated Fresh Beef**  
N. Kalchayanand, J. M. Bosilevac, T. L. Wheeler; U.S. Meat Animal Res. Ctr., Clay Center, NE
- 1597 Attachment of Shiga-Toxigenic *Escherichia coli* (STEC) on Stainless Steel Hex Nuts**  
A. R. Parks, K. K. Nightingale, J. C. Brooks, M. San Francisco, L. D. Thompson, G. H. Loneragan, M. M. Brashears; Texas Tech Univ., Lubbock, TX

- 1598 Bacterial Contamination of Kitchen Sponges and the Effect of Microwave Radiation as a Method of Disinfection**  
P. R. McInnis, M. Donnelly, L. Cuchara; Quinnipiac Univ., Hamden, CT

**1599 WITHDRAWN**

- 1600 Validating Models for Growth of *Salmonella* Spp. Under Dynamic Temperature Profiles in Ground Beef**  
J. A. McConnell, D. W. Schaffner; Rutgers Univ., New Brunswick, NJ

- 1601 Assessing of *In vitro* Inhibitory Effect Caused by *Pediococcus acidilactici* (atcc 8042) Over *Escherichia coli* O157:H7 (EDL 933) Using the FESC PM Chamber™**  
O. A. Hernández Castillo<sup>1</sup>, J. López Pérez<sup>1</sup>, A. Llorente Busquet<sup>1</sup>, F. Nuñez Espinoza<sup>2</sup>, A. L. Núñez del Arco<sup>1</sup>, C. Cuenca Verde<sup>1</sup>, G. Valdivia Anda<sup>1</sup>; <sup>1</sup>Facultad de Estudios Superiores, Cuautitlan, UNAM, Edo. Mexico, Mexico, <sup>2</sup>Facultad de Ciencias, UNAM, DF México, Mexico

- 1602 Antimicrobial Activity of Edible Films Prepared with Pectic Extracts and Essential Oil from Lime**  
D. Sanchez-Aldana<sup>1</sup>, C. N. Aguilar<sup>1</sup>, J. C. Contreras-Esquivel<sup>1</sup>, G. V. Nevárez-Moorillón<sup>2</sup>; <sup>1</sup>Univ. Autonoma de Coahuila, Chihuahua, Chih., Mexico, <sup>2</sup>Univ. Autonoma de Chihuahua, Chihuahua, Chih., Mexico

- 1603 Antibiotic Resistance in *Escherichia coli* on Commercial Chicken: Comparing Conventional, Organic, Kosher and Antibiotic Free**  
J. Millman<sup>1</sup>, K. Waits<sup>2</sup>, A. R. Marks<sup>1</sup>, J. C. Marks<sup>3</sup>, B. A. Hungate<sup>3</sup>, L. B. Price<sup>4</sup>; <sup>1</sup>Horace Mann, New York, NY, <sup>2</sup>The Translational Genomics Res. Inst., Flagstaff, AZ, <sup>3</sup>Northern Arizona Univ., Flagstaff, AZ, <sup>4</sup>The George Washington Univ., Washington, DC

- 1604 Evaluation of Ozone as a Means of Disinfection of Contaminated Hard Surfaces and Food Products**  
R. S. Donofrio, R. Saha; NSF Intl., Ann Arbor, MI

- 1605 The Effect of 5-isopropyl-2-methylphenol on a Bioluminescent Strain of *E. coli* O157:H7**  
C. M. Vasquez-Mejia, J. G. Auer, E. E. Duarte-Gomez, V. Rodriguez-Martinez, W. A. Peer, B. Applegate, F. San Martin; Purdue Univ., West Lafayette, IN

- 1606 Influence of Water Activity and Water Mobility on the Survival of *Salmonella* spp. in Low-Moisture Whey Protein Powder at Temperatures Ranging from 21°C to 80°C**  
S. M. Santillana Farakos<sup>1</sup>, J. F. Frank<sup>1</sup>, D. W. Schaffner<sup>2</sup>; <sup>1</sup>The Univ. of Georgia, Athens, GA, <sup>2</sup>Rutgers Univ., NJ

- 1607 Efficacy of Chlorine Dioxide Gas at Penetrating Romaine Lettuce Tissue for Bacterial Inactivation**  
A. D. Broady, P. Tanner, K. Parker, K. Farrokhsad, T. Lim, A. Kanach, B. M. Applegate, M. T. Morgan; Purdue Univ., West Lafayette, IN

- 1608 Use of Bacteriophage Coating on Seeds to Prevent Pathogen Contamination During Germination**  
D. Zhang, A. Opoku, U. Minocha, P. Meyer, R. Turco, J. Youngblood, F. M. San Martin-Gonzalez, B. Applegate; Purdue Univ., West Lafayette, IN

- 1609 Persistence and Effectiveness of TS-15: A Biocontrol to Prevent *Salmonella* Contamination of Tomatoes**  
S. M. Allard<sup>1</sup>, J. Zheng<sup>1</sup>, J. G. Gu<sup>2</sup>, S. Rideout<sup>2</sup>, P. Millner<sup>3</sup>, R. Bell<sup>1</sup>, E. W. Brown<sup>1</sup>; <sup>1</sup>FDA Ctr. for Food Safety and Applied Nutrition, College Park, MD, <sup>2</sup>Virginia Polytechnic Inst. and State Univ., Eastern Shore AREC, Painter, VA, <sup>3</sup>USDA Agricultural Res. Service, Beltsville, MD

- 1610 The Efficacy of Antimicrobial Solutions for Use on *Salmonella* Inoculated Poultry Parts**  
P. Cook, K. Beers; MCA Services, Rogers, AR

- 1611 Antimicrobial Activity of the Essential Oil of Mexican Plant: *Piper auritum* Kunth (Yerba Santa)**  
J. Guzmán-Mateos<sup>1</sup>, F. Medina-Mendoza<sup>1</sup>, J. Zavala-López<sup>1</sup>, L. Fernández-Licón<sup>2</sup>, R. Carrera-Gutiérrez<sup>1</sup>; <sup>1</sup>QFBT, Ciencias de la Salud, UVM Coyoacán, México City, Mexico, <sup>2</sup>Facultad de Ciencias Agrotecnológicas, UACH, Chihuahua, Chih., Mexico

- 1612 Biocontrol of Fusarium wilt of Banana by a Plant Endophytic Bacterium, *Burkholderia cenocepacia* 869T2**  
Y.-N. Ho<sup>1</sup>, H.-M. Chiang<sup>1</sup>, H.-F. Hsu<sup>1</sup>, C.-C. Su<sup>2</sup>, C.-P. Chao<sup>2</sup>, C.-C. Huang<sup>1</sup>; <sup>1</sup>Natl. Chung Hsing Univ., Taichung, Taiwan, <sup>2</sup>Taiwan Banana Res. Inst., Pingtung, Taiwan

- 1613 Microwave Treatment of *Salmonella*-contaminated Dry Food Matrices**  
R. C. Fink, F. Hung Lee, A. R. Amann, Z. P. Metz, C. L. Radtke, F. Diez-Gonzalez; Univ. of Minnesota, St. Paul, MN

- 1614 Correlations of the Effects of Nisin and Organic Acids on *Listeria monocytogenes* Growth Inhibition in BHI Broth and on Cold Smoked Salmon Are Lineage-dependent**  
S. Tang<sup>1</sup>, M. J. Stasiewicz<sup>1</sup>, M. Wiedmann<sup>1</sup>, K. J. Boor<sup>1</sup>, T. M. Bergholz<sup>2</sup>; <sup>1</sup>Cornell Univ., Ithaca, NY, <sup>2</sup>North Dakota State Univ., Fargo, ND

- 1615 The Effects of Low Oxygen and Low Temperature Pre-Conditioning on the Response of *Listeria monocytogenes* FSL R2-499 to Decontaminating Agents**  
D. Sewell, S. C. H. Allen, C. A. Phillips; Univ. of Northampton, Northampton, United Kingdom

**132 Antibiotic Resistance and Microbial Control (Division Q)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 1616 Prevalence of Antibiotic Resistance in Fecal *E. coli* of Migratory Canada Geese (*Branta canadensis*) Parallels Antibiotic Usage in Animal Agriculture: A Longitudinal Study 2002-2011**  
J. Middleton; Fairleigh Dickinson Univ., Madison, NJ

- 1617 The Impacts of a Poultry Processing Plant on the Diversity and Transferability of Tetracycline Resistance Genes in a Headwater Stream in Greenville, South Carolina**  
B. Anderson, S. McCauley, G. Lewis, M.-K. Liao; Furman Univ., Greenville, SC

- 1618 Intracellular and Extracellular Antimicrobial Resistance Genes in Livestock Manure Management Structures**  
Y. Zhang<sup>1</sup>, X. Li<sup>1</sup>, D. D. Snow<sup>1</sup>, D. Parker<sup>2</sup>, Z. Zhou<sup>3</sup>; <sup>1</sup>Univ. of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>USDA Meat Animal Res. Ctr., Clay Center, NE, <sup>3</sup>Natl. Univ. of Singapore, Singapore

- 1619 Antibiotic Resistance Plasmids in an *E. coli* Population in Agriculturally Impacted Stream Sediment**  
E. F. Gehr, J. B. Herrick; James Madison Univ., Harrisonburg, VA

- 1620 A Persistent and Mobile Resistome in Poultry-litter-impacted Farm Soil**  
Y. You<sup>1</sup>, M. J. Ward<sup>2</sup>, M. Hilpert<sup>1</sup>; <sup>1</sup>Johns Hopkins Univ., Baltimore, MD, <sup>2</sup>Univ. of South California, Los Angeles, CA

- 1621 The Prevalence of Antibiotic Insensitive Bacteria in the Ballona Wetlands**  
G. Kuleck, J. Dorsey, N. S. Kaweck, C. Leary; Loyola Marymount Univ., Los Angeles, CA

- 1622 Influence of Soil Management on Presence and Diversity of Antibiotic Resistance Genes among Bacterial Populations**  
M. E. Santos, S. Edwards-Latchu, R. Caswell, C. Terry; Univ. of North Carolina at Pembroke, Pembroke, NC

- 1623 The Fate of MRSA in Synthetic Field Turf Systems**  
M. Keller<sup>1</sup>, Z. Johnson<sup>1</sup>, V. Sigler<sup>1</sup>, R. Turco<sup>2</sup>; <sup>1</sup>The Univ. of Toledo, Toledo, OH, <sup>2</sup>Purdue Univ., West Lafayette, IN

- 1624 Survival of Methicillin-Resistant *Staphylococcus aureus* and *Escherichia coli* O157:H7 on Airplane Cabin Surfaces**  
K. A. Vaglenov, I.-H. Chen, A. N. Goodloe, B. Koonce, P. J. Zwack, R. A. Overfelt, J. M. Barbaree; Auburn Univ., Auburn, AL

- 1625 Transfer and Control of Infectious Microbes in Emergency Vehicles**  
M. K. Valdez, J. D. Sexton, K. Reynolds; The Univ. of Arizona, Tucson, AZ

- 1626 Transfer and Control of Infectious Microbes in Emergency Medical Responder Facilities and Apparatuses**  
J. D. Sexton, M. K. Valdez, K. A. Reynolds; Univ. of Arizona, Tucson, AZ
- 1627 Identification and Characterization of Microbial Isolates Collected from the Surfaces of the Mars-bound Viking Spacecraft**  
A. K. Tenuto<sup>1</sup>, S. A. Smith<sup>1</sup>, E. Wear<sup>1</sup>, J. N. Bernardini, III<sup>2</sup>, W. W. Schubert<sup>2</sup>, S. E. Childers<sup>3</sup>, A. Paszczynski<sup>1</sup>; <sup>1</sup>Univ. of Idaho, Moscow, ID, <sup>2</sup>Jet Propulsion Lab., California Inst. of Technology, Pasadena, CA, <sup>3</sup>Colby Univ., Waterville, ME
- 1628 Investigation of Antibacterial Effect of Non-harmful, Visible-light-activated Photocatalysts**  
E. Nagy<sup>1</sup>, S. P. Tallósy<sup>1</sup>, L. Janovák<sup>2</sup>, I. Dékány<sup>2</sup>, E. Fodor<sup>1</sup>, J. Sóni<sup>1</sup>; <sup>1</sup>Inst. of Clinical Microbiol., Univ. of Szeged, Szeged, Hungary, <sup>2</sup>Dept. of Physical Chemistry and Material Sci., Univ. of Szeged, Univ. of Szeged, Szeged, Hungary
- 1629 Utilization of Copper Alloy to Reduce Antimicrobial Resistant Bacteria in Hospital Equipments**  
J.-H. Woo<sup>1</sup>, H.-I. Hong<sup>1</sup>, D. Kim<sup>1</sup>, Y. Kim<sup>1</sup>, S.-H. Choi<sup>1</sup>, S.-O. Lee<sup>1</sup>, S.-H. Kim<sup>1</sup>, M. Chang<sup>2</sup>, M. Kang<sup>3</sup>, J. Kim<sup>4</sup>; <sup>1</sup>Univ. of Ulsan, Asan Med. Ctr., Songpa-Gu, Republic of Korea, <sup>2</sup>Seoul Natl. Univ., Boramae Hosp., Dongjak-Gu, Republic of Korea, <sup>3</sup>Catholic Univ. of Korea, Seoul St. Mary Hosp., Seocho-Gu, Republic of Korea, <sup>4</sup>Yonsei Univ., Severance Hosp., Seodaemun-Gu, Republic of Korea
- 1630 Decontamination of Soil Contaminated with *Bacillus anthracis* Spores**  
M. Q. S. Wendling<sup>1</sup>, A. T. Lastivka<sup>1</sup>, Y. W. Choi<sup>1</sup>, J. V. Rogers<sup>1</sup>, J. P. Wood<sup>2</sup>; <sup>1</sup>Battelle Mem. Inst., Columbus, OH, <sup>2</sup>US EPA, Research Triangle Park, NC
- 1631 *In vitro* Growth Inhibition of Pathogens by High Efficient Microorganisms (KEM-mix)**  
E. A. Diange<sup>1</sup>, W.-W. Jeong<sup>2</sup>, S. Park<sup>2</sup>, T. You<sup>3</sup>, S.-S. Lee<sup>4</sup>; <sup>1</sup>Dept. of Bioengineering, Kyonggi Univ., Suwon-Si, Republic of Korea, <sup>2</sup>Environmental Infrastructure Res. Dept. Water Supply & Sewerage Res. Div., Natl. Inst. of Environmental Res., South Korea, Republic of Korea, <sup>3</sup>Dept. of Biological Sci., Campbell Univ., Buies Creek, North Carolina, NC, <sup>4</sup>Faculty of Sci., Kyonggi Univ., Suwon-Si, Republic of Korea
- 1632 The Antiviral Effect of White Tea Polyphenol**  
M. Schifffenbauer, A. Alnaqeeb, R. Florence, A. Gross, I. Hrynyk, R. Levin, M. Lindsay, N. Polataiko, E. Saul, S. Shokeen, S. Silwal, O. Yefimenko, P. Hersh, E. Sava; Touro Coll., New York City, New York, NY
- 1633 Antibiotic Resistance Determinants in Treated Wastewater and in the Upper Mississippi River**  
M. Madson, T. LaPara; Univ. of Minnesota, Minneapolis, MN
- 1634 Effect of Chlorine on the Viability of the Multidrug-Resistant *Acinetobacter baumannii* in Water and Expression of Antibiotic Resistance Genes**  
D. P. Karumathil, H.-B. Yin, A. Kollanoor-Johny, K. Venkitanarayanan; Dept of Animal Sci., Univ. of Connecticut, Storrs, CT
- 1635 Plasmid Screening of Multiple Antibiotic-Resistant Strains of *Enterococcus faecium* Isolated from Puerto Rico's Farm Lands**  
K. Maldonado, M. Díaz, P. Silva, W. Colón, N. Rodríguez; Univ. del Este, Carolina, PR
- 1636 Characterizing Extended Spectrum Beta-Lactamase (blaCTX-M-1, blaTEM and blaKPC) Genes Pollution in Urban Clinton River Fresh Water Sediments in Michigan**  
C. Muraleedharan<sup>1</sup>, N. Bhutani<sup>1</sup>, S. Mikhail<sup>1</sup>, J. Band<sup>2</sup>, A. Kumar<sup>3</sup>, S. Wallia<sup>1</sup>; <sup>1</sup>Oakland Univ., Rochester, MI, <sup>2</sup>Beaumont Hlth. System, Royal Oak, MI, <sup>3</sup>Wayne State Univ., Detroit, MI

- 1637 Random Amplified Polymorphic DNA Typing of Multidrug-Resistant Clinical and Environmental *Pseudomonas aeruginosa* Strains From Abeokuta, Nigeria**  
O. B. Shittu, S. A. Adeniran, S. A. Adeniran, O. R. Afolabi, S. O. Sam-Wobo; Federal Univ. of Agriculture, Abeokuta, Nigeria
- 1638 Antimicrobial Resistance in the Chesapeake Bay and Watershed: Unexpected Susceptibility Patterns and Unanswered Questions**  
N. Boire<sup>1</sup>, S. Riedel<sup>2</sup>, V. Atukorale<sup>1</sup>, A. Vadlamudi<sup>2</sup>, E. Weddle<sup>2</sup>, V. Vadlamudi<sup>2</sup>, N. Parrish<sup>2</sup>; <sup>1</sup>Johns Hopkins Bloomberg Sch. of Publ. Hlth., Baltimore, MD, <sup>2</sup>Johns Hopkins Med. Inst., Baltimore, MD
- 1639 High Levels of Triclosan Resistant Bacteria Exist in the Effluent of a Wastewater Treatment Plant**  
K. Giesting, K. Svitana, J. Bennett; Otterbein Univ., Westerville, OH
- 1640 Analysis of Bacterial Community and Antibiotic-Resistant Strains in the Housefly (*Musca domestica*)**  
T. Wei, K. Miyanaga, Y. Tanji; Dept. of Bioengineering, Graduate Sch. of BioSci. and Biotechnology, Tokyo Inst. of Technology, Yokohama, Japan
- 1641 Novel Reservoirs for *mecA*: Conferring Methicillin Resistance in Tropical Marine and Fresh Water Environments**  
J. I. Rivera<sup>1</sup>, T. M. Santiago-Rodriguez<sup>1</sup>, M. Coradin<sup>1</sup>, M. C. Roberts<sup>2</sup>, G. A. Toranzos<sup>1</sup>; <sup>1</sup>Univ. of Puerto Rico, San Juan, PR, <sup>2</sup>Univ. of Washington, Seattle, WA
- 1642 Antibiotic-Resistance of *Enterococci* Isolated from the Great Salt Lake and Fresh Water Sources**  
K. Nakaoka, J. Jorgenson, A. Badley, M. Sondossi, W. Lorowitz; Weber State Univ., Ogden, UT
- 1643 Distribution of Antibiotic Resistance Patterns and Vancomycin Resistance Genes in *Enterococcus spp.* Isolated from Clinical, Fecal, River and Beach Samples**  
V. V. Lozada Fernández, M. Cuebas, G. Negrón, L. Ríos-Hernández; Univ. of Puerto Rico, Mayaguez, PR
- 1644 The Role of Bacteriophage in Antibiotic-Resistant Gene Development in Wastewater Treatment Plants**  
M. Munir, I. Xagorarakis; Michigan State Univ., East Lansing, MI
- 133 Biosynthesis and Biodegradation of Specialty Chemicals, Pesticides, and Pharmaceuticals (Division Q)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 1645 C-C Bond Hydrolase Mediated Synthesis of Nanoparticle Titanium Phosphate and Titanium Dioxide**  
H. Zhou, Y. Qu; Dalian Univ. of Technology, Dalian, China
- 1646 A Secretion Based Approach to Produce Polyhydroxyalkanoates in *Escherichia coli***  
A. Rahman, R. C. Sims, C. D. Miller; Utah State Univ., Logan, UT
- 1647 Residues Affecting Alcohol Selectivity in the Bacterial Wax Ester Synthase**  
B. M. Barney, J. M. Ohlert, J. Timler; Univ. of Minnesota, St. Paul, MN
- 1648 Influence of pH and Formate on the Production of C-2 and C-4 Biochemicals and Transcriptomic Analysis by *Eubacterium limosum* KIST612 using Carbon Monoxide**  
S. Choi<sup>1</sup>, S. Park<sup>1</sup>, J. Jeong<sup>1</sup>, H.-J. Ko<sup>2</sup>, I.-G. Choi<sup>2</sup>, I. Chang<sup>1</sup>; <sup>1</sup>Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea, <sup>2</sup>Korea Univ., Seoul, Republic of Korea
- 1649 *Oscillibacter* sp. a CO-oxidizing, C-5 Chemical-producing Acetogen Isolated From Cow Feces**  
S. Park<sup>1</sup>, M. Yasin<sup>1</sup>, J. Jung<sup>1</sup>, H. Roh<sup>2</sup>, I.-G. Choi<sup>2</sup>, I. Chang<sup>1</sup>; <sup>1</sup>Gwangju Inst. of Sci. and Technology, Gwangju, Republic of Korea, <sup>2</sup>Korea Univ., Seoul, Republic of Korea



- 1650 Carbon Dioxide Fixation and Polyhydroxybutyrate Production in *Rhodobacter sphaeroides* Using Waste Medium**  
J.-Y. Park<sup>1</sup>, Y.-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Republic of Korea, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Republic of Korea
- 1651 Emulsification and Stability Properties of Rhamnolipid Biosurfactant Produced by *Pseudomonas nitroreducens* Isolated from Petroleum-contaminated Soil**  
C. O. Onwosi<sup>1</sup>, F. C. Odibo<sup>2</sup>; <sup>1</sup>Univ. of Nigeria, Nsukka, Nigeria, <sup>2</sup>Nnamdi Azikiwe Univ., Awka, Anambra State, Nigeria
- 1652 Characterization of a Photosynthetic Community and the Polymer that it Produces**  
J. Jorgensen<sup>1</sup>, R. Liu<sup>2</sup>, R. Christianson<sup>1</sup>, J. Huang<sup>1</sup>; <sup>1</sup>Olin Coll., Needham, MA, <sup>2</sup>Pronutria, Cambridge, MA
- 1653 Seawater Microbial Flocculant**  
J. Hao, Y. Zhang, J. Wang, B. Yang, T. Jiang, X. Zhang, A. Zhang, X. Zhang; The Inst. of Seawater Desalination and Multipurpose Utilization, State Oceanic Admin., Tianjin, China
- 1654 Effective Biodemulsifier Components Secreted by *Bacillus mojavensis* XH-1 and Analysis of the Demulsification Mechanism**  
N. Hou<sup>1</sup>, D. Li<sup>2</sup>, F. Ma<sup>2</sup>, Y. Xu<sup>3</sup>, C. Li<sup>1</sup>; <sup>1</sup>Northeast Agricultural Univ., Harbin, China, <sup>2</sup>Harbin Inst. of Technology, Harbin, China, <sup>3</sup>Heilongjiang Univ. of Chinese Med., Harbin, China
- 1655 WITHDRAWN**
- 1656 Isolation and Characterization of PES Depolymerase from *Microbispora rosea* HS45-1**  
M.-K. Yang<sup>1</sup>, S.-X. Nian<sup>1</sup>, M. Tseng<sup>2</sup>; <sup>1</sup>Fu Jen Univ., Hsin Chuang, Taiwan, <sup>2</sup>Bioresource Collection and Res. Ctr., Food Industry Res. Inst., Hsinchu, Taiwan
- 1657 Isolation, Enrichment, and Characterization of Soil Bacteria Capable of Metabolizing the Triazole Fungicide Epoxiconazole**  
N. N. Kogekar, A. E. Holliday, A. C. Vollmer; Swarthmore Coll., Swarthmore, PA
- 1658 Degradation of Chloropicrin and Methyl Iodide by *Frateuria* sp. and *Rhodanobacter* sp.**  
J. A. Garcia, A. Iness, C. T. Ramirez, A. D. Wright; California State Univ., Fresno, Fresno, CA
- 1659 Biodegradation of Pharmaceutical Compound Ibuprofen by Activated Sludge from various Wastewater Treatment Plants**  
C.-Y. Huang, H.-W. Kuo, M.-H. Sung, C.-H. Ho, L.-H. Fu, L.-Z. Chen; Tunghai Univ., Taichung, Taiwan
- 1660 Characterization and Genome Sequence of A Novel Cold-adapted Carbamazepine-degrading Bacterium, *Pseudomonas* sp. CBZ-4**  
D. Cui<sup>1,2</sup>, A. Li<sup>1,3</sup>, R. Cai<sup>1</sup>, Z. Gai<sup>4</sup>, T. Qiu<sup>1</sup>, Y. Wang<sup>1</sup>, J. Yang<sup>1</sup>, F. Ma<sup>1</sup>, N. Ren<sup>1</sup>; <sup>1</sup>State Key Lab. of Urban Water Resource and Environment, Harbin Inst. of Technology, Harbin, China, <sup>2</sup>Inst. for Environmental Genomics, Univ. of Oklahoma, Norman, OK, <sup>3</sup>Swette Ctr. for Environmental Biotechnology, The Biodesign Inst., Arizona State Univ., Tempe, AZ, <sup>4</sup>State Key Lab. of Microbial Metabolism and Sch. of Life Sci. and Biotechnology, Shanghai Jiao Tong Univ., Shanghai, China
- 1661 Identification and Analysis of Bacterial Organisms Capable of Mediating Venlafaxine Degradation**  
K. C. Sullivan, M. Murphy, J. Fox, M. J. Snider, M. M. Schultz, S. S. Strand; The Coll. of Wooster, Wooster, OH
- 1662 Integrated Genomic, Transcriptomic, and Molecular Characterization of Aerobic Biotransformation of Benzalkonium Chloride Antimicrobials**  
S. Oh, M. Weigand, D. Tsementzi, M. Tandukar, S. G. Pavlostathis, K. T. Konstantinidis; Georgia Inst. of Technology, Atlanta, GA
- 1663 Biodegradation of 1-butyl-3-methylpyridinium bromide and 1-octyl-3-methylpyridinium bromide by Microbial Isolates from a Wastewater Treatment Plant**  
B. K. Buehler, S. W. Aiello, K. M. Docherty; Western Michigan Univ., Kalamazoo, MI

### 134 Physiological, Genetic and Proteomic Responses of Microorganisms to Environmental Stimuli (Division Q)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 1664 Coculture of *Nitrosomonas europaea* and *Nitrobacter winogradskyi* Affects Expression of Key Nitrite Metabolism Genes**  
R. V. Ferrell<sup>1</sup>, J. Pérez<sup>2</sup>, P. Bottomley<sup>2</sup>, D. Arp<sup>2</sup>, L. Sayavedra-Soto<sup>2</sup>; <sup>1</sup>Metropolitan State Univ. of Denver, Denver, CO, <sup>2</sup>Oregon State Univ., Corvallis, OR
- 1665 Iron And Copper Act Synergistically To Delay Anaerobic Growth In Bacteria**  
L. J. Bird<sup>1,2</sup>, M. L. Coleman<sup>3</sup>, D. K. Newman<sup>1</sup>; <sup>1</sup>California Inst. of Technology, Pasadena, CA, <sup>2</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>3</sup>Univ. of Chicago, Chicago, IL
- 1666 Genomic and Transcriptomic Analyses of NaCl-Tolerant *Staphylococcus* sp. OJ82 Isolated from Fermented Seafood**  
S. Choi, W. Park; Korea Univ., Seoul, Republic of Korea
- 1667 Starvation-Induced Phenotypic and Genetic Diversification of *Vibrio vulnificus***  
H. Chen<sup>1</sup>, C.-Y. Chen<sup>2</sup>; <sup>1</sup>Inst. of Med. Sci., Tzu-Chi Univ., Hualien, Taiwan, <sup>2</sup>Dept. of Life Sci., Tzu-Chi Univ., Hualien, Taiwan
- 1668 Proteomic Profiling of *Caulobacter crescentus* CB15N Under Heavy Metal Stress**  
J. Ma<sup>1</sup>, M. Salemb<sup>2</sup>, B. Phinney<sup>2</sup>, Y. Jiao<sup>1</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab., Livermore, CA, <sup>2</sup>Univ. of California, Davis, CA
- 1669 Investigation of DNA Modifications in a Soil Bacterium After Exposure to Organic and Inorganic Pollutants by LC-tandem Mass Spectrometry**  
R. A. Kanaly<sup>1</sup>, R. Micheletto<sup>1</sup>, A. H. Maeda<sup>1</sup>, N. Hamamura<sup>2</sup>; <sup>1</sup>Yokohama City Univ., Yokohama, Japan, <sup>2</sup>Ehime Univ., Matsuyama, Japan
- 1670 Differential Protein Expression Analysis in *Geobacter sulfurreducens* PCA Grown Under "Famine" Conditions**  
R. Bansal, L. Liermann, S. Brantley, M. Tien; Penn State Univ., University Park, PA
- 1671 Proteomics Reveals Growth-dependent c-Type Cytochrome Expression in Dissimilatory Metal Reducing Bacteria**  
X. Liu<sup>1,2</sup>, S. Nissen<sup>3,4</sup>, K. Chourey<sup>2</sup>, F. Löffler<sup>3,5,6</sup>, S. Pfiffner<sup>3,6</sup>, R. Hettich<sup>1,2</sup>; <sup>1</sup>Genome Sci. and Technology, Univ. of Tennessee, Knoxville, TN, <sup>2</sup>Chemical Sci. Div., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>3</sup>Dept. of Microbiol., Univ. of Tennessee, Knoxville, TN, <sup>4</sup>BioSci. Div., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>5</sup>Dept. of Civil and Environmental Engineering, Univ. of Tennessee, Knoxville, TN, <sup>6</sup>Ctr. for Environmental Biotechnology, Univ. of Tennessee, Knoxville, TN
- 1672 Identification of a c-Type Cytochrome Involved in Mn(IV) Reduction in *Anaeromyxobacter dehalogenans* Strain 2CP-C**  
S. Nissen<sup>1,2</sup>, X. Liu<sup>3,4</sup>, K. Chourey<sup>3</sup>, R. Hettich<sup>3,4</sup>, S. Pfiffner<sup>5</sup>, F. Löffler<sup>1,6,7</sup>; <sup>1</sup>BioSci. Div., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Dept. of Microbiol., Univ. of Tennessee, Knoxville, TN, <sup>3</sup>Chemical Sci. Div., Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>4</sup>Graduate Sch. of Genome Sci. and Technology, Univ. of Tennessee, Knoxville, TN, <sup>5</sup>Ctr. for Environmental Biotechnology, Univ. of Tennessee, Knoxville, TN, <sup>6</sup>Dept. of Microbiol., Univ. of Tennessee, Knoxville, TN, <sup>7</sup>Dept. of Civil and Environmental Engineering, Univ. of Tennessee, Knoxville, TN
- 1673 Identification of *In vivo* Functions of Two R-type Metabolic Synthases from *Dehalococcoides mccartyi* 195 Using *Desulfovibrio vulgaris* Hildenborough as a Host**  
W.-Q. Zhuang<sup>1</sup>, Q. Gui<sup>2</sup>, S. Yi<sup>1</sup>, L. You<sup>3</sup>, Y. Tang<sup>3</sup>, J. D. Wall<sup>2</sup>, L. Alvarez-Cohen<sup>1</sup>; <sup>1</sup>Univ. of California at Berkeley, Berkeley, CA, <sup>2</sup>Univ. of Missouri at Columbia, Columbia, MO, <sup>3</sup>Washington Univ. in St. Louis, St. Louis, MO



**1674** **Corrinoid Salvaging and Remodeling by *Dehalococcoides mccartyi* Strain 195 in a defined consortium containing Corrinoid-producer *Pelosinus fermentans* Strain R7**  
Y. Men<sup>1</sup>, E. C. Seth<sup>1</sup>, M. E. Taga<sup>1</sup>, R. H. Allen<sup>2</sup>, L. Alvarez-Cohen<sup>1,3</sup>;  
<sup>1</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>2</sup>Univ. of Colorado Hlth. Sci. Ctr., Denver, CO, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**1675** **Transposon and Deletion Mutagenesis of *Azospira suillum* PS Reveals Novel Factors Essential for Perchlorate Reduction Located on a Genomic Island**  
R. A. Melnyk, A. Liao, J. D. Coates; Univ. of California, Berkeley, Berkeley, CA

**1676** **The Sensor Kinase GacS Negatively Regulates Flagellar Formation and Motility in *Pseudomonas chlororaphis* O6**  
H. Kim<sup>1</sup>, B. Kang<sup>2</sup>, A. J. Anderson<sup>3</sup>, Y. Kim<sup>1</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>JARES, Naju, Republic of Korea, <sup>3</sup>Utah State Univ., Logan, UT

**1677** **Altered Gene Expression in *Pseudomonas aeruginosa* PA14 by Ginger Extract**  
H-S. Kim, H-D. Park; Korea Univ., Seoul, Republic of Korea

**1678** **Genotyping of *Bacillus anthracis* Strains Based on 25-loci Multiple Locus Variable-Number Tandem Repeats in Kazakhstan**  
I. I. Sytnik<sup>1</sup>, A. T. Daugalieva<sup>1</sup>, T. B. Karibayev<sup>1</sup>, A. S. Tashkebayev<sup>1</sup>, A. Y. Abenova<sup>1</sup>, J. C. Mullins<sup>2</sup>, K. Patel<sup>3</sup>, M. Van Ert<sup>4</sup>, J. K. Blackburn<sup>2</sup>;  
<sup>1</sup>Natl. Reference Vet. Ctr., Astana, Kazakhstan, <sup>2</sup>Univ. of Florida, SEER Lab., Emerging Pathogens Inst., Gainesville, FL, <sup>3</sup>Naval Med. Res. Ctr., Frederick, MD, <sup>4</sup>Univ. of Florida, SEER Lab., Emerging Pathogens Inst., Gainesville, FL

**1679** **Nanoparticle-Biofilm Interactions: The Importance of Chemical Composition of Extracellular Polymeric Substances**  
K. Ikuma<sup>1</sup>, A. S. Madden<sup>2</sup>, A. W. Decho<sup>3</sup>, B. L. T. Lau<sup>1</sup>; <sup>1</sup>Baylor Univ., Waco, TX, <sup>2</sup>Univ. of Oklahoma, Norman, OK, <sup>3</sup>Univ. of South Carolina, Columbia, SC

**1680** **Fe(III) Oxide Reduction by the Hyperthermophilic Archaeon *Geoglobus ahangari* by a Direct Contact Mechanism**  
M. P. Manzella, G. Reguera, K. Kashefi; Michigan State Univ., East Lansing, MI

**1681** ***Shewanella oneidensis* Requires Homocysteine for Anaerobic Biofilm Formation**  
R. E. Cooper, T. J. DiChristina; Georgia Inst. of Technology, Atlanta, GA

**1682** **Biofilm Formation and Motility of Deep-sea Bacteria *Pseudoalteromonas* Sp. SM9913**  
X. Cai, X. Wang; South China Sea Inst. of Oceanology, Guangzhou, China

**1683** **The Effects of Quorum Sensing Inhibitors on Pseudomonad Biofilm Formation in Sandy Soil**  
T. Kimmel, M. G. Galperin, J. K. Saini, L. F. Caslake; Lafayette Coll., Easton, PA

**1684** **A Systematic Study on Micromonosporae which Produce Aerial Mycelia**  
L. A. Maldonado<sup>1</sup>, E. T. Quintana<sup>2</sup>, M. Segura<sup>2</sup>, W. M. Lara<sup>1</sup>; <sup>1</sup>Inst. de Ciencias del Mar y Limnología, UNAM, Mexico DF, Mexico, <sup>2</sup>Escuela Natl. de Ciencias Biológicas, Inst. Politécnico Natl., Mexico DF, Mexico

**1685** **Improvement of Electron Transport by *Rhodobacter sphaeroides* Immobilized on the Photosensitizers, Zinc Phthalocyanine and Copper Phthalocyanine**  
H. Lee<sup>1</sup>, Y-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Republic of Korea, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Republic of Korea

## 135 Evolutionary Genomics (Division R)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1686** **Non-Parallelism, Mutators, and Protein Destabilization: Metabolic Tradeoffs in *Escherichia coli* Long-Term Evolution**  
N. Leiby; Harvard Univ., Cambridge, MA

**1687** **Genomic Changes in *E. coli* during Experimental Evolution under Stress from Desiccation and Ultraviolet-C Radiation**  
B. D. Wade<sup>1</sup>, J. E. Barrick<sup>2</sup>, R. E. Lenski<sup>1</sup>; <sup>1</sup>Dept. of Plant, Soil, and Microbial Sci., Michigan State Univ., East Lansing, MI, <sup>2</sup>Dept. of Chemistry and Biochemistry, The Univ. of Texas at Austin, Austin, TX

**1688** **Differential Adaptive Evolution of *E. coli* K-12 and B Strains under Anaerobic Stress**  
H. Kim<sup>1,2</sup>, H. Jeong<sup>1,2</sup>, D-W. Lee<sup>3</sup>, S. Lee<sup>1,2</sup>; <sup>1</sup>Korea Res. Inst. of BioSci. and Biotechnology, Daejeon, Republic of Korea, <sup>2</sup>Biosystems and Bioengineering Program, Univ. of Sci. and Technology, Daejeon, Republic of Korea, <sup>3</sup>Kyungpook Natl. Univ., Daegu, Republic of Korea

**1689** **Experimental Evolution of Cross-Feeding Laboratory Populations of *Escherichia coli***  
M. Kinnersley<sup>1</sup>, E. Kroll<sup>1</sup>, R. Rosenzweig<sup>1</sup>, G. Sherlock<sup>2</sup>, J. Wenger<sup>2</sup>;  
<sup>1</sup>Univ. of Montana, Missoula, MT, <sup>2</sup>Stanford Univ. Dept. of Genetics, Stanford, CA

**1690** **Whole Genome Resequencing of *Acinetobacter baylyi* Evolution Experiments Reveals IS1236-driven Changes in Chromosomal Structure and Competence**  
B. A. Renda, J. E. Barrick; Univ. of Texas at Austin, Austin, TX

**1691** **Experimental Evolution of *Trichoderma viride* Toward Unicellular Growth**  
H. Lin, R. J. Kazlauskas, M. Travisano; Univ. of Minnesota, Saint Paul, MN

**1692** **Phenotypic and Genomic Evolution in a Long-Term Experiment with *Desulfovibrio vulgaris* Under Salinity Stress**  
A. Zhou<sup>1</sup>, Q. Tu<sup>1</sup>, Z. He<sup>1</sup>, Q. Ma<sup>1</sup>, J. Wall<sup>2</sup>, A. Arkin<sup>3</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Univ. of Missouri-Columbia, Columbia, MO, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**1693** **The Fitness Cost of Horizontal Gene Transfer**  
D. Baltrus; Univ. of Arizona, Tucson, AZ

**1694** **Lateral Gene Transfer from a *Wolbachia* Endosymbiont to *Drosophila ananassae*: A Tale of Extensive Duplication and Epigenomic Variation**  
J. C. Dunning Hotopp<sup>1</sup>, L. Klasson<sup>2</sup>, N. Kumar<sup>1</sup>, S. G. E. Andersson<sup>2</sup>, K. B. Sieber<sup>1</sup>, R. Bromely<sup>1</sup>, L. J. Tallon<sup>1</sup>, M. Flowers<sup>1</sup>, S. H. Ott<sup>1</sup>; <sup>1</sup>Inst. for Genome Sci., Univ. of Maryland, Baltimore, MD, <sup>2</sup>Uppsala Univ., Uppsala, Sweden

**1695** **Exploring the Impacts of Biased Horizontal Gene Transfer on the Evolutionary History of the Genus *Streptomyces***  
C. P. Andam, D. H. Buckley; Cornell Univ., Ithaca, NY

**1696** **Transfer-RNA Editing, CCA Addition, and Gene Loss in a Set of Bacterial Endosymbionts**  
J. T. Van Leuven; The Univ. of Montana, Missoula, MT

**1697** **A Nucleoside Scavenging Response Controls Natural Transformation in *Vibrio cholerae***  
E. Antonova, E. Bernardy, S. Watve, J. Thomas, B. K. Hammer; Georgia Inst. of Technology, Atlanta, GA

**1698** **Contribution of Mobile Genetic Elements to *Bacillus coahuilensis* Genome Evolution: An Approach of Microevolution in Cuatro Ciénegas, Coahuila**  
Z. Gómez<sup>1</sup>, I. Hernández<sup>1</sup>, V. Souza<sup>2</sup>, G. Olmedo<sup>1</sup>; <sup>1</sup>Ctr. de Investigación y Estudios Avanzados del Inst. Politécnico Natl., Irapuato, Mexico, <sup>2</sup>Univ. Natl. Autónoma de México, México, D.F., Mexico

**1699** **Multiple Chromosomes in Bacteria: Low Level of Evolutionary Constraint Drives the Rapid Genetic Divergence of Accessory Chromosomes**  
C. P. Trahan, H. Cho, M. Choudhary; Sam Houston State Univ., Huntsville, TX

**1700 (dN/dS<1) = Selection for Function – Myth or Reality?**

S. Omer, J. P. Gogarten; Univ. of Connecticut, Storrs, CT

**1701 LuxS in Bacteria Isolated from Amber: An Ancient Mechanism of Quorum-Sensing?**T. M. Santiago-Rodriguez<sup>1</sup>, A. R. Patricio<sup>1</sup>, M. Coradin<sup>1</sup>, A. Gonzalez<sup>1</sup>, J. I. Rivera<sup>1</sup>, G. Tirado<sup>1</sup>, R. Cano<sup>2</sup>, G. A. Toranzos<sup>1</sup>; <sup>1</sup>Univ. of Puerto Rico, Rio Piedras, PR, <sup>2</sup>California Polytechnic State Univ., San Luis Obispo, CA**1702 Non-Photosynthetic, Deep-Branching Cyanobacteria of the Human Gut and Subsurface Permit Inference of the Cyanobacterial Ancestor**S. C. Di Rienzi<sup>1</sup>, I. Sharon<sup>2</sup>, K. C. Wrighton<sup>2</sup>, O. Koren<sup>1</sup>, L. A. Hug<sup>2</sup>, B. C. Thomas<sup>2</sup>, J. K. Goodrich<sup>1</sup>, J. T. Bell<sup>3</sup>, T. D. Spector<sup>3</sup>, J. F. Banfield<sup>2</sup>, R. E. Ley<sup>1</sup>; <sup>1</sup>Cornell Univ., Ithaca, NY, <sup>2</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>3</sup>King's Coll., London, United Kingdom**1703 WITHDRAWN****1704 A Unique Genome Feature of an Amoebal Endosymbiotic Primitive Chlamydiae, *Neochlamydia*, Showing Intimate Mutualistic Interaction With *Acanthamoeba***K. Ishida<sup>1</sup>, J. Matsuo<sup>1</sup>, K. Hayashida<sup>1</sup>, T. Sekizuka<sup>2</sup>, M. Kuroda<sup>2</sup>, F. Takeuchi<sup>2</sup>, H. Nagai<sup>3</sup>, C. Sugimoto<sup>1</sup>, H. Yamaguchi<sup>1</sup>; <sup>1</sup>Hokkaido Univ., Sapporo, Japan, <sup>2</sup>Natl. Inst. Infect. Dis., Tokyo, Japan, <sup>3</sup>Osaka Univ., Osaka, Japan**136 Session (Division V)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1705 *E. coli* O104:H4, the Causative Agent of the 2011 Outbreak in Germany, Associates with Human Cells and Elicits a Strong Proinflammatory Response**

C. Tartera, C. A. Elkins; FDA, Laurel, MD

**1706 Clustering of Clinical and Environmental *Escherichia coli* O104 Using the DiversiLab™ System**N. Herbold<sup>1</sup>, L. M. Clotilde<sup>2</sup>, K. M. Anderson<sup>2</sup>, J. Kase<sup>3</sup>, S. Himathongkham<sup>4</sup>, A. Lin<sup>2</sup>; <sup>1</sup>California State Univ. - East Bay, Hayward, CA, <sup>2</sup>FDA - Office of Regulatory Affairs, SAN-LAB, Alameda, CA, <sup>3</sup>FDA - Ctr. for Food Safety and Applied Nutrition - Office of Regulatory Sci., College Park, MD, <sup>4</sup>FDA - Office of Regulatory Affairs, DFS, Rockville, MD**1707 Characterization of *E. coli* O157:H7 Strains Isolated from Super-shedding Cattle**T. M. Arthur<sup>1</sup>, R. Ahmed<sup>2</sup>, M. Chase-Topping<sup>3</sup>, N. Kalchayanand<sup>1</sup>, J. W. Schmidt<sup>1</sup>, J. L. Bono<sup>2</sup>; <sup>1</sup>USDA, Agricultural Res. Service, Roman L. Hruska U.S. Meat Animal Res. Ctr., Clay Center, NE, <sup>2</sup>Publ. Hlth. Agency of Canada, Natl. Microbiol. Lab., Canadian Sci. Ctr. for Human and Animal Hlth., Winnipeg, ON, Canada, <sup>3</sup>Ctr. for Immunity, Infection and Evolution Ashworth Lab., Kings Buildings, Univ. of Edinburgh, Edinburgh, Scotland, United Kingdom**1708 SHIGA TOXIN CHEK and SHIGA TOXIN QUIK CHEK detect *Escherichia coli* Subtypes Associated with Human Disease**

D. E. Campbell, J. T. Boone, A. S. Dandro, J. F. Herbein; TechLab, Blacksburg, VA

**1709 Using the DiversiLab™ Repetitive-Sequence-Based PCR System for Molecular Characterization of Shiga Toxin-Producing *Escherichia coli***K. Anderson<sup>1</sup>, S. Zhao<sup>2</sup>, E. Liu<sup>1</sup>, S. Himathongkham<sup>3</sup>; <sup>1</sup>FDA, Alameda, CA, <sup>2</sup>FDA, Laurel, MD, <sup>3</sup>FDA, Rockville, MD**1710 Ultra-sensitive Bacterial Pathogen Detection and Molecular Viability Testing**J. Do<sup>1</sup>, K. Weigel<sup>2</sup>, J. S. Meschke<sup>2</sup>, J. Davie<sup>1</sup>, G. Cangelosi<sup>2</sup>; <sup>1</sup>AttoDx, Inc., Seattle, WA, <sup>2</sup>Univ. of Washington, Seattle, WA**1711 Synthesis of LAM-fragments to Develop New Modified DNA-aptamer Affinity Reagents for Validating *Mycobacterium Tuberculosis* Biomarkers in Urine**P. De<sup>1</sup>, D. L. Feldheim<sup>2</sup>, D. Chatterjee<sup>1</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Univ. of Colorado, Boulder, CO**1712 Early Development of a Real Time PCR Assay for the Detection and Differentiation of Group A and Group C/G Streptococci from Patients Suspected of Group A or Group C/G Streptococcal Pharyngitis**

J. de Leon, V. Armendarez, T. R. Ott, J. Ahle, T. D. Pack; Quidel Corp., San Diego, CA

**1713 A Novel RNA Virus Detection System for Environmental Waters Based on the Duplex Specific Nuclease**

R. Ravi, V. Kapoor, D. Wendell; Univ. of Cincinnati, Cincinnati, OH

**1714 Detection of the Pathogenic Oomycete *Pythium insidiosum* by Conventional and Real-Time Polymerase Chain Reaction**

A. Keeratijarut; Mahidol Univ., Bangkok, Thailand

**1715 Novel Solutions for Manual and Automated Identification of Pathogen Nucleic Acids in Various Animal Samples**

S. Essakali; Qiagen, Hilden, Germany

**1716 Direct Detection in Human Stool Samples of Bacterial Genes Associated with Intestinal Inflammation**R. Gómez-Moreno<sup>1</sup>, C. Cordero<sup>2</sup>, A. Baerga-Ortiz<sup>1</sup>; <sup>1</sup>UPR Med. Sci. Campus, San Juan, Puerto Rico, <sup>2</sup>UPR Rio Piedras Campus, San Juan, Puerto Rico**1717 Distribution of *Borrelia burgdorferi*, the Causative Agent of Lyme Disease in Ticks Across Texas**A. Brown<sup>1</sup>, A. Grover<sup>1</sup>, J. M. Pavey<sup>1</sup>, S. Kanamen<sup>1</sup>, M. Bogges<sup>2</sup>, R. F. Medina<sup>1</sup>, M. D. Esteve-Gassent<sup>1</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>Arizona State Univ., Tempe, AZ**1718 Development of a Colorimetric Assay for the Rapid Detection of Gram-Negative Bacteria**E. Ogunrinde<sup>1</sup>, M. Super<sup>2</sup>, J. Berthet<sup>2</sup>; <sup>1</sup>Florida State Univ., Tallahassee, FL, <sup>2</sup>Harvard Med. Sch. - Wyss Inst. for Biologically Inspired Engineering, Boston, MA**1719 Development of the National Reference Standards of Serums for Standardization and Validation of Diagnostic Test-Kits for Enzootic Bovine Leukosis**A. Golovko<sup>1</sup>, M. Babkin<sup>2</sup>, O. Blotska<sup>2</sup>, V. Ushkalov<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>SSCIBMS, Kyiv, Ukraine**137 Molecular Tools for Assessing Public Health Risks (Division Y)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**1720 The Impact of Whole Genome Sequencing on the Detection and Investigation of Outbreaks of *Escherichia coli* O157:H7 in the United Kingdom**P. Ashton<sup>1</sup>, T. Dallman<sup>1</sup>, C. Jenkins<sup>1</sup>, L. Cowley<sup>1</sup>, N. Perry<sup>1</sup>, L. Byrne<sup>1</sup>, R. Elson<sup>1</sup>, L. Petrovska<sup>2</sup>, J. Wain<sup>3</sup>; <sup>1</sup>Hlth. Protection Agency, London, United Kingdom, <sup>2</sup>Animal Hlth. and Vet. Lab. Agency, Surrey, United Kingdom, <sup>3</sup>Univ. of East Anglia, Norwich, United Kingdom**1721 Whole Genome Cluster Analysis Implemented in a State Public Health Laboratory Vastly Improves Outbreak Detection and Tracking of a Food-borne Pathogen**H. C. den Bakker<sup>1</sup>, M. W. Allard<sup>2</sup>, D. Bopp<sup>3</sup>, E. W. Brown<sup>2</sup>, J. Fontana<sup>4</sup>, A. Kinney<sup>4</sup>, R. Limberger<sup>3</sup>, K. A. Musser<sup>3</sup>, E. Strain<sup>5</sup>, M. Wiedmann<sup>1</sup>, W. J. Wolfgang<sup>3</sup>; <sup>1</sup>Cornell Univ., Ithaca, NY, <sup>2</sup>Office of Regulatory Sci., Ctr. for Food Safety & Applied Nutrition, FDA, College Park, MD, <sup>3</sup>Wadsworth Ctr., Bacteriology Lab., New York State Dept. of Hlth., Albany, NY, <sup>4</sup>Dr. Katherine A. Kelley State Publ. Hlth. Lab., Connecticut Dept. of Publ. Hlth., Rocky Hill, CT, <sup>5</sup>Office of Food Defense, Communications, and Emergency Response, Ctr. for Food Safety & Applied Nutrition, FDA, College Park, MD**1722 Development of CRISPR-2 Locus for Rapid Singleplex Molecular Typing of a Diverse Collection of *Escherichia coli* and RT-PCR Utility**

S. T. Gebru, M. K. Mammel, C. A. Elkins; FDA, Laurel, MD

- 1723 Diversity of *Yersinia pestis* Strains Causing Human Plague in the West Nile Region of Uganda**  
L. B. Respicio-Kingry<sup>1</sup>, B. M. Yockey<sup>1</sup>, S. Acayo<sup>2</sup>, T. Apangu<sup>2</sup>, R. J. Eisen<sup>1</sup>, P. S. Mead<sup>1</sup>, M. E. Schriefer<sup>1</sup>, J. M. Petersen<sup>1</sup>; <sup>1</sup>CDC, Fort Collins, CO, <sup>2</sup>Uganda Virus Res. Inst., Entebbe, Uganda
- 1724 Evolution of Virulence Genes of *Vibrio cholerae* Isolated from Clinical and Environmental Samples in Haiti**  
A. Ali, M. T. Alam, C. Weber, J. A. Johnson, M. Jubair, J. G. Morris, Jr; Univ. of Florida at Gainesville, Gainesville, FL
- 1725 Swine Workers are at Increased Risk of Carrying Multidrug-Resistant *Staphylococcus aureus***  
S. Wardyn, R. Nair, S. Farina, B. Forshey, A. Kates, T. Smith; Univ. of Iowa, Iowa City, IA
- 1726 Emergence of a New Clone of *Vibrio parahaemolyticus* Associated with an Outbreak of Gastroenteritis in Peru**  
R. G. Gavilan<sup>1,2</sup>, M. L. Zamudio<sup>3</sup>, J. Martinez-Urtaza<sup>4</sup>; <sup>1</sup>Ctr. for Drug Discovery and Biodiversity, Inst. for Scientific Res. and Technology Services (INDICASAT), Panama, Panama, <sup>2</sup>Smithsonian Tropical Res. Inst., Balboa, Ancon, Panama, <sup>3</sup>Inst. Natl. de Salud, Lima, Peru, <sup>4</sup>European Ctr. for Disease Prevention and Control (ECDC), Stockholm, Sweden
- 1727 *Salmonella enterica* Diversity in Central Californian Coastal Waterways**  
N. Gonzalez-Escalona<sup>1</sup>, S. P. Walters<sup>2</sup>, I. Son<sup>1</sup>, L. M. Sassoubre<sup>2</sup>, A. B. Boehm<sup>2</sup>; <sup>1</sup>CFSAN/FDA, College Park, MD, <sup>2</sup>Environmental and Water Studies, Dept. of Civil and Environmental Engineering, Stanford, CA
- 1728 Genomic Epidemiology Based on Population Structure of Commonly Circulating *Salmonella enterica* Serotype Enteritidis Lineages**  
X. Deng<sup>1</sup>, H. C. den Bakker<sup>2</sup>, P. T. Desai<sup>3</sup>, R. S. Hendriksen<sup>4</sup>, M. Mikoleit<sup>1</sup>, E. Trees<sup>1</sup>, M. McClelland<sup>3</sup>, P. I. Fields<sup>1</sup>; <sup>1</sup>Enteric Diseases Lab. Branch, Div. of Foodborne, Waterborne, and Environmental Diseases, Natl. Ctr. for Emerging and Zoonotic Infectious Diseases, CDC, Atlanta, GA, <sup>2</sup>Dept. of Food Sci., Cornell Univ., NY, <sup>3</sup>Vaccine Res. Inst. of San Diego, CA, <sup>4</sup>Div. of Bacteria Genomics and Epidemiology, WHO collaborating Ctr. for Antimicrobial Resistance in Food borne Pathogens and European Union Reference Lab. for Antimicrobial Resistance, Natl. Food Inst., Technical Univ. of Denmark, Denmark

- 1729 Recurrent MRSA Infections: A Study of Risk Factors and Molecular Epidemiology**  
A. I. Michel, M. Z. David; Univ. of Chicago, Chicago, IL
- 1730 Characterization of Washington State *V. parahaemolyticus* Clinical Isolates Associated with Illness in 2012**  
W. A. Glover, G. Olson, R. Vouk, R. Gee, B. T. Leader, A. Perez-Osorio, R. Gautom, B. Hiatt; WA State Publ. Hlth. Lab., Shoreline, WA
- 1731 Rapid Detection and Sub-Serotype Level Typing of Bacterial Organisms Using Optical Genome Sequence Scanning**  
G. Malkin, D. B. Cameron, M. A. Faggart, M. N. Manoj Kumar, S. V. Ramaswamy, D. Ropireddy, M. M. Safranovitch, S. P. Vyas, R. Gilmanshin; PathoGenetix, Woburn, MA
- 1732 Identification of Antibiotic-Resistance Genes in *Klebsiella pneumoniae* Isolates and Metagenomic Samples Using Real-Time PCR Arrays**  
M. Fosbrink<sup>1</sup>, G. Wilt<sup>1</sup>, L. Chen<sup>2</sup>, B. Kreiswirth<sup>2</sup>, V. Devgan<sup>1</sup>; <sup>1</sup>QIAGEN Sci. Inc., Frederick, MD, <sup>2</sup>Publ. Hlth. Res. Inst. Ctr., UMDNJ - New Jersey Med. Sch., Newark, NJ
- 1733 Whole Genome Mapping for the Analysis of Bacterial Strains from Foodborne Outbreaks**  
J. Miller<sup>1</sup>, M. M. Freeman<sup>2</sup>, E. M. Ribot<sup>2</sup>, P. Gerner-Smidt<sup>2</sup>, E. Zentz<sup>3</sup>; <sup>1</sup>Microbiol. Technical Services, LLC, Dunwoody, GA, <sup>2</sup>CDC, Atlanta, GA, <sup>3</sup>OpGen, Inc., Gaithersburg, MD
- 1734 The FDA MaAtPan Pipeline for Molecular Epidemiological Foodborne Outbreak Investigations: An Integrated Geo-Genomic-Bioinformatic Workflow for Pathogen Identification and Traceback**  
S. A. Jackson<sup>1</sup>, H. Fang<sup>2</sup>, B. D. Tall<sup>1</sup>, R. J. Kelly<sup>2</sup>, J. Xu<sup>2</sup>, G. Gopinath<sup>1</sup>, R. Jain<sup>3</sup>, K. L. Hari<sup>3</sup>, C. A. Elkins<sup>1</sup>, W. Tong<sup>2</sup>, M. D. Solomotis<sup>1</sup>; <sup>1</sup>FDA - CFSAN, Laurel, MD, <sup>2</sup>FDA - NCTR, Jefferson, AR, <sup>3</sup>cBio, CA

Tuesday, May 21

10:45 a.m. – 12:30 p.m.

**163 Surveillance of Microbial Susceptibility to Antimicrobials (Division A)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1735 Prevalence of  $\beta$ -Lactamase-encoding Genes in *Escherichia coli* Strains Collected in the USA: Report of the SENTRY Antimicrobial Susceptibility Program**M. Castanheira<sup>1</sup>, S. E. Farrell<sup>1</sup>, R. N. Jones<sup>1</sup>, J. R. Johnson<sup>2</sup>; <sup>1</sup>JMI Lab., North Liberty, IA, <sup>2</sup>VA Med. Ctr., Minneapolis, MN**1736 The Antimicrobial Index: A Comprehensive Literature-based Antimicrobial Database And Reference Work**

V. Amirkia; TOKU-E Biotechnology Co., Ltd., Shanghai, China

**1737 Antifungal Susceptibility of *Candida* species Involved in Clinically Significant Infections in Northeastern Pennsylvania**H. Namdari<sup>1</sup>, R. Blazaskie<sup>1</sup>, B. Oravitz<sup>1</sup>, S. Shetty<sup>2</sup>; <sup>1</sup>Clin-Micro Immunology Ctr., Clarks Summit, PA, <sup>2</sup>Regional Hosp. of Scranton, Scranton, PA**1738 Antibigram of Bacterial Isolates from Bacteremia Cases of Kathmandu University Hospital, Nepal**

S. Pant, N. R. Tuladhar; Kathmandu Univ. Hosp., Dhulikhel, Nepal

**1739 Antimicrobial Susceptibility Patterns and Virulence Characteristics of Methicillin-Resistant *Staphylococcus aureus* Isolated in a Tertiary Hospital from 2005 to 2010**

T. C. Nascimento, V. L. Silva, C. O. Fontes, M. R. B. Paiva, M. O. Fajardo, S. O. Fortunato, T. L. R. Oliveira, P. P. Castro, S. F. Silva, C. G. Diniz; Federal Univ. of Juiz de Fora, Juiz de Fora, Brazil

**1740 Antimicrobial Susceptibility Profile of *Neisseria gonorrhoeae* Isolates in Québec, Canada, 2010 – 2012**B. Lefebvre<sup>1</sup>, C. Tremblay<sup>1</sup>, S. Venne<sup>2</sup>, G. Lambert<sup>1</sup>, C. Fortin<sup>1</sup>, A.-M. Bourgault<sup>1</sup>, A.-C. Labbé<sup>1</sup>; <sup>1</sup>Inst. Natl. de Santé Publique du Québec, Montreal, QC, Canada, <sup>2</sup>Ministère de la Santé et des Services Sociaux du Québec, Montreal, QC, Canada**1741 Tracking Methicillin-Resistant *Staphylococcus aureus* among Community Clinical Isolates: A Five-Year Study**S. E. Farhat<sup>1</sup>, I. Coelho<sup>1</sup>, G. Lim<sup>1</sup>, B. Shingala<sup>1</sup>, W. P. Shih<sup>1</sup>, B. Premraj<sup>1</sup>, A. E. Simor<sup>1,2,3</sup>; <sup>1</sup>Alpha Lab. Inc., Toronto, ON, Canada, <sup>2</sup>Sunnybrook Hlth. Sci. Ctr., Toronto, ON, Canada, <sup>3</sup>Univ. of Toronto, Toronto, ON, Canada**1742 Prevalence of *mecA* Gene among *Staphylococcus* species of Farm Animal Origin in Nkonkobe Municipality, South Africa**A. A. Adegoke<sup>1,2</sup>, A. I. Okoh<sup>1</sup>, O. A. Aiyegoro<sup>1</sup>; <sup>1</sup>Univ. of Fort Hare, Alice, South Africa, <sup>2</sup>Univ. of Uyo, Uyo, Nigeria**1743 Comparative Study of the Antibigram of Urinary Tract and Vaginal Bacterial Isolates from Pregnant Women**S. O. Anyadoh-Nwadike<sup>1</sup>, P. O. Nwadike<sup>2</sup>, S. I. Okorundu<sup>1</sup>, I. O. C. Obiajuru<sup>3</sup>, F. O. Nwaokorie<sup>2</sup>, M. Mbacha<sup>2</sup>, J. O. Akerele<sup>4</sup>; <sup>1</sup>Federal Univ. of Technology, Owerri, Nigeria, <sup>2</sup>Nigeria Inst. for Med. Res., Lagos, Nigeria, <sup>3</sup>Imo State Univ., Owerri, Nigeria, <sup>4</sup>Univ. of Benin, Benin, Nigeria**1744 Distribution of Benzalkonium Chloride Resistance Genes in Community Environmental Isolates of *Staphylococci***G. He<sup>1</sup>, M. Laundry<sup>1</sup>, H. Chen<sup>2</sup>, C. Thorpe<sup>1</sup>, D. Walsh<sup>1</sup>, M. F. Varela<sup>3</sup>, H. Pan<sup>2</sup>; <sup>1</sup>Univ. of Massachusetts Lowell, Lowell, MA, <sup>2</sup>Natl. Ctr. for Toxicological Res., Jefferson, AR, <sup>3</sup>Eastern New Mexico University, Portales, NM**1745 Drug Resistance Surveillance and Different Origin Distribution of *Acinetobacter baumannii* During the 18 Years Period**

Y. Luo, Y. Zhang, J. Yang, L. Ye, Q. Zhao, L. Guo, R. Chen; Dept. of Microbiol., Chinese PLA Gen. Hosp., Beijing, China

**1746 Prevalence and Drug Susceptibility Pattern of Extended-Spectrum Beta-Lactamase Producing Bacteria, Ethiopia, 2011-2012**

N. A. Abera, T. B. Biza, S. F. Dinku, N. D. Dires, R. A. Abuboker; Ethiopian Hlth. and Nutrition Res. Inst., Addis Abab, Ethiopia

**1747 Prevalence and Antimicrobial Susceptibility of ESBP Producing *Escherichia coli* and *Klebsiella pneumoniae* Isolated from Urine in a Tertiary Care Hospital in Kathmandu, Nepal**

A. Chander, C. D. Shrestha; Kathmandu Med. Coll. Teaching Hosp., Kathmandu, Nepal

**1748 Urinary Tract Infections in Kidney Transplant Patients of Kathmandu Valley**

K. R. Rijal; Tribhuvan Univ., Kathmandu, Nepal

**1749 New Delhi Metallo- $\beta$ -Lactamase (*Bla<sub>Ndm-1</sub>*) in Gram-Negative Rods: Causing Infections in Children**

M. Qamar, R. Zahra; Quaid-I-Azam Univ., Islamabad, Pakistan

**1750 Continuously Increasing Antibiotic-Resistance among Urinary Clinical Isolates of *Pseudomonas aeruginosa*: An Alarming Situation for Clinicians in Pakistan**A. Shafiq<sup>1</sup>, S. T. Hakim<sup>1</sup>, S. G. Nadeem<sup>2</sup>; <sup>1</sup>Virology & Tissue Culture Laboratory, Jinnah Univ. For Women, Karachi, Pakistan, <sup>2</sup>Med. Mycology Res. & Reference Lab., Dept. of Microbiol., Jinnah Univ. for Women, Karachi, Karachi, Pakistan**1751 Antimicrobial Susceptibility Patterns of *Gardnerella vaginalis* and Vaginolysin Gene in Isolates from Women with Symptomatic Bacterial Vaginosis and Asymptomatic Patients**

D. M. K. Souza, C. G. Diniz, L. M. A. Oliveira, D. M. Coelho, L. S. Talha, T. C. Nascimento, A. B. Ferreira-Machado, V. L. Silva; Federal Univ. of Juiz de Fora, Juiz de Fora, Brazil

**1752 Metallo-Beta-Lactamase Production among Gram-Negative Bacilli Isolated from Clinical Samples at the Medical Research Institute in Alexandria, Egypt**M. G. B. M. Abdalla<sup>1</sup>, E. El-Sherbiny<sup>2</sup>, H. Abou Shleib<sup>3</sup>, G. Helaly<sup>2</sup>, A. Ghazal<sup>2</sup>; <sup>1</sup>Bibliotheca Alexandrina, Alexandria, Egypt, <sup>2</sup>Med. Res. Inst., Alexandria Univ., Alexandria, Egypt, <sup>3</sup>Faculty of Pharmacy, Alexandria Univ., Alexandria, Egypt**1753 Blood Culture Monitoring Provides Antimicrobial Stewardship Opportunities**R. G. Washburn<sup>1,2</sup>, A. K. Heckman<sup>1</sup>, B. J. York<sup>1</sup>, V. L. Moore<sup>1</sup>, S. A. Dauenhauer<sup>1,2</sup>; <sup>1</sup>Shreveport VA Med. Ctr., Shreveport, LA, <sup>2</sup>Louisiana State Univ. Hlth., Shreveport, LA**1754 ESBP-producing *E. coli* Isolated from Hospitalized Patients at a Neurosurgery Hospital: Clinical History and Characterization of Isolates**K. Yamada<sup>1</sup>, A. Kanayama<sup>2</sup>, I. Kobayashi<sup>2</sup>; <sup>1</sup>Dept. of Pharmacy, Nakamura Mem. South Hosp., Sapporo, Japan, <sup>2</sup>Dept. of Infection Control and Prevention, Sch. of Nursing, Faculty of Med., Toho Univ., Tokyo, Japan**1755 Characterization of Resistance Genes and Plasmids from Outbreak-associated *Salmonella* Resistant to Ceftriaxone in the United States, 2011-2012**J. P. Folster<sup>1</sup>, J. Grass<sup>1,2</sup>, A. Bicknese<sup>1,3</sup>, J. Taylor<sup>1,4</sup>, J. M. Whichard<sup>1</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>Atlanta Res. Fndn., Atlanta, GA, <sup>3</sup>ORISE, Oakridge, TN, <sup>4</sup>IHR, Inc, Atlanta, GA



**1756 Detection of Extended-Spectrum  $\beta$ -Lactamase-Producing Enterotoxigenic *Escherichia coli* isolates in Thailand, Nepal, Vietnam, Cambodia, Uzbekistan and Kenya from 2001 to 2010**  
P. Kietsiri, W. Nirdnoy, A. Srijan, K. Poramathikul, B. Wongstitwilairoong, S. Raksasiri, L. Bodhidatta, C. J. Mason; Armed Forces Res. Inst. of Med. Sci., Bangkok, Thailand

**1757 Coexistence of *bla*CTX-M, *bla*TEM, *bla*SHV, *bla*IMP, *bla*VIM & *bla*NDM in Multidrug-Resistant *Escherichia coli* Isolates in Kathmandu, Nepal**  
R. H. Pokhrel<sup>1</sup>, R. Kafle<sup>1</sup>, A. Gautam<sup>1</sup>, C. Tribuddharat<sup>2</sup>, B. Thapa<sup>3</sup>, <sup>1</sup>St. Xaviers Coll., Kathmandu, Nepal, <sup>2</sup>Dept. of Microbiol., Faculty of Med., Siriraj Hosp., Mahidol Univ., Bangkok, Thailand, <sup>3</sup>Genesis Lab. & Res., Kathmandu, Nepal

**1758 Serovars and Antimicrobial Resistance of Nontyphoidal *Salmonella* from Human Patients in Shanghai, China, 2006 – 2010**  
Z. Jianmin<sup>1</sup>, X. Xuebin<sup>2</sup>, M. Jianghong<sup>3</sup>, J. Huiming<sup>2</sup>, H. Jiayu<sup>2</sup>, Y. Zhengang<sup>2</sup>, S. Weimin<sup>4</sup>, R. Lu<sup>5</sup>, Z. Shaohua<sup>6</sup>, Y. Xiaowei<sup>1</sup>; <sup>1</sup>Shanghai Jiao Tong Univ., Shanghai, China, <sup>2</sup>Shanghai Ctr. for Disease Control and Prevention, Shanghai, China, <sup>3</sup>Joint Inst. for Food Safety and Applied Nutrition (JIFSAN), Univ. of Maryland, Park, MD, <sup>4</sup>Shanghai Municipal Ke-Ma-Jia Technology Ctr. for Microbiol., Shanghai, China, <sup>5</sup>China Ctr. for Disease Control and Prevention, Beijing, China, <sup>6</sup>Ctr. for Vet. Med., FDA, Laurel, MD

**1759 Reclassification of *Staphylococcal* Cassette Chromosome *mec* and Susceptibility Testing from Livestock-Associated Methicillin-Resistant *Staphylococcus aureus* ST9 in Taiwan**  
M. Wan, Y. Lo, C. Chou; Sch. of Vet. Med., Natl. Taiwan Univ., Taipei, Taiwan

**1760 Comprehensive Update of Dalbavancin Activity when Tested against Uncommonly Isolated *Streptococci*, *Corynebacterium* spp., *Listeria monocytogenes* and *Micrococcus* spp.**  
R. N. Jones, R. K. Flamm, H. S. Sader, M. G. Stilwell; JMI Lab., North Liberty, IA

**1761 Prevalence of *blaz* in *Staphylococci* Isolated from Blood Cultures in University Hospital in Japan**  
S. Chihara<sup>1</sup>, Y. Yamamoto<sup>2</sup>, S. Koike<sup>3</sup>; <sup>1</sup>Southern Illinois Univ., Springfield, IL, <sup>2</sup>Dokkyo Med. Univ. Hosp. Koshigaya, Koshigaya, Japan, <sup>3</sup>Dokkyo Med. Univ., Shimotsuga-Gun, Japan

**164 Biofilm Formation and Interactions of Pathogens – I (Division B)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1762 Protease Production of *Staphylococcus epidermidis* and Its Effect on *Staphylococcus aureus* Biofilms**  
I. Vandecastelaere<sup>1</sup>, P. Depuydt<sup>2</sup>, H. Nelis<sup>1</sup>, T. Coenye<sup>1</sup>; <sup>1</sup>Lab. of Pharmaceutical Microbiol., Ghent Univ., Ghent, Belgium, <sup>2</sup>Ghent Univ. Hosp., Ghent, Belgium

**1763 Temporal Characterization Of *Streptococcus pneumoniae* Biofilms in the Nasopharynx: Biofilm Formation Is Multifactorial**  
K. A. Blanchette, R. Akula Suresh Babu, C. Orihuela; Univ. of Texas Hlth. Sci. Ctr. at San Antonio, San Antonio, TX

**1764 Role of ORF1798 in Biofilm Formation by *Staphylococcus aureus***  
W.-C. Chien<sup>1</sup>, H.-Y. Huang<sup>1</sup>, M.-H. Lin<sup>1,2</sup>; <sup>1</sup>Dept. of Med. Technology and Lab. Sci., Chang Gung Univ., Tao-Yuan, Taiwan, <sup>2</sup>Graduated Inst. of Med. Technology and Lab. Sci., Chang Gung Univ., Taiwan

**1765 Autoinducer-2-mediated Signaling In Biofilm Formation of *Enterococcus faecalis***  
F. S. Rossmann<sup>1,2</sup>, E. Rabener<sup>3,2</sup>, A.-K. Diederich<sup>1,2</sup>, K. Jung<sup>3,2</sup>, J. Huebner<sup>1,2</sup>; <sup>1</sup>Hauner Children's Hosp., Munich, Germany, <sup>2</sup>Ludwigs Maximilian Univ., Munich, Germany, <sup>3</sup>Ctr. for Integrated Protein Sci., Dept. of Biol. I, Microbiol., Munich, Germany

**1766 Lpg2107: *Legionella pneumophila* Protein Involved in Metal Response and Biofilm Morphology**  
A. Harmon, B. Jenkins, T. L. McNealy; Clemson Univ., Clemson, SC

**1767 A *Vibrio cholerae* Degenerate Diguanilate cyclase Regulates Biofilm Formation and Motility Through Synthesis of Cyclic di-GMP**  
J. L. Hunter, B. J. Koestler, C. Waters; Michigan State Univ., East Lansing, MI

**1768 Vaccine Development in *Staphylococcus aureus* Biofilm Infections**  
D. L. Allison, J. M. Harro, M. E. Shirtliff; Univ. of Maryland Dental Sch., Baltimore, MD

**1769 Prevalence of Some Virulence Genes among Biofilm Forming Methicillin Resistant *Staphylococcus aureus* Isolates Obtained from Patients in Egyptian Hospitals**  
A. A. Y. Abouelfetouh<sup>1,2</sup>, N. K. Moussa<sup>1</sup>; <sup>1</sup>Alexandria Univ., Alexandria, Egypt, <sup>2</sup>Loyola Univ. Chicago, Chicago, IL

**1770 Prophage Insertions in *mlrA* are not the Major Obstacle to Biofilm Formation in *Escherichia coli* O157:H7**  
G. A. Uhlich<sup>1</sup>, C.-Y. Chen<sup>1</sup>, E. G. Dudley<sup>2</sup>, C. S. Hofmann<sup>1</sup>, B. J. Cottrell<sup>1</sup>; <sup>1</sup>Eastern Regional Res. Ctr., Wyndmoor, PA, <sup>2</sup>Penn State Univ., University Park, PA

**1771 Vibriobactin Mediated Biofilm Formation in *Vibrio cholerae***  
A. D. Angotti, E. Karatan; Appalachian State Univ., Boone, NC

**1772 Phase Variation Associated with Hemolytic Activity in *Staphylococcus aureus* Biofilms**  
M. D. Sekedat, B. R. Boles; Univ. of Michigan, Ann Arbor, MI

**1773 Non-typeable *Streptococcus pneumoniae*: Persistence and Virulence in the Chinchilla Otitis Media Model**  
K. Murrah<sup>1</sup>, S. H. Richardson<sup>1</sup>, B. Pang<sup>1</sup>, M. Nahm<sup>2</sup>, W. E. Swords<sup>1</sup>; <sup>1</sup>Wake Forest Sch. of Med., Winston-Salem, NC, <sup>2</sup>Univ. of Alabama at Birmingham, Birmingham, AL

**1774 Nontypeable *Haemophilus influenzae* Enhances Pneumococcal Survival and Biofilm Formation by Inhibiting Autolysis and Fratricide**  
W. Hong, P. Pawjai Khampang, C. Erbe, S. R. Taylor, J. E. Kerschner; Med. Coll. of Wisconsin, Milwaukee, WI

**1775 *msa* Operon Regulates Autolysis and Biofilm Development in Community-Acquired MRSA Strain Type USA300**  
G. S. Sahukhal, M. O. Elasi; The Univ. of Southern Mississippi, Hattiesburg, MS

**1776 Biofilm Formation in Wild Type and Mutant *Haemophilus ducreyi***  
E. Nawrocki, T. Humphreys; Allegheny Coll., Meadville, PA

**1777 Identification and Characterization of eDNA in *Mycobacterium avium* biofilms**  
S. J. Rose, B. M. Jeffrey, L. E. Bermudez; Oregon State Univ., Corvallis, OR

**1778 Enhanced Intracellular Survival of Group A Streptococci in Macrophages Infected with Microsporidia**  
A. Nassar, M. Dao; Univ. of South Florida, Tampa, FL

**165 Surface Structures of Pathogens (Division B)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1779 Peptide Binding and Import by the Oligopeptide Permease Transport System of *Moraxella catarrhalis***  
M. M. Jones<sup>1</sup>, M. E. Rosenblum<sup>2</sup>, M. G. Malkowski<sup>2</sup>, T. F. Murphy<sup>1</sup>; <sup>1</sup>Univ. at Buffalo SUNY, Buffalo, NY, <sup>2</sup>Hauptman Woodward Res. Inst., Buffalo, NY

**1780 Different *Burkholderia pseudomallei* Lipopolysaccharide (LPS) Types Cause Differential Stimulations of Nitric Oxide (NO) Production in Murine Macrophages**  
S. Grasso, J. Stone, F. Monroy, P. Keim, A. Tuanyok; Northern Arizona Univ., Flagstaff, AZ

- 1781 The Cell Surface Determinant EdpA Is Involved in Fluoroquinolone Tolerance in *Pseudomonas aeruginosa***  
W. J. Knapen<sup>1</sup>, V. R. Liebens<sup>1</sup>, V. N. De Groote<sup>1</sup>, N. Verstraeten<sup>1</sup>, C. I. Kint<sup>1</sup>, A. Jans<sup>1</sup>, M. Fauvar<sup>1</sup>, J. Michiels<sup>1</sup>, K U Leuven<sup>1</sup>, Leuven, Belgium
- 1782 The Hxc Type II Secretion System Is Required for the Secretion of PstS and DING but Not for Production of PstS/DING Appendages**  
M. Shah<sup>1,2</sup>, K. Scott<sup>1</sup>, A. Zaborin<sup>2</sup>, N. Belogortseva<sup>2</sup>, J. C. Alverdy<sup>2</sup>, O. Y. Zaborina<sup>2</sup>, <sup>1</sup>Univ. of Auckland, Auckland, New Zealand, <sup>2</sup>Univ. of Chicago, Chicago, IL
- 1783 Type 1c O-antigen Modification of *Shigella flexneri*: Its Origin and Virulence Properties**  
S-S. Tang<sup>1,2</sup>, N. Verma<sup>1</sup>, <sup>1</sup>Australian Natl. Univ., Canberra, Australia, <sup>2</sup>Malaya Univ., Kuala Lumpur, Malaysia
- 1784 Flagella Comprised of FlaC and FlaE Are Necessary and Sufficient to Confer Virulence to *Vibrio vulnificus* in a Mouse Model**  
P. A. Gulig, J. Comiskey, N. Rezaie, P. C. Thiaville, M. S. Tucker; Univ. of Florida Coll. of Med., Gainesville, FL
- 1785 Regulatory Effects of Anti-Virulence Compounds Targeting UPEC CUP pili**  
S. E. Greene<sup>1</sup>, E. Chorell<sup>2</sup>, J. S. Pinkner<sup>1</sup>, M. Hadjifrangiskou<sup>1,3</sup>, K. W. Dodson<sup>1</sup>, F. Almquist<sup>2</sup>, S. J. Hultgren<sup>1</sup>; <sup>1</sup>Washington Univ. in St. Louis, St. Louis, MO, <sup>2</sup>Umea Univ., Umea, Sweden, <sup>3</sup>Vanderbilt Univ., Nashville, TN
- 1786 Characterization of Cnm Modification in *Streptococcus mutans* OMZ175**  
A. Avilés-Reyes, J. H. Miller, P. J. Simpson-Haidaris, J. Abranches, J. A. Lemos; Univ. of Rochester, Rochester, NY
- 1787 The Collagen-binding Adhesin, Cnm, Contributes to *Streptococcus mutans* Virulence In vivo**  
J. Miller<sup>1</sup>, A. Avilés-Reyes<sup>1</sup>, K. Scott-Anne<sup>1</sup>, S. Gregoire<sup>1</sup>, E. Sampson<sup>2</sup>, A. Progulski-Fox<sup>2</sup>, H. Koo<sup>1</sup>, J. Lemos<sup>1</sup>, J. Abranches<sup>1</sup>; <sup>1</sup>Univ. of Rochester, Rochester, NY, <sup>2</sup>Univ. of Florida, Gainesville, FL
- 1788 Conformation-Function Relationships in the Chaperone-Usher Pathway**  
V. Kalas, E. Volkan, J. S. Pinkner, R. Galletto, Z. Han, J. W. Janetka, S. J. Hultgren; Washington Univ. in St. Louis, St. Louis, MO
- 1789 Characterisation of the Gonococcal Homologue of Factor H Binding Protein**  
I. Jongerius<sup>1</sup>, H. Lavender<sup>1</sup>, L. Tan<sup>2</sup>, N. Ruivo<sup>2</sup>, R. M. Exley<sup>1</sup>, S. Johnson<sup>1</sup>, S. M. Lea<sup>1</sup>, C. M. Tang<sup>1</sup>; <sup>1</sup>Univ. of Oxford, Oxford, United Kingdom, <sup>2</sup>Imperial Coll. London, London, United Kingdom
- 1790 Characterization of Fibrinogen Binding by Glycoproteins Srr1 and Srr2 of *Streptococcus agalactiae***  
H. Seo, P. Sullam; SFVAMC, San Francisco, CA
- 1791 Ficolin-2 Binds Many Pneumococcal Serotypes With *wcjE***  
A. M. Brady, J. J. Calix, J. Yu, M. H. Nahm; Univ. of Alabama at Birmingham, Birmingham, AL
- 1792 Novel Motility Genes of *Campylobacter jejuni* Identified by INSeq Approach**  
B. Gao, J. E. Galan; Yale Univ., New Haven, CT
- 1793 The Adhesin Complex Protein (ACP) of *Nisseria meningitidis* Is a New Adhesin with Vaccine Potential**  
M-C. Hung, J. E. Heckels, M. Christodoulides; Univ. of Southampton, Southampton, United Kingdom
- 1794 Characterization of *Helicobacter pylori* Outer Membrane Protein, HomB**  
S. L. Servetas<sup>1</sup>, J. Kang<sup>2</sup>, J. Cha<sup>2</sup>, D. Merrell<sup>1</sup>; <sup>1</sup>Uniformed Service Univ. of Hlth. Sci., Bethesda, MD, <sup>2</sup>Yonsei Univ. Coll. of Dentistry, Seoul, Republic of Korea
- 1795 Identification of the *In vivo* Binding Target of *Proteus mirabilis* MR/P Fimbriae**  
J. Schaffer<sup>1</sup>, L. Wang<sup>2</sup>, L. Mahal<sup>2</sup>, M. Pearson<sup>1</sup>; <sup>1</sup>New York Univ. Med. Ctr., New York City, NY, <sup>2</sup>New York Univ., New York City, NY

- 1796 The Effect of O Antigen Loss on the Composition of Outer Membrane Vesicles Secreted by *Klebsiella pneumoniae***  
B. K. Cahill, T. N. Ellis; Univ. of North Florida, Jacksonville, FL
- 1797 ESBL Strains of *Klebsiella pneumoniae* Exhibit a Distinct Outer Membrane Vesicle Protein Composition than Strains with a Single Resistance Phenotype**  
R. Brookins, C. Harris, M. MacIntyre, T. N. Ellis; Univ. of North Florida, Jacksonville, FL
- 1798 Structural Characterization of the Cell Wall Lipidome of Strain Bp82 of *Burkholderia pseudomallei***  
M. M. Hayes, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 1799 Export and Assembly of S-layer Proteins in *Bacillus anthracis* Requires S-layer Assembly Protein Q**  
S-M. Nguyen-Mau, D. Missiakas, O. Schneewind; Univ. of Chicago, Chicago, IL

## 166 Gram Positive Molecular Identification (Division C)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 1800 Fatal *Clostridium* spp. Infections Identified by PCR and Sequencing in Tissue Specimens of Patients with Diverse Disease Spectra: Rare or Unsuspected and Underdiagnosed Infections**  
J. Bhatnagar, M. DeLeon-Carnes, M. Patel, T. Jones, W-J. Shieh, J. M. Ritter, S. R. Zaki, C. D. Paddock; Infectious Diseases Pathology Branch, CDC, Atlanta, GA
- 1801 Use of the ESwab for the Detection of MRSA: A Comparison Between Two Different Commercial PCR Methods**  
S. Silbert, C. Kubasek, D. Uy, R. Widen; Tampa Gen. Hosp., Tampa, FL
- 1802 Evaluation of the *Illumigene* Group A *Streptococcus* Assay for the Diagnosis of Acute Pharyngitis in Pediatric Patients**  
K. Batoon<sup>1</sup>, C. M. Polanco<sup>1</sup>, J. Dien Bard<sup>2</sup>; <sup>1</sup>Children's Hosp. Los Angeles, Los Angeles, CA, <sup>2</sup>Children's Hosp. Los Angeles, Univ. of Southern California, Los Angeles, CA
- 1803 Evaluation of the Nanosphere Verigene BC-GP test for Direct Detection of Gram-Positive Bacteria and Resistance Genes from Positive Blood Cultures in Pediatric Patients**  
C. M. Polanco<sup>1</sup>, J. Dien Bard<sup>2</sup>; <sup>1</sup>Children's Hosp. Los Angeles, Los Angeles, CA, <sup>2</sup>Children's Hosp. Los Angeles, Univ. of Southern California, Los Angeles, CA
- 1804 Evaluation of the Comparative Performance of Verigene Gram-Positive Blood Culture Nucleic Acid System to Conventional and Other Nucleic Acid Techniques in a Tertiary-Care Hospital in Kuwait**  
I. M. A. H. Mokadas, A. A. Behbehani, A. A. Abdulla, S. A. Shatti; Ibn Sina Hosp., Shulaibikhat, Kuwait
- 1805 Evaluation of the Analytical Reactivity (Inclusivity) and Analytical Specificity (Cross-Reactivity) of the BD MAX™ StaphSR Assay, a New Automated Molecular Assay\***  
D. Roy, F. Hamel, A. Charbonneau, J. Pinard-Lachapelle, M. Boutin, N. Dionne, S. Matte, C. Coulombe, E. Kadiric, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada
- 1806 Evaluation of the Analytical Sensitivity (Limit of Detection) of the BD MAX™ StaphSR Assay, a New Automated Molecular Assay\***  
D. Roy, F. Hamel, A. Charbonneau, J. Pinard-Lachapelle, M. Boutin, N. Dionne, S. Matte, C. Coulombe, E. Kadiric, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada
- 1807 Evaluation of Cepheid Xpert® Group B Streptococcus (GBS) LB Real Time PCR Assay on the Cepheid GeneXpert® Infinity System**  
P. Ferrier<sup>1</sup>, E. Thonen-Kerr<sup>2</sup>; <sup>1</sup>Univ. of Minnesota Med. Sch. & U of MN Med Ctr., Fairview, Minneapolis, MN, <sup>2</sup>Univ. of Minnesota Med. Ctr., Fairview, Minneapolis, MN

**1808 Evaluation of DNA Extraction Methods and Sensitivity of Tissue PCR Detection of *Staphylococcus aureus* and Coagulase Negative Staphylococci (CNS) Associated with Prosthetic Joint Infection (PJI)**  
S. Ryu<sup>1</sup>, K. Greenwood-Quaintance<sup>1</sup>, A. Hanssen<sup>2</sup>, R. Patel<sup>1,3</sup>; <sup>1</sup>Div. of clinical Microbiol., Mayo Clinic, Rochester, MN, <sup>2</sup>Dept. of Orthopedic Surgery, Mayo Clinic, Rochester, MN, <sup>3</sup>Div. of Infectious Diseases, Mayo Clinic, Rochester, MN

**1809 Test Performance of the Xpert® GBS-LB Assay Using LIM Broth Enrichment Compared to Illumigene® GBS**  
W. Sae-Ow<sup>1</sup>, T. Enomoto<sup>2</sup>, C. Russell<sup>2</sup>, C. Ying<sup>2</sup>, T. Koyamatsu<sup>2</sup>, W. Kim<sup>2,3</sup>, M. J. Bankowski<sup>2,3</sup>; <sup>1</sup>Univ. of Hawaii, Dept. of Pathology, Honolulu, HI, <sup>2</sup>Diagnostic Lab. Services, Inc., Aiea, HI, <sup>3</sup>John A. Burns Sch. of Med. and the Univ. of Hawaii at Manoa, Dept. of Pathology, Honolulu, HI

**1810 Validation of the BD MAX™ GBS Assay in a Clinical Laboratory**  
C. Kubasek, V. Healer, S. Silbert, R. Widen; Tampa Gen. Hosp., Tampa, FL

**1811 Validation of the BD MAX™ MRSA Assay in a Clinical Laboratory**  
V. Healer, S. Silbert, R. Widen; Tampa Gen. Hosp., Tampa, FL

**1812 Evaluation of Illumigene® Group A Streptococcus DNA Amplification Assay for the Detection of *Streptococcus pyogenes* from Throat Swabs**  
J. A. Daly<sup>1</sup>, K. Pierce<sup>2</sup>, T. Barney<sup>1</sup>, A. J. Blaschke<sup>2</sup>, K. Ampofo<sup>2</sup>, K. Korgenski<sup>3</sup>, A. Phillips<sup>1</sup>, M. Dickey<sup>1</sup>, J. A. Daly<sup>1</sup>; <sup>1</sup>Primary Children's Med. Ctr., Salt Lake City, UT, <sup>2</sup>Univ. of Utah Hlth. Sci. Ctr., Salt Lake City, UT, <sup>3</sup>Univ. of Utah Hlth. Sci. Ctr., Primary Children's Med. Ctr., Salt Lake City, UT

**1813 The Diagnostic Accuracy of Verigene® BC-GP for the Detection of Pathogenic Gram-Positive Organisms from Positive Blood Culture in a Veteran Population**  
C. Hongsermeier, Daniel T. Merrick, Neelam Ojha; Eastern Colorado Healthcare System, Denver, CO

**1814 Evaluation of the Nanosphere Verigene® Gram-Positive Blood Culture Nucleic Acid Test (BC-GP)**  
R. Podzorski<sup>1</sup>, E. Heen<sup>2</sup>, M. Mesa<sup>1</sup>, S. Feitel<sup>1</sup>, S. Rockteacher<sup>1</sup>, A. Sabourin<sup>1</sup>, L. Hartzel<sup>1</sup>, K. Leidinger<sup>1</sup>, M. Jozwiak<sup>1</sup>, J. Mayhew<sup>1</sup>, H. Graves<sup>1</sup>, B. Moerschel<sup>1</sup>, M. Schlosser<sup>1</sup>; <sup>1</sup>Waukesha Mem. Hosp., Waukesha, WI, <sup>2</sup>Marquette Univ., Milwaukee, WI

**1815 Comparative Detection of *Staphylococcus aureus* Genotypic Data Between Blood Culture Broth and Subcultured Isolates**  
C. S. Kraft, T. Alam, R. A. Petit, III, E. K. Crispell, S. W. Satola, T. D. Read; Emory Univ., Atlanta, GA

**1816 Evaluation and Application of KBM Immunochromato-MRSA for Detection of MRSA**  
S. Nihonyanagi<sup>1</sup>, Y. Adachi<sup>1</sup>, S. Muneakata<sup>1</sup>, H. Matsui<sup>2</sup>, L. Cui<sup>2</sup>, H. Hanaki<sup>2</sup>, K. Sunakawa<sup>3</sup>; <sup>1</sup>Kitasato Univ. Hosp., Kanagawa, Japan, <sup>2</sup>Kitasato Inst. for Life Sci., Kitasato Univ., Tokyo, Japan, <sup>3</sup>Kitasato Univ. Research Organization for Infection Control Sci., Tokyo, Japan

**1817 Accurate and Rapid Detection of Gram-Positive Organisms in Positive Blood Cultures Using the Verigene Gram-Positive Blood Culture Test in a Tertiary Pediatric Population**  
N. N. Turner<sup>1</sup>, S. S. Roundtree<sup>1</sup>, D. L. Blecker-Shelly<sup>1</sup>, K. V. Ota<sup>1,2</sup>; <sup>1</sup>The Children's Hosp. of Philadelphia, Philadelphia, PA, <sup>2</sup>Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA

**1818 Detection of *Streptococcus pyogenes* Using Illumigene® Group A Streptococcus Assay**  
A. M. Henson<sup>1,2</sup>, D. Carter<sup>1</sup>, K. Todd<sup>1</sup>, S. Shulman<sup>1,3</sup>, X. Zheng<sup>1,3</sup>; <sup>1</sup>Ann & Robert H. Lurie Children's Hosp. of Chicago, Chicago, IL, <sup>2</sup>Rush Univ. Coll. of Hlth. Sci., Chicago, IL, <sup>3</sup>Northwestern Univ. Feinberg Sch. of Med., Chicago, IL

**1819 Performance Characteristics of a Fully-Automated Assay on the cobas® 4800 System to Detect Methicillin-Resistant *Staphylococcus aureus* (MRSA) and *Staphylococcus aureus* (SA)**  
K. Lu, R. Kotadia, T. Jackson, D. Victoria, M. Lewinski, J. Osiecki; Roche Molecular Systems, Pleasanton, CA

**1820 Evaluation of the Nanosphere Verigene Gram-Positive Blood Culture Assay with VersaTREK Blood Culture System**  
S. G. Beal, J. Ciurca, G. Smith, J. John, F. Lee, C. Doern, R. M. Gander; UT Southwestern, Dallas, TX

**1821 Molecular Microbiologic Detection of Prosthetic Joint Infection (PJI) Using Implant Sonication and the Abbott PLEX-ID System**  
K. E. Greenwood-Quaintance<sup>1</sup>, J. R. Uhl<sup>1</sup>, A. D. Hanssen<sup>1</sup>, R. Sampath<sup>2</sup>, J. N. Mandrekar<sup>1</sup>, R. Patel<sup>1</sup>; <sup>1</sup>Mayo Clinic Coll. of Med., Rochester, MN, <sup>2</sup>Abbott, Calsbad, CA

**1822 Reducing Time to *Staphylococcus* Identification in Positive Blood Cultures from Pediatric Patients Using *Staphylococcus* QuickFISH™**  
M. T. Dickey<sup>1</sup>, T. Barney<sup>1</sup>, J. Daly<sup>1,2</sup>, K. Korgenski<sup>1</sup>, A. Phillips<sup>1</sup>; <sup>1</sup>Primary Children's Med. Ctr., Salt Lake City, UT, <sup>2</sup>Univ. of Utah Hlth. Sci., Salt Lake City, UT

**1823 A Comparison Study of Recombinase Polymerase Amplification Assay to Real Time PCR for the Rapid Detection of Group B Streptococci**  
R. K. Daher<sup>1,2</sup>, G. Stewart<sup>3</sup>, M. Boissinot<sup>3</sup>, M. G. Bergeron<sup>3</sup>; <sup>1</sup>Univ. Laval, Quebec, QC, Canada, <sup>2</sup>Ctr. de Recherche du CHU de Québec, Ctr. de Recherche en Infectiologie du CHUL, Quebec, QC, Canada, <sup>3</sup>Ctr. de Recherche du CHU de Québec, Ctr. de Recherche en Infectiologie du CHUL, Quebec, QC, Canada

**1824 Comparative Evaluation of Two PCR Assays for the Detection of Group B Streptococci in Lim Broth Cultures**  
D. J. Chen, J. Advent, C. Starkey, S. Vogel, M. La Salvia, G. W. Procop, S. S. Richter; Cleveland Clinic, Cleveland, OH

**1825 Evaluation of a Liquid Medium Transport Swab (sigma-transwab) for the Detection of MRSA Using the Cepheid Genexpert PCR Analyser**  
K. Khan, H. L. Jones; NHS Heatherwood and Wexham Park Hosp., Slough, United Kingdom

**1826 First Evaluation of the BD MAX StaphSR\* Assay for the Detection of Methicillin Susceptible and Resistant *Staphylococcus aureus* from Samples**  
P. O. Verhoeven<sup>1,2</sup>, A. Epercieux<sup>1</sup>, A. Carricajo<sup>1,2</sup>, S. Pilet<sup>1,2</sup>, F. Laurent<sup>3</sup>, F. Vandenesch<sup>3</sup>, P. Berthelot<sup>1,2,4</sup>, B. Pozzetto<sup>1,2</sup>, F. Grattard<sup>1,2</sup>; <sup>1</sup>Lab. of Bacteriology-Virology-Hygiene, Univ. Hosp. of Saint-Etienne, Saint-Etienne, France, <sup>2</sup>GIMAP EA, Univ. of Lyon, Saint-Etienne, France, <sup>3</sup>Ctr. Natl. de Référence des Staphylocoques, Lab. of Bacteriology, Hospices Civils de Lyon, Lyon, France, <sup>4</sup>Infectious Diseases Dept., Univ. Hosp. of Saint-Etienne, Saint-Etienne, France

**1827 Comparison of Three Manual Nucleic Acid Extraction Methods Using Whole Blood for Detecting *Staphylococcus aureus* in a Canine Sepsis Model Using PCR/Pyrosequencing**  
J. A. Jordan<sup>1</sup>, C. D. McCann<sup>1</sup>, C. Natanson<sup>2</sup>, S. B. Solomon<sup>2</sup>; <sup>1</sup>The George Washington Univ., Washington, DC, <sup>2</sup>NIH, Bethesda, MD

**167 Gram Positive Non-Molecular Identification (Division C)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1828 Direct Identification of Bacteria in Positive Blood Cultures: Comparison of 2 Rapid Methods, FilmArray and Mass Spectrometry**  
K. H. Rand, J. P. Delano; Univ. of Florida, Gainesville, FL



**1829 Reliability of Newly Developed Immunochromatographic Test for the Detection of Group B Streptococcus in the Clinical Specimens**  
H. Matsui<sup>1</sup>, Y. Takeuchi<sup>2</sup>, K. Okue<sup>2</sup>, M. Higashide<sup>3</sup>, L. Cui<sup>1</sup>, T. Nakae<sup>1</sup>, H. Hanaki<sup>1</sup>; <sup>1</sup>Kitasato Univ., Tokyo, Japan, <sup>2</sup>Kohjin Bio Co., Ltd., Saitama, Japan, <sup>3</sup>Kotobiken Med. Lab., Inc., Ibaraki, Japan

**1830 Reflexive Culture after Negative Rapid Antigen Detection Tests in Adolescents and Adults with Suspected Group A Streptococcal Pharyngitis**  
T. C. Dingle, A. N. Abbott, F. C. Fang; Univ. of Washington, Seattle, WA

**1831 Prevalence of Bacterial Vaginosis and Predictive Value of Clinical Diagnosis among Pregnant Women Attending Antenatal Care in Tikur Anbessa University Hospital, Addis Ababa, Ethiopia**  
Z. Mengistie Simeneh<sup>1</sup>, Y. Woldeamanuel<sup>2</sup>, D. Asrat<sup>2</sup>, M. Yigeremu<sup>2</sup>; <sup>1</sup>Mizan Tepi Univ., Mizan, Ethiopia, <sup>2</sup>Addis Ababa Univ., Addis Ababa, Ethiopia

**1832 Performance of a Rapid Fluorescent Immunoassay for Group A Streptococcus**  
J. McClure, P. Ren, R. George, L. T. Mims; Quidel Corp., San Diego, CA

**1833 Discriminating *Streptococcus pneumoniae* and *S. pseudopneumoniae* by Phenotypic, Genotypic, and MALDI-ToF Methods**  
A. M. Larson<sup>1</sup>, R. P. Morlen<sup>2</sup>, A. N. Abbott<sup>3</sup>, S. J. Libby<sup>3</sup>, F. C. Fang<sup>1,3</sup>; <sup>1</sup>Harborview Med. Ctr., Seattle, WA, <sup>2</sup>Seattle Children's Hosp., Seattle, WA, <sup>3</sup>Univ. of Washington, Seattle, WA

**1834 Rapid Automated Identification of Anaerobic and Coryneform Species with the Updated VITEK® 2 ANC Card**  
K. Wilkey, J. Colón-Reveles, N. Moss, P. Theodorakis, D. Pincus; bioMérieux, Hazelwood, MO

**1835 Multi-Site Validation of the Vitek MS MALDI-ToF Platform for the Identification of Gram-Positive Aerobes**  
J. Rychert<sup>1</sup>, M. Ferraro<sup>1</sup>, O. Garner<sup>2</sup>, B. Mochon<sup>3,4</sup>, M. Lewinski<sup>2</sup>, L. Sercia<sup>3</sup>, G. W. Procop<sup>3</sup>, S. S. Richter<sup>3</sup>, L. F. Westblade<sup>4</sup>, R. Jennemann<sup>4</sup>, C-A. D. Burnham<sup>4</sup>, C. C. Ginocchio<sup>5</sup>, R. Manji<sup>6</sup>, M. Bythrow<sup>5</sup>, J. A. Branda<sup>1</sup>; <sup>1</sup>Massachusetts Gen. Hosp. and Harvard Med. Sch., Boston, MA, <sup>2</sup>UCLA, Los Angeles, CA, <sup>3</sup>Cleveland Clinic, Cleveland, OH, <sup>4</sup>Barnes Jewish, St. Louis, MO, <sup>5</sup>North Shore-LIJ Hlth. System Lab., Lake Success, NY

**1836 Multi-center Validation of the Vitek MS Instrument for the Identification of Fastidious Gram-Negative Bacteria**  
J. A. Branda<sup>1,2</sup>, J. A. Rychert<sup>1,2</sup>, C-A. D. Burnham<sup>3,4</sup>, M. Bythrow<sup>5,6</sup>, O. B. Garner<sup>7</sup>, C. C. Ginocchio<sup>5,6</sup>, R. Jennemann<sup>3</sup>, M. A. Lewinski<sup>7</sup>, R. Manji<sup>6</sup>, B. A. Mochon<sup>7</sup>, G. W. Procop<sup>8</sup>, S. S. Richter<sup>8</sup>, L. Sercia<sup>8</sup>, L. F. Westblade<sup>4,5</sup>, M-J. Ferraro<sup>1,2</sup>; <sup>1</sup>Massachusetts Gen. Hosp., Boston, MA, <sup>2</sup>Harvard Med. Sch., Boston, MA, <sup>3</sup>Barnes Jewish Hosp., St. Louis, MO, <sup>4</sup>Washington Univ. Sch. of Med., St. Louis, MO, <sup>5</sup>Hofstra North Shore-LIJ Sch. of Med., Hempstead, NY, <sup>6</sup>North Shore-LIJ Hlth. System Lab., Lake Success, NY, <sup>7</sup>David Geffen Sch. of Med. at UCLA, Los Angeles, CA, <sup>8</sup>Cleveland Clinic, Cleveland, OH

**1837 Identification of Nocardia Species by Use of Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry**  
G. Hasçelik<sup>1</sup>, M. Kostrzewa<sup>2</sup>, D. Perçin<sup>3</sup>, B. Sümerkan<sup>4</sup>, M. C. Uner<sup>1</sup>; <sup>1</sup>Hacettepe Univ. Faculty of Med., Ankara, Turkey, <sup>2</sup>Bruker Daltonics, Bremen, Germany, <sup>3</sup>Erciyes Univ. Faculty of Med., Kayseri, Turkey, <sup>4</sup>Kayseri Acibadem Hosp., Kayseri, Turkey

**1838 Accurate Differentiation between *S. pneumoniae* and Other *S. mitis* Group Streptococci Using the Vitek MS System**  
J. A. Branda<sup>1,2</sup>, R. P. Markham<sup>1</sup>, J. A. Rychert<sup>1,2</sup>, M-J. Ferraro<sup>1,2</sup>; <sup>1</sup>Mass. Gen. Hosp., Boston, MA, <sup>2</sup>Harvard Med. Sch., Boston, MA

**1839 Sorting through 2012 Recommendations and CAP Requirements for the Diagnosis and Management of Group A Streptococcal Pharyngitis: What's a Lab to Do?**  
K. Hanson<sup>1</sup>, R. Gottschall<sup>1</sup>, R. Zadroga<sup>1</sup>, K. Connors<sup>1</sup>, G. Hansen<sup>1,2</sup>; <sup>1</sup>Hennepin County Med. Ctr., Minneapolis, MN, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN

**1840 Longitudinal Assessment of Clinical Response and Laboratory Parameters after Diagnosis and Initiation of Treatment for *Clostridium difficile* Infection**  
D. C. Garner<sup>1</sup>, J. H. Boone<sup>2</sup>, R. J. Carman<sup>3</sup>, K. N. Wickham<sup>2</sup>, M. V. Goodykoontz<sup>2</sup>, M. D. Macgibbon<sup>1</sup>, E. Cheikh<sup>1</sup>; <sup>1</sup>Carilion Roanoke Mem. Hosp., Roanoke, VA, <sup>2</sup>TechLab, Inc., Blacksburg, VA, <sup>3</sup>TechLab Inc., Blacksburg, VA

**168 Molecular Detection and Identification of Pathogens – General (Division C)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1841 Multimodal Approach for Diagnosis of Bacterial Etiology in Brain Abscess**  
K. Prasad<sup>1</sup>, A. Bajpai<sup>1</sup>, P. Mishra<sup>1</sup>, R. K. Gupta<sup>1</sup>, B. K. Ojha<sup>2</sup>; <sup>1</sup>Sanjay Gandhi PGIMS, Lucknow, U.P., India, <sup>2</sup>King George Med. Univ., Lucknow, U.P., India

**1842 Evaluation of Curetis Unyvero™ for Rapid Detection of Bacteria and Antibiotic-Resistance in Nosocomial Pneumonia**  
E. Al Roomi<sup>1</sup>, W. Jamal<sup>2</sup>, L. R. AbdulAziz<sup>1</sup>, V. O. Rotimi<sup>2,1</sup>; <sup>1</sup>Dept. of Microbiol., Mubarak Al Kabeer Hosp., Jabriya, Kuwait, <sup>2</sup>Dept. of Microbiol., Faculty of Med., Kuwait Univ., Safat, Kuwait

**1843 Evaluation of Unyvero, Curetis in the Rapid Diagnosis of Pneumonia in a Tertiary Hospital in Kuwait**  
I. M. Mokadas, A. A. Behbehani; Ibn Sina Hosp., Shulaibikhat, Kuwait

**1844 Molecular Microbiologic Detection of Prosthetic Joint Infection (PJI) Using the Abbott PLEX-ID System on Synovial Fluid**  
D. Melendez<sup>1</sup>, J. R. Uhl<sup>1</sup>, K. E. Greenwood-Quaintance<sup>1</sup>, A. D. Hanssen<sup>1</sup>, R. Sampath<sup>2</sup>; <sup>1</sup>Mayo Clinic, Rochester, MN, <sup>2</sup>Abbott Molecular, IL

**1845 Molecular Detection of Pathogens from Bacteremic Patients on Antibiotic Therapy**  
C. W. Dykes, E. W. Adams, A. M. Barr, S. A. Dryga, L-J. Clarizia, T. H. Ung, S. M. Springer, M. Davila, D. E. Standridge, K. K. Culbreath, S. A. Young, M. E. Norvell, V. C. Esch; nanoMR Inc., Albuquerque, NM

**1846 Extraction and Amplification of Total Nucleic Acid (TNA) Using BD MAX™ ExK™ TNA-2 and Ribonucleic Acid (RNA) Enrichment Using BD MAX™ ExK™ DNase with Cerebrospinal Fluid (CSF) or Fresh Stool (Liquid or Soft) Specimens\***  
R. Labourdette, V. Blanchette, I. Bourque, V. Brochu, H. Galarneau, J. Grondin, S. Lapointe, S. Létourneau, S. Roy, S. Simard, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada

**1847 Clinical Feasibility of an Improved Time-to-Detection Blood Culture Based Septicemia Assay**  
D. R. Zweitzig<sup>1</sup>, N. M. Riccardello<sup>1</sup>, J. Morrison<sup>2</sup>, J. Rubino<sup>2</sup>, J. Axelband<sup>2</sup>, R. Jeanmonod<sup>2</sup>, B. I. Sodowich<sup>1</sup>, M. J. Kopnitsky<sup>1</sup>, S. M. O'Hara<sup>1</sup>; <sup>1</sup>ZEUS Scientific Inc., Raritan, NJ, <sup>2</sup>St. Luke's Univ. Hlth. Network, Bethlehem, PA

**1848 Amplification and Detection of the Bd Max™ Exk™ Tna-2 Sample Processing Control (spc) Target for Diagnostic Purposes in a Wide Range of Reverse Transcription (RT)/annealing Temperatures**  
P-L. Larouche, D. Dugourd, I. Bourque, R. Labourdette, C. Lippé, B. Leclerc, V. Jean, S. Champetier, D. Beaulieu, J. Pinard-Lachapelle, J. Cormier, C. Ménard, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada

**1849 Profiling of Combat Wounds Through Microbial and Host Biomarker Detection**  
N. A. Be<sup>1</sup>, B. A. Chromy<sup>2</sup>, T. S. Brown<sup>3</sup>, A. Eldridge<sup>2</sup>, S. N. Gardner<sup>1</sup>, K. S. McLoughlin<sup>1</sup>, P. A. Luciw<sup>2</sup>, E. A. Elster<sup>3,4</sup>, C. Jaing<sup>1</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab., Livermore, CA, <sup>2</sup>Univ. of California Davis, Davis, CA, <sup>3</sup>Naval Med. Res. Ctr., Silver Spring, MD, <sup>4</sup>Uniformed Services Univ. of the Hlth. Sci., Bethesda, MD



**1850 Identification of Meningitis-causing Bacteria in Cerebrospinal Fluid Using 16S rDNA Sequence Analysis**  
M. Dickinson<sup>1</sup>, D. Wroblewski<sup>1</sup>, T. Halse<sup>1</sup>, N. Dumas<sup>1</sup>, K. Musser<sup>1</sup>, A. Ramautar<sup>2</sup>, D. Weiss<sup>2</sup>, E. Nazarian<sup>1</sup>; <sup>1</sup>Wadsworth Ctr., New York State Dept. of Hlth., Albany, NY, <sup>2</sup>New York City Dept. of Hlth. and Mental Hygiene, New York, NY

**1851 Workflow Investigation for Multiple Spot Preparation with the VITEK<sup>®</sup> MS System**  
D. H. Pincus, H. P. Dwivedi, C. D. Garner; bioMérieux, Inc., Hazelwood, MO

**1852 Evaluation of the Risk of RNase Contamination During Total Nucleic Acid Extraction from Clinical Samples using the BD MAX<sup>™</sup> System**  
D. Dugourd<sup>1</sup>, D. Beaulieu<sup>1</sup>, J. Cormier<sup>1</sup>, P.-L. Larouche<sup>1</sup>, B. Leclerc<sup>1</sup>, J. A. Price<sup>2</sup>, D. Fox<sup>2</sup>, V. Jean<sup>1</sup>, S. Champetier<sup>1</sup>, J. Pinard-Lachapelle<sup>1</sup>, C. Lippé<sup>1</sup>, C. Ménard<sup>1</sup>; <sup>1</sup>BD Diagnostics, Quebec, QC, Canada, <sup>2</sup>BD Diagnostics, Baltimore, MD

**1853 Raman Spectrometry Identification on Single Bacteria for Clinical Diagnosis**  
A. Novelli Rousseau<sup>1</sup>, M. Dupuy<sup>2</sup>, I. Espagnon<sup>3</sup>, O. Gal<sup>3</sup>, Q. Josso<sup>1</sup>, P. Joly<sup>2</sup>, F. Mallard<sup>1</sup>, R. Mathy<sup>1</sup>, F. Perraut<sup>2</sup>; <sup>1</sup>bioMérieux, Grenoble, France, <sup>2</sup>CEA-LETI, Grenoble, France, <sup>3</sup>CEA-LIST, Saclay, France

**1854 Detection of Methicillin-Resistant *Staphylococcus aureus* by a Nanoscale Optical Fiber Biosensor Assay**  
T. J. Inzana<sup>1</sup>, J. R. Heflin<sup>2</sup>, Z. Zuo<sup>2</sup>, A. B. Bandara<sup>1</sup>; <sup>1</sup>Coll. of Vet. Med., Virginia Tech, Blacksburg, VA, <sup>2</sup>Virginia Tech, Blacksburg, VA

**1855 16S rRNA Semiconductor Deep Sequencing Provides Rapid, Sensitive and Comprehensive Classification of Bacteria in Polymicrobial Clinical Samples**  
S. J. Salipante<sup>1</sup>, D. J. Sengupta<sup>1</sup>, C. Rosenthal<sup>1</sup>, G. Costa<sup>2</sup>, J. Spangler<sup>2</sup>, D. R. Hoogstraal<sup>1</sup>, B. T. Cookson<sup>1</sup>, C. McCoy<sup>3</sup>, F. A. Matsen<sup>3</sup>, J. Shendure<sup>3</sup>, C. Lee<sup>2</sup>, T. Harkins<sup>2</sup>, N. G. Hoffman<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Life Technologies, Beverly, MA, <sup>3</sup>Fred Hutchinson Cancer Res. Ctr., Seattle, WA

**1856 Assessment of the Linearity of the BD MAX<sup>™</sup> ExK<sup>™</sup> TNA-2 for a DNA Target When Utilized in Conjunction with BD MAX<sup>™</sup> TNA MMK(SPC)\***  
R. Labourdette, V. Blanchette, I. Bourque, V. Brochu, H. Galarneau, J. Grondin, S. Lapointe, S. Lévesque, S. Roy, S. Simard, C. Roger-Dalbert; BD Diagnostics, Quebec, QC, Canada

## 169 New Technologies for Studying Host Pathogen Interactions (Division D)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1857 A Novel Approach to Measure the Adherence and Invasion of *Campylobacter* sp. on HeLa Cells**  
C.-L. Wong, J. Berestecky, T. Premeaux, A. Garcia, M. Tuthill; Univ. of Hawaii Kapi'olani Community Coll., Honolulu, HI

**1858 Two-Photon Microscopy of Pulmonary Infection Reveals Novel Immunological Synapses**  
D. Fiole<sup>1</sup>, P. Deman<sup>1</sup>, J. Mathieu<sup>1</sup>, J. Douady<sup>2</sup>, J.-N. Tournier<sup>1,3</sup>; <sup>1</sup>Inst. de Recherche Biomédicale des Armées, Grenoble, France, <sup>2</sup>Univ. Joseph Fourier, Grenoble, France, <sup>3</sup>Ecole du Val-de-Grâce, Paris, France

**1859 Global Quantitative Phosphoproteomic Analysis of *Trypanosoma cruzi* during Metacyclogenesis**  
M. R. Gaynor, I. C. Almeida; The Border BioMed. Res. Ctr., Univ. of Texas at El Paso, El Paso, TX

**1860 *C. difficile* Toxins A and B Disrupt Barrier Function in Induced Human Intestinal Organoids**  
J. L. Leslie, J. S. Opp, J. R. Spence, V. B. Young; Univ. of Michigan, Ann Arbor, MI

**1861 Microbial Collagenase Activity is Increased at the Site of a Colon Anastomosis**  
P. M. Luong<sup>1</sup>, B. D. Shogan<sup>2</sup>, O. Zaborina<sup>2</sup>, J. C. Alverdy<sup>2</sup>; <sup>1</sup>Univ. of Chicago, Chicago, IL, <sup>2</sup>Univ. of Chicago Med., Chicago, IL

**1862 Cell-to-cell Transfer of Amoebal Endosymbiotic Primitive Chlamydiae Via Cytokinesis: A Model**  
J. Matsuo<sup>1</sup>, M. Okude<sup>1</sup>, Y. Hayashi<sup>1</sup>, S. Nakamura<sup>2</sup>, H. Yamaguchi<sup>1</sup>; <sup>1</sup>Hokkaido Univ., Sapporo, Japan, <sup>2</sup>Juntendo Univ., Tokyo, Japan

**1863 Comparative Study of the Gut Microbiome in Mice with Lrrk2 Gene Mutations Using Multi-barcoded 16S Sequencing On Pacbio RS Platform**  
H. Fernandez-Hernandez, J. Hu, I. Peter; Icahn Sch. of Med. at Mount Sinai, New York, NY

**1864 *Pseudomonas aeruginosa* Induces Tight Junction Disruption via an EGFR-Dependent MAPK Pathway**  
O. J. Castillo, A. A. Azghani; Univ. of Texas at Tyler, Tyler, TX

**1865 Contributing Factors for Adverse Pregnancy Outcomes: Cellular Studies of *Neisseria gonorrhoeae* Infection of Primary Human Cervical and Amniochorion Epithelial Cells**  
J. A. Gawthorne<sup>1</sup>, T. J. Edwards<sup>1</sup>, A. Folley<sup>1</sup>, J. L. Edwards<sup>1,2</sup>; <sup>1</sup>The Res. Inst. at Nationwide Children's Hosp., Columbus, OH, <sup>2</sup>Ohio State Univ., Columbus, OH

**1866 Global Gene Expression Profiling of Virulent and Attenuated Strains of *Ehrlichia ruminantium*: Toward the Comprehension of Pathogenesis**  
L. Pruneau<sup>1</sup>, D. F. Meyer<sup>1</sup>, L. Emboulet<sup>1</sup>, B. Mari<sup>2</sup>, K. Lebrigand<sup>2</sup>, A. Viari<sup>3</sup>, V. Pinarello<sup>1</sup>, I. Marcelino<sup>4</sup>, C. Sheikboudou<sup>1</sup>, D. Martinez<sup>1</sup>, T. Lefrançois<sup>5</sup>, N. Vachier<sup>1</sup>; <sup>1</sup>CIRAD, Petit Bourg, France, <sup>2</sup>CNRS, Sophia Antipolis, France, <sup>3</sup>INRIA, Grenoble, France, <sup>4</sup>IBET-ITQB, Oeiras, Portugal, <sup>5</sup>CIRAD, Montpellier, France

**1867 Role of Bacterial Endosymbiont in Host Reproduction**  
M. Mathew, N. B. Lopanik; Georgia State Univ., Atlanta, GA

**1868 Pathogenic *Rickettsia* species Trigger Activation of mTOR and Modulation of Autophagy in Host Microvascular Endothelium**  
E. D. Thomasson, A. Sahni, C. L. C. Schroeder, H. P. Narra, S. K. Sahni; Univ. of Texas Med. Branch, Galveston, TX

**1869 Effects of Selective and Non-Selective NSAIDs on Antibiotic Efficacy of Experimental Group A Streptococcal Myonecrosis**  
S. M. Hamilton<sup>1</sup>, C. R. Bayer<sup>1</sup>, D. L. Stevens<sup>1,2</sup>, A. E. Bryant<sup>1,2</sup>; <sup>1</sup>VA Med. Ctr., Boise, ID, <sup>2</sup>Univ. of Washington Sch. of Med., Seattle, WA

**1870 Identification of Circulating Brain Microvascular Endothelial Cells as Cell-based Biomarkers for Blood-brain Barrier Disorders Caused by Various Pathogenic Insults**  
S. H. Huang<sup>1</sup>, F. Chi<sup>1</sup>, L. Wang<sup>1</sup>, C. H. Wu<sup>1</sup>, H. Cao<sup>2</sup>, A. Zhang<sup>1</sup>, A. Jong<sup>1</sup>; <sup>1</sup>Childrens Hosp. Los Angeles, USC, CA, <sup>2</sup>Southern Med. Univ., Guangzhou, China

**1871 Live Fast, Die Faster – Avirulent Strain of *Ehrlichia ruminantium* Displays a Gain of Fitness *In vitro***  
A. Moumene<sup>1</sup>, N. Vachier<sup>1</sup>, C. Carasco-Lacombe<sup>1</sup>, I. Marcelino<sup>2</sup>, O. Gros<sup>3</sup>, T. Lefrançois<sup>1</sup>, D. F. Meyer<sup>1</sup>; <sup>1</sup>CIRAD, Petit-Bourg, Guadeloupe, <sup>2</sup>IBET/ITQB, Oeiras, Portugal, <sup>3</sup>Univ. des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe

**1872 Examining the Role of the *Lachnospiraceae* Family of Bacteria in a Murine Model of *Clostridium difficile* Gastrointestinal Infection**  
M. J. Koenigsnecht, D. Y. Wang, V. B. Young; Univ. of Michigan, Ann Arbor, MI

**1873 Host Immunity and Bacterial Factors Contribute to Pathogenesis of *Serratia marcescens* in a Murine Model of Lung Infection**  
N. Gonzalez Juarbe, C. Mares, R. Seoanes, M. Bergman; UT Hlth. Sci. Ctr. San Antonio, San Antonio, TX

**1874 MyD88-dependent Corneal Epithelial Defenses against *Pseudomonas aeruginosa* Adhesion and Traversal Involve IL-1R, TLR-5, and Antimicrobial Activity of Epithelial Cell Lysates**  
C. Tam<sup>1</sup>, M. M. E. Metruccio<sup>1</sup>, D. J. Evans<sup>1,2</sup>, S. M. J. Fleiszig<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, CA, <sup>2</sup>Touro Univ., Vallejo, CA

**1875 Diagnosis of Disseminated Intravascular Coagulation (DIC)**  
M. R. M. Nazir, Nazir; French Med. Inst. for Children, Kabul, Afghanistan

**1876 *Plasmodium falciparum* Apoptotic Factor Induced Apoptosis in Brain Vascular and Hematopoietic Stem Cells**  
C. M. Dickinson-Copeland, N. O. Wilson, M. Liu, M. B. Huang, C. V. Bond, M. D. Powell, S. Singh, J. K. Stiles; Morehouse Sch. of Med., Atlanta, GA

**1877 Effect of TNF- $\alpha$  Signaling and Caspase Activation in the Reproductive System During Genital *Chlamydia* Infection on Key Regulators of Fertility**  
J. U. Igietseme<sup>1</sup>, Y. Omosun<sup>2</sup>, J. Partin<sup>1</sup>, Q. He<sup>3</sup>, F. Eko<sup>3</sup>, C. Benda<sup>1</sup>, K. Joseph<sup>1</sup>, D. Ellerson<sup>1</sup>, C. M. Black<sup>1</sup>; <sup>1</sup>CDC, NCEZID, Atlanta, GA, <sup>2</sup>Morehouse Sch. of Med. & CDC, NCEZID, Atlanta, GA, <sup>3</sup>Morehouse Sch. of Med., Atlanta, GA

**1878 Maintenance of *Drosophila* Microbiota Abundance Depends on Frequent Ingestion of Bacteria**  
C. Fischer, J. Miles, J. Blum, J. Handelsman; Yale Univ., New Haven, CT

**1879 Bacteria-Human Somatic Cell Lateral Gene Transfer Is Enriched in Cancer Samples**  
K. B. Sieber<sup>1</sup>, D. R. Riley<sup>1</sup>, K. M. Robinson<sup>1</sup>, J. R. White<sup>1</sup>, A. Ganesan<sup>1,2</sup>, S. Nourbakhsh<sup>1,3</sup>, J. C. Dunning Hotopp<sup>1</sup>; <sup>1</sup>Univ. of Maryland, Baltimore, MD, <sup>2</sup>Univ. of Maryland Baltimore County, Baltimore, MD, <sup>3</sup>Univ. of Maryland Coll. Park, Baltimore, MD

**1880 *Moraxella catarrhalis*-Produced Nitric Oxide Mediates a Suicidal-like Pathogenic Mechanism in a Bacterial-Host Cell Interaction System**  
W. Wang, B. Mocca; FDA, CBER, Bethesda, MD

**1881 Identifying the Locales of Nitrosative Stress Encountered by the Lyme Disease Spirochete *Borrelia burgdorferi***  
T. J. Bourret<sup>1</sup>, K. A. Lawrence<sup>2</sup>, F. C. Gherardini<sup>2</sup>; <sup>1</sup>Univ. of Nebraska at Kearney, Kearney, NE, <sup>2</sup>Rocky Mountain Lab., NIAID, NIH, Hamilton, MT

**1882 Two-Component Regulatory System CovRS Negatively Regulates Neutrophil Recruitment in Group A Streptococcus Infection**  
J. Li, Z. Hui, W. Feng, M. Liu, B. Lei; Montana State Univ., Bozeman, MT

**1883 Ompa of Uropathogenic *E. coli* Contributes to Antimicrobial Peptide Resistance *In vitro* and Intracellular Growth *In vivo***  
E. S. Danka, K. M. Tiemann, D. A. Hunstad; Washington Univ. in St. Louis, St. Louis, MO

## 170 Vaccines and Host Protection (Division E)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1884 Oral Immunization with Cholera Toxin (CT) Protects against *Campylobacter jejuni* Infection in an Adult Mouse Intestinal Colonization Model**  
M. Albert, A. S. Mustafa, A. Islam, S. Haridas; Dept. of Microbiol., Faculty of Med., Kuwait Univ., Safat, Kuwait

**1885 Yersiniabactin Receptor, FyuA, as a Target for a Multivalent *Escherichia coli* Vaccine to Prevent Urinary Tract Infection**  
A. R. Brumbaugh, S. N. Smith, H. L. T. Mobley; Univ. of Michigan, Ann Arbor, MI

**1886 IgG Antibody in BCG-Vaccinated Neonates in Asaba, Nigeria**  
E. Aidevbo, F. Esumeh; Ambrose Alli Univ., Ekpoma, Nigeria

**1887 Genetic Modification of *Francisella tularensis* LVS to Create a Novel Vaccine against *Pseudomonas aeruginosa***  
B. N. Cowan, D. M. Schmitt, J. Horzempa; West Liberty Univ., West Liberty, WV

**1888 Safety and Protective Efficacy of *Brucella Abortus* Rb51  $\Delta$ Cyddc and  $\Delta$ Purd Mutants as Live Attenuated Vaccines in Mice**  
T-W. Hahn, T. Q. Lam; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**1889 In Situ Neutralization of *Clostridium difficile* toxin B Mediated by Engineered *Lactobacilli***  
K. Krogh Andersen<sup>1</sup>, N. Strokappe<sup>2</sup>, A. Hultberg<sup>2</sup>, M. Mikelsaar<sup>3</sup>, T. Verrips<sup>2</sup>, H. Marcotte<sup>1</sup>, L. Hammarström<sup>1</sup>; <sup>1</sup>Karolinska Inst., Stockholm, Sweden, <sup>2</sup>Utrecht Univ., Utrecht, Netherlands, <sup>3</sup>Univ. of Tartu, Tartu, Estonia

**1890 Attenuation and Protection of *Salmonella enterica* Serovar Gallinarum Mutants with Multiple Deletion of Virulence Genes in Chickens**  
S-Y. Park, J. Sun, Y. Cho, T-W. Hahn; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**1891 Nano-Encapsulated Recombinant MOMP-278 of *Chlamydia trachomatis* in PLA-PEG Nanoparticles Triggers Predominant Interferon- $\gamma$  and Th2 Antibody Responses in Mice**  
S. Dixit, S. R. Singh, A. N. Yilma, R. Agee, V. A. Dennis; Alabama State Univ., Montgomery, AL

**1892 Novel Vaccine Antigen of *Moraxella catarrhalis* for Preventing Otitis Media**  
T. Otsuka, A. L. Brauer, C. Kirkham, T. F. Murphy; Univ. at Buffalo, State Univ. of New York, Buffalo, NY

**1893 PLGA-encapsulation of the *Pseudomonas aeruginosa* PopB Protein Improves Th17 Responses to Vaccination and Confers Protection Against Experimental Acute Pneumonia**  
B. Duan<sup>1</sup>, B. Mizrahi<sup>2</sup>, R. Lu<sup>1</sup>, G. Reznor<sup>2</sup>, D. S. Kohane<sup>2</sup>, G. P. Priebe<sup>1,3</sup>; <sup>1</sup>Div. of Infectious Diseases, Dept. of Med., Brigham & Women's Hosp., Boston, MA, <sup>2</sup>Lab. for Biomaterials and Drug Delivery, Dept. of Anesthesiology, Perioperative and Pain Med., Boston Children's Hosp., Boston, MA, <sup>3</sup>Dept. of Anesthesiology, Perioperative and Pain Med., Boston Children's Hosp., Boston, MA

**1894 Analysis of The Effect of Antigenic Diversity of the *Neisseria meningitidis* Outer Membrane Porin B Protein (Porb) on Strain Fitness**  
H. F. Nawar, K. F. Smith, L. Amer, W. F. Vann, M. C. Bash; Lab. of Bacterial Polysaccharides, Div. of Bacterial, Parasitic and Allergenic Products, Ctr. for Biologics Evaluation and Res., FDA, Bethesda, MD

**1895 Protective Capacity of an IpaB/IpaD Fusion Protein against Shigella**  
F. J. Martinez Becerra<sup>1</sup>, X. Chen<sup>1</sup>, S. P. Choudhari<sup>1</sup>, K. Harrison<sup>1</sup>, J. D. Clements<sup>2</sup>, W. D. Picking<sup>1</sup>, W. L. Picking<sup>1</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Tulane Univ. Sch. of Med., New Orleans, LA

**1896 Recombinant FhSAP2 from *Fasciola hepatica*: Immunogenicity of Different Vaccine Formulations in the Murine Model**  
A. Morales, L. A. Cruz, A. M. Espino; Univ. of Puerto Rico, Med. Sci. Campus, San Juan, Puerto Rico

**1897 A Bioinformatics Approach to *Bordetella avium* as a Universal Poultry Live Vaccine Platform for the Expression of Foreign Antigens**  
C. Starke; James Madison Univ., Harrisonburg, VA

**1898 Evaluation of Systemic and Local Immunity against Fusion Protein Composed of *Mycoplasma hyopneumoniae* P97 Adhesin R1 Repeat and *Escherichia coli* Heat-Labile Enterotoxin B Subunit**  
A. K. Barate, T-W. Hahn; Kangwon Natl. Univ., Chuncheon, Republic of Korea

**1899 *Staphylococcus aureus*-Cholera Toxin Fusions As Novel Vaccines to Prevent Bovine Mastitis**  
S. K. Jeffries, J. K. Tinker; Boise State Univ., Boise, ID

**1900 Evaluation of Recombinant Gas Vesicles as Multisubunit-Fusion Protein Delivery Platforms**  
T. S. Childs, W. C. Webley; Univ. of Massachusetts Amherst, Amherst, MA

**1901 Enhancing the Protective Immune Response against Botulism**  
A. Kroken<sup>1</sup>, W. Tepp<sup>2</sup>, A. Przedpelski<sup>1</sup>, Z. Fu<sup>1</sup>, J.-J. Kim<sup>1</sup>, E. Johnson<sup>2</sup>, J. Barbieri<sup>1</sup>; <sup>1</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>2</sup>Univ. of Wisconsin, Madison, WI

**1902 Chromosomal Super-recombineering in Development of a Combined Oral Vaccine for Simultaneous Protection against Both Typhoid Fever and Shigellosis**  
M. N. Dharmasena, S. Filippova, B. Hanisch, T. T. Wai, C. Marsh, M. Osorio, D. J. Kopecko; FDA -CBER, Bethesda, MD

**1903 Development of a Transgenic Plant Vaccine for Low Pathogenic Avian Influenza Virus**  
H. Wu<sup>1</sup>, K. Scissum-Gunn<sup>1</sup>, C. Barns<sup>1</sup>, N. K. Singh<sup>2</sup>, J. J. Giambrone<sup>2</sup>; <sup>1</sup>Alabama State Univ., Montgomery, AL, <sup>2</sup>Auburn Univ., Auburn, AL

**171 Gene Expression – Metals and other Stresses (Division H)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1904 Control of Hemin-Responsive Gene Expression by the ChrAS and HrrAS Two-Component Systems in *Corynebacterium diphtheriae***  
J. M. Burgos, M. P. Schmitt; FDA, Bethesda, MD

**1905 Role of an Archaeal PitA Phosphate Transporter in Metal Resistance of the Thermoacidophile and Bioreactor, *Metallosphaera sedula***  
S. McCarthy<sup>1</sup>, C. Ai<sup>1</sup>, G. Wheaton<sup>2</sup>, R. Singh<sup>1</sup>, R. Tevatia<sup>1</sup>, R. Kelly<sup>2</sup>, P. Blum<sup>1</sup>; <sup>1</sup>Univ. of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>North Carolina State Univ., Raleigh, NC

**1906 The Cpx Envelope Stress Response Leads to Changes in the Peptidoglycan Structure by Up-regulating *ygaU*, *slt/mltB* and *ycbB***  
M. Bernal, T. Raivio; Univ. of Alberta, Edmonton, AB, Canada

**1907 Toxin-antitoxin Systems of *Staphylococcus equorum*: Characterization of Two YefM-YoeB Paralogs**  
C. F. Schuster, N. Nolle, R. Bertram; Univ. of Tuebingen, Dept. of Microbial Genetics, Tuebingen, Germany

**1908 Molecular Mechanism for Simultaneous Adaptation to Both Acid and Anaerobic Conditions in *Escherichia coli***  
Y. Yamanaka<sup>1</sup>, T. Oshima<sup>2</sup>, A. Ishihama<sup>1,3</sup>, K. Yamamoto<sup>1,3</sup>; <sup>1</sup>Dept. of Frontier BioSci., Hosei Univ., Japan, <sup>2</sup>Graduate school of BioSci., Nara Inst. of Sci. and Technology, Japan, <sup>3</sup>Micro-Nano Technology Res. Ctr., Hosei Univ., Japan

**1909 IscR Regulation of the Capsular Polysaccharide Biosynthesis and Iron-acquisition Systems in *Klebsiella pneumoniae* CG43**  
Y.-M. Hong<sup>1</sup>, Y.-C. Chen<sup>2</sup>, T.-R. Jinn<sup>1</sup>, C.-T. Lin<sup>1</sup>; <sup>1</sup>Sch. of Chinese Med., China Med. Univ., Taichung, Taiwan, <sup>2</sup>Dept. of BioMed. Informatics, Asia Univ., Taichung, Taiwan

**1910 Role of Glutamate and Alanine at the Phosphorylation Site of Response Regulator KvhA in Acid Resistance in *Klebsiella pneumoniae***  
W.-H. Wu<sup>1</sup>, C.-T. Lin<sup>2</sup>; <sup>1</sup>Sch. of Pharmacy, China Med. Univ., Taichung, Taiwan, <sup>2</sup>Sch. of Chinese Med., China Med. Univ., Taichung, Taiwan

**1911 The Role of the Small Non-coding RNA RprA in the CpxAR Two-component System Regulator**  
A. D. Evans, T. L. Raivio; Univ. of Alberta, Edmonton, AB, Canada

**1912 Role of Twin-arginine Translocase (Tat) System in Iron-uptake in *Listeria monocytogenes***  
K. B. Tiwari, B. J. Wilkinson, R. K. Jayaswal; Illinois State Univ., Normal, IL

**172 Microbial Development, Behavior, Chemotaxis and Motility (Division I)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1913 Construction and Phenotypic Analysis of *Streptomyces coelicolor* with Mutant Biosurfactant Peptides**  
L. M. Heisinger, D. Montalbano, J. M. Willey; Hofstra Univ., Hempstead, NY

**1914 The Degenerate EAL Domain Protein Ydiv of *Escherichia coli* Inhibits Mucoidy Via Flhdc2-dependent and Flhdc2-independent Pathways**  
X. Fang<sup>1</sup>, L. I. Hu<sup>2</sup>, A. J. Wolfe<sup>2</sup>, M. Gomelsky<sup>1</sup>; <sup>1</sup>Univ. of Wyoming, Dept. of Molecular Biol., Laramie, WY, <sup>2</sup>Loyola Univ., Dept. of Microbiol. and Immunology, Maywood, IL

**1915 Study of the Phototaxis Behavior of *Rhodospseudomonas palustris***  
J. Hong, J. Huang; Olin Coll., Needham, MA

**1916 *Streptomyces* Diguanylate Cyclase Mutant Exhibits Early Aerial Mycelium Formation and Sporulation in Comparison to Wild Type**  
C. R. Baker, J. Bennett; Otterbein Univ., Westerville, OH

**1917 Development of a RacF2DN-RFP Expression Vector for Rab8 Colocalization Studies in the Social Amoebae, *Dictyostelium discoideum***  
J. Angeloni, T. Bruce, R. Powell, A. Goldston, L. Temesvari; Clemson Univ., Clemson, SC

**1918 Characterization of a Chemosensory Kinase Regulating Gliding and Twitching Motility in *Myxococcus xanthus***  
K. R. Hummels, C. K. Dong, J. R. Kirby; Univ. of Iowa, Iowa City, IA

**1919 Phosphodiesterase Expression in *Streptomyces coelicolor* and Differential Expression of Antibiotics**  
B. Geiger<sup>1</sup>, J. Bennett<sup>2</sup>; <sup>1</sup>Otterbein Univ., Galena, OH, <sup>2</sup>Otterbein Univ., OH

**1920 Polymer Surfaces with Negative Charge Inhibit Bacterial Motility and Change Biofilm Properties**  
O. Rzhapishvskaya<sup>1</sup>, S. Hakobyan<sup>1</sup>, R. Ruhai<sup>1</sup>, J. Gautrot<sup>2</sup>, D. Barbero<sup>1</sup>, M. Ramstedt<sup>1</sup>; <sup>1</sup>Umea Univ., Umea, Sweden, <sup>2</sup>Queen Mary Univ. of London, London, United Kingdom

**1921 CsrA Regulates *H. pylori* Motility and Adhesion through Controlling the Alternative Sigma Factor *rpoN* and Flagella Formation**  
C.-Y. Kao<sup>1</sup>, B.-S. Sheu<sup>2</sup>, J.-J. Wu<sup>3</sup>; <sup>1</sup>Inst. of Basic Med. Sci., Tainan, Taiwan, <sup>2</sup>Dept. of Internal Med., Tainan, Taiwan, <sup>3</sup>Dept. of Med. Lab. Sci. and Biotechnology, Tainan, Taiwan

**1922 Post-translational Modification of Flagellins in *Shewanella oneidensis***  
L. Sun<sup>1</sup>, M. Jin<sup>1</sup>, W. Ding<sup>2</sup>, J. Yuan<sup>1</sup>, J. Kelly<sup>2</sup>, H. Gao<sup>1</sup>; <sup>1</sup>Zhejiang Univ., Hangzhou, China, <sup>2</sup>Natl. Res. Council of Canada, Ottawa, ON, Canada

**1923 Diversity in Deep-sea Marine Bacteria *Pseudoalteromonas lipolytica* Biofilms**  
Z. Zeng, X. Wang; South China Sea Inst. of Oceanology, GuangZhou, China

**1924 Loss of Helical Cell Shape Alters *Helicobacter pylori*'s Swimming Velocity**  
L. E. Martinez<sup>1,2</sup>, J. Hardcastle<sup>3</sup>, J. Wang<sup>2</sup>, B. Turner<sup>4</sup>, R. Bansil<sup>3</sup>, N. R. Salama<sup>1,2</sup>; <sup>1</sup>Graduate Program in Pathobiology, Dept. of Global Hlth., Univ. of Washington, Seattle, WA, <sup>2</sup>Div. of Human Biol., Fred Hutchinson Cancer Res. Ctr., Seattle, WA, <sup>3</sup>Dept. of Physics, Boston Univ., Boston, MA, <sup>4</sup>Beth Israel Deaconess Med. Ctr. and Harvard Med. Sch., Boston, MA

**1925 Characterizing the Mechanism of Asymmetric Distribution of cyclic di-GMP Following Cell Division in *Pseudomonas aeruginosa***  
B. Kulasekara, C. Kamischke, H. Kulasekara, M. Christen, S. I. Miller; Univ. of Washington, Seattle, WA



**1926 Casein Induced Changes in Surface Tension Modifies the Mode of Surface Translocation in *Bacillus cereus***  
K. E. Zeigler, A. R. Ferguson, L. R. Aaronson; Utica Coll., Utica, NY

**1927 The Bimodal Expression Pattern of sigK Corresponds to Its Dual Role as an Early as well as Late Sporulation-Specific Sigma Factor In *Clostridium acetobutylicum***  
M. Al-Hinai, E. T. Papoutsakis; Univ. of Delaware, Newark, DE

**1928 Cell-Cell Interactions and Dynamics during Swarming of *Pseudomonas aeruginosa***  
M. E. Anyan<sup>1</sup>, N. Morales-Soto<sup>1,2</sup>, C. Harvey<sup>1</sup>, M. Alber<sup>1</sup>, J. D. Shrout<sup>1,2</sup>; <sup>1</sup>Univ. of Notre Dame, Notre Dame, IN, <sup>2</sup>Eck Inst. for Global Hlth., Notre Dame, IN

## 173 Regulation, Replication, Recombination, and Biotechnology (Division M)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1929 Characterization of a Non-Canonical Tyrosine Integrase**  
E. E. Shine, G. W. Broussard, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1930 Differential Lytic Activity and Binding Spectrum of Endolysins from *Bacillus cereus* Bacteriophages**  
M. Kong, S. Ryu; Seoul Natl. Univ., Republic of Korea

**1931 Lytic Cycle-bias by a Constitutive Expression of Anti-repressor in Temperate Phage**  
M. Kim, S. Ryu; Seoul Natl. Univ., Seoul, Republic of Korea

**1932 Characterization of the DNA Binding and Gene Regulatory Activities of Bacteriophage VtΦ272 Repressor**  
C. E. Szyjka, D. Chakraborty, M. P. Colon, G. B. Koudelka; Univ. at Buffalo, Buffalo, NY

**1933 Application of Phages for Control of Pierce's Disease**  
M. Das, T. Bhowmick, S. J. Ahern, R. F. Young, III, C. F. Gonzalez; Texas A&M Univ., College Station, TX

**1934 Defining the Requirements for Bacteriophage HK639 Early Gene Expression**  
A. L. Seaton, R. A. King; Western Kentucky Univ., Bowling Green, KY

**1935 Start/Extended Start-Associated Sequences in Mycobacteriophage Adephegia**  
E. S. Tse, G. W. Broussard, D. Jacobs-Sera, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1936 Characterization of Bacteriophages that Infect *Paenibacillus larvae*, a Honeybee Pathogen**  
D. G. Yost, P. S. Amy; Univ. of Nevada, Las Vegas, NV

**1937 The Effectiveness of Bacteriophages against Methicillin-Resistant *Staphylococcus aureus* Nasal Colonization in Pigs *In vitro*, *ex vivo* and *In vivo***  
K. M. Verstappen<sup>1</sup>, P. Tulinski<sup>1</sup>, B. Duim<sup>1</sup>, A. C. Fluit<sup>2</sup>, J. Carney<sup>3</sup>, J. A. Wagenaar<sup>1,4</sup>; <sup>1</sup>Utrecht Univ., Utrecht, Netherlands, <sup>2</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>3</sup>Novolytics Ltd., Warrington, United Kingdom, <sup>4</sup>Central Vet. Inst. of Wageningen UR, Wageningen, Netherlands

**1938 Characterization of a Novel Phage Repressor**  
V. M. Villanueva, G. W. Broussard, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1939 Analysis of RNA-Mediated Antitermination in the *Erwinia tasmaniensis* Bacteriophage φEt88**  
R. A. King<sup>1</sup>, S. R. Helm<sup>1</sup>, D. R. Allan<sup>2</sup>, S. M. Schrader<sup>1</sup>; <sup>1</sup>Western Kentucky Univ., Bowling Green, KY, <sup>2</sup>Harvey Mudd Coll., Claremont, CA

**1940 Expanding the Mycobacterial Genetic Toolbox: Cotransformation of Integrative Vectors**  
K. Rockenbach, R. M. Dedrick, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1941 Transcriptomic Analysis of Mycobacteriophage Giles**  
R. M. Dedrick, G. F. Hatfull; Univ. of Pittsburgh, Pittsburgh, PA

**1942 *Pseudomonas aeruginosa* Temperate Phage Pan70, an F10-like LESB58 Prophage, and its Successful Mouse Infection Control**  
G. A. Rangel<sup>1</sup>, A. V. Holguin<sup>1</sup>, C. Prada<sup>1</sup>, M. C. Gomez<sup>1</sup>, C. Echeverri Erk<sup>2</sup>, E. Kutter<sup>3</sup>, M. J. Vives<sup>1</sup>; <sup>1</sup>Univ. de los Andes, Bogota, Colombia, <sup>2</sup>Hosp. Federico Lleras, Ibaguë, Colombia, <sup>3</sup>Evergreen State Coll., Olympia, WA

**1943 Combination Therapy of Vancomycin and Staphylococcal Phage K on *S. aureus* Biofilms Can Significantly Reduce the Bacterial Load Compared to Individual Treatments Alone**  
S. M. Wu<sup>1,2</sup>, J. P. Beck<sup>1,2</sup>, C. M. Loc-Carrillo<sup>1,2</sup>; <sup>1</sup>The Univ. of Utah, Dept. of Orthopaedics, Salt Lake City, UT, <sup>2</sup>George E. Wahlen Dept. of VA, Healthcare System, Salt Lake City, UT

## 174 Bioinformatic & Meta-omics Tools in Microbial Ecology (Division N)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1944 Optimizing Metaproteomic Methods to Capture Natural Microbial Community Expression**  
R. M. Jones<sup>1</sup>, E-H. Kim<sup>1</sup>, B. J. Woodcroft<sup>2</sup>, M. Shah<sup>3</sup>, G. W. Tyson<sup>2</sup>, N. C. VerBerkmoes<sup>4</sup>, V. I. Rich<sup>1</sup>; <sup>1</sup>The Univ. of Arizona, Tucson, AZ, <sup>2</sup>Univ. of Queensland, Australia, <sup>3</sup>Oak Ridge Natl. Lab., TN, <sup>4</sup>New England Biolabs, MA

**1945 Assessing the Prevalence of the CRISPR/Cas Systems in the Environment**  
D. Baltrusaitis, J. J. Kelly, C. Putonti; Loyola Univ. Chicago, Chicago, IL

**1946 Nonpareil: Assessing the Level of Coverage and Sequencing Depth in Metagenomic Datasets Using Read Redundancy**  
L. M. Rodriguez-R, K. T. Konstantinidis; Georgia Inst. of Technology, Atlanta, GA

**1947 Stochastic Assembly in MECs Leads to Alternative Communities with Distinct Functions**  
D. Xu<sup>1</sup>, W. Liu<sup>2</sup>, B. Liang<sup>2</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Harbin Inst. of Technology, China

**1948 Using Shotgun Metagenomic Data for Less Biased SSU rRNA Gene Community Analysis**  
J. Guo, J. Cole, T. Brown, J. Tiedje; Michigan State Univ., East Lansing, MI

**1949 Co-occurrence Detection Methods for Microbial Datasets Vary Dramatically in Sensitivity and Specificity**  
W. Van Treuren, C. Lozupone, R. Knight; Univ. of Colorado Boulder, Denver, CO

**1950 Reproducibility of Microbial Community Amplicon Sequencing by the Illumina MiSeq**  
C. Wen<sup>1,2</sup>, L. Wu<sup>1</sup>, J. D. Van Nostrand<sup>1</sup>, Y. Qin<sup>1</sup>, F. Liu<sup>1</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Dept. of Botany and Microbiol., Inst. for Environmental Genomics, Univ. of Oklahoma, Norman, OK, <sup>2</sup>Guangdong Ocean Univ., Zhanjiang, China

**1951 A Comparison of Two Library Construction Procedures for Obtaining Long Read DNA Sequences for Use in Environmental Microbial Genomics**  
K. E. Wommack<sup>1</sup>, D. Nasko<sup>1</sup>, S. Polson<sup>1</sup>, M. Radosevich<sup>2</sup>, J. DeBruyn<sup>2</sup>, Y-C. Tsai<sup>3</sup>, B. Bowman<sup>3</sup>, J. Korlach<sup>3</sup>; <sup>1</sup>Univ. of Delaware, Newark, DE, <sup>2</sup>Univ. of Tennessee, Knoxville, TN, <sup>3</sup>Pacific BioSci., Menlo Park, CA

**1952 High Precision Melting Curve: A Novel Method for Fast Screening of Environmental Samples for Changes in Bacterial Phylogenetic Composition Prior to Deep Sequencing**  
M. H. Hjelmso<sup>1</sup>, J. Bælum<sup>2</sup>, L. Feld<sup>1</sup>, W. E. Holben<sup>3</sup>, L. H. Hestbjerg<sup>4</sup>, C. S. Jacobsen<sup>1</sup>; <sup>1</sup>Geological Survey of Denmark and Greenland, Copenhagen, Denmark, <sup>2</sup>Technical Univ. of Denmark, Copenhagen, Denmark, <sup>3</sup>Univ. of Montana, Missoula, MT, <sup>4</sup>Univ. of Copenhagen, Copenhagen, Denmark



**1953 Multi-kb Illumina Reads Improve Metagenomic Assembly and Access Genomes of Members of Aquifer Sediment Microbial Communities**

I. Sharon<sup>1</sup>, L. A. Hug<sup>1</sup>, C. J. Castelle<sup>1</sup>, M. Kertesz<sup>2</sup>, D. Pushkarev<sup>2</sup>, T. A. Blauwkamp<sup>2</sup>, K. R. Frischkorn<sup>1</sup>, M. Amirebrahimi<sup>3</sup>, B. C. Thomas<sup>1</sup>, K. H. Williams<sup>4</sup>, S. G. Tringe<sup>3</sup>, J. F. Banfield<sup>1</sup>; <sup>1</sup>Univ. of California-Berkeley, Berkeley, CA, <sup>2</sup>Moleculo, Inc., San Francisco, CA, <sup>3</sup>Dept. of Energy, Joint Genome Inst., Walnut Creek, CA, <sup>4</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**1954 Variations In Microbiome Profiling Between Pyrosequencing Runs at the Same Facility and Between Different Pyrosequencing Facilities**

Z. Yu, M. Kim; The Ohio State Univ., Columbus, OH

**175 Molecular Microbial Ecology – Communities (Division N)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1955 Diurnal Changes in the Vertical Distribution of Bacterioplankton at Grays Reef National Marine Sanctuary in Spring and Fall by 16S rRNA Gene Tag Pyrosequencing**

X. Lu<sup>1</sup>, J. T. Hollibaugh<sup>2</sup>, X. Mou<sup>1</sup>; <sup>1</sup>Kent State Univ., Kent, OH, <sup>2</sup>Univ. of Georgia, Athens, GA

**1956 Seasonal Bacterial Growth Patterns Estimated by Metagenomics and Metatranscriptomics in Coastal Marine Waters**

B. J. Campbell<sup>1</sup>, D. L. Kirchman<sup>2</sup>; <sup>1</sup>Clemson Univ., Clemson, SC, <sup>2</sup>Univ. of Delaware, Lewes, DE

**1957 Metaproteomic Survey of Six Aquatic Habitats: Validating Community Composition, Discovering Contrasts in Functional Proteins, and Confirming *In situ* Metabolism**

B. T. Hanson, I. Hewson, E. L. Madsen; Cornell Univ., Ithaca, NY

**1958 Metagenomics Reveals G1405 16S rRNA Methyltransferases Are Widespread Antibiotic-Resistance Determinants in Diverse Environments**

G. L. Lozano Betancourt<sup>1</sup>, F. Wichmann<sup>1</sup>, N. Udiković Kolić<sup>1</sup>, I. Torres Zapata<sup>2</sup>, C. Ríos Velázquez<sup>2</sup>, J. Handelsman<sup>1</sup>; <sup>1</sup>Molecular, Cellular and Dev. Biol. Dept., Yale Univ., New Haven, CT, <sup>2</sup>Univ. of Puerto Rico at Mayagüez, PR

**1959 Comparison of Bacterial Populations in Briny Groundwaters of Different Ionic Strengths Under a Variety of Incubation Conditions**

K. A. Simmons, J. S. Swanson; Los Alamos Natl. Lab., Carlsbad, NM

**1960 An Examination of Eukaryotic Microbial Diversity and Nutrient Release in High Elevation Snow-Fields and Glaciers of the Rocky Mountains**

C. S. Naff<sup>1</sup>, N. Mladenov<sup>2</sup>, M. W. Williams<sup>1</sup>, S. K. Schmidt<sup>1</sup>; <sup>1</sup>Univ. of Colorado Boulder, Boulder, CO, <sup>2</sup>Kansas State Univ., Manhattan, KS

**1961 Development and Applications of GeoChip 4.2 for Microbial Community Analysis**

Z. Shi, D. Ye, J. W. Voordeckers, Y. Lee, K. Xue, M. Yuan, J. D. Nostrand, Z. He, J. Zhou; Univ. of Oklahoma, Norman, OK

**1962 Surface to Sea Floor Time Series of All Three Domains Via rRNA Tag Sequences**

A. E. Parada, C. Chow, D. Needham, D. Caron, J. Fuhrman; Univ. of Southern California, Los Angeles, CA

**1963 The Novel Application of Single Cell Raman Microspectroscopy to Link the Roles of Uncultured Microorganisms with Specific Functional Genes in Complex Microbial Community**

D. Zhang, W. E. Huang; Kroto Res. Inst., Sheffield, United Kingdom

**1964 Metagenomic Characterization of Microbial Communities Capable of Producing Methane Via Coal Degradation**

S. Robbins<sup>1</sup>, S. Papendick<sup>2</sup>, P. Gilcrease<sup>2</sup>, S. Golding<sup>3</sup>, G. Tyson<sup>1</sup>; <sup>1</sup>Australian Ctr. for Ecogenomics, Univ. of Queensland, Brisbane, Australia, <sup>2</sup>South Dakota, Sch. of Mines and Technology, Rapid City, SD, <sup>3</sup>Sch. of Earth Sci., Univ. of Queensland, Brisbane, Australia

**1965 Experimental Assessment of Viral Impact on Marine Microbial Community Composition**

Y. Gerardin; Harvard Univ., Boston, MA

**1966 Characterization of Marine and Freshwater Photosynthetic Communities Cultured by Wavelength Selection Using LEDs**

R. Liu<sup>1</sup>, E. Chin<sup>2</sup>, S. Simmons<sup>3</sup>, J. Huang<sup>2</sup>; <sup>1</sup>Pronutra, Cambridge, MA, <sup>2</sup>Olin Coll., Needham, MA, <sup>3</sup>Marine Biological Lab., Woods Hole, MA

**1967 Characterization of Extracellular Polymeric Substances in Hypersaline Cyanobacterial Mats and Mat-forming Cyanobacterial Isolates**

R. K. Stuart<sup>1</sup>, J. Pett-Ridge<sup>1</sup>, B. Bebout<sup>2</sup>, M. Thelen<sup>1</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab., Livermore, CA, <sup>2</sup>Exobiology Branch, NASA Ames Res. Ctr., Mountain View, CA

**1968 Metagenomic Advances in Environmental Studies of Microbial Eukaryotes**

H. M. Bik, G. Jospin, E. Lowe, J. Eisen, A. Darling; UC Davis Genome Ctr., Davis, CA

**1969 Methylphosphonate Utilization by Marine Bacteria**

A. Martinez<sup>1</sup>, L. Ventouras<sup>1</sup>, S. T. Wilson<sup>2</sup>, D. M. Karl<sup>2</sup>, E. F. DeLong<sup>1</sup>; <sup>1</sup>MIT, Cambridge, MA, <sup>2</sup>Univ. of Hawaii, Honolulu, HI

**176 Molecular Microbial Ecology – Organisms (Division N)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1970 Comparative Genomics of N-Oxide Transformation Modules in Methanotrophic Bacteria**

L. Y. Stein<sup>1</sup>, K. D. Kits<sup>1</sup>, M. G. Klotz<sup>2</sup>; <sup>1</sup>Univ. of Alberta, Edmonton, AB, Canada, <sup>2</sup>Univ. of North Carolina, Charlotte, Charlotte, NC

**1971 *Vibrio vulnificus* Environmental Genotypes Exhibit Greater Attachment Efficiency to Chitin Compared to Clinical Genotypes**

T. C. Williams, M. Ayrapetyan, J. D. Oliver; Univ. of North Carolina at Charlotte, Charlotte, NC

**1972 Chemical Profiling of B Vitamin Transporters and Sensor Proteins in *Streptococcus pyogenes***

L. N. Anderson, P. K. Koech, S. B. Reed, M. F. Romine, A. T. Wright; Pacific Northwest Natl. Lab., Richland, WA

**1973 Pathways Underlying Pyomelanin Production by *Penicillium chrysogenum***

A. Vasanthakumar, A. DeAraujo, R. Mitchell; Harvard Univ., Cambridge, MA

**1974 *cotE*, a Reliable Biomarker for the Bacilli**

G. Ruiz-Ocasio<sup>1,2</sup>, J. Pérez-Jiménez<sup>2</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico at Aguadilla Campus, Aguadilla, PR, <sup>2</sup>Univ. del Turabo, Gurabo, PR

**1975 *In vitro* Culture of “Unculturable” Oral Bacteria**

A. Rybalka<sup>1</sup>, H. Thompson<sup>1</sup>, R. Moazzez<sup>1</sup>, F. E. Dewhirst<sup>2</sup>, W. G. Wade<sup>1</sup>; <sup>1</sup>King's Coll. London, London, United Kingdom, <sup>2</sup>The Forsyth Inst., Cambridge, MA

**1976 Label-Free, Strain-Resolved, Shotgun Proteomics of a Pathogen-Containing, Bacterial Co-Culture**

J. Chignell, S. Park, K. Reardon; Colorado State Univ., Fort Collins, CO

**1977 Comparative Genomics of *Lachnospiraceae* to Identify Host-specific Genetic Indicators**

M. R. Schroeder; Univ. of Wisconsin Milwaukee, Milwaukee, WI

**1978 The Functional and Phylogenetic Diversity of Laterally Transferred Genes In Cyanophage and Cyanobacteria**

L. Kelly, H. Ding, S. W. Chisholm; Massachusetts Inst. of Technology, Cambridge, MA

**1979 Indole Inhibition of AHL-Mediated Quorum Signaling Is Widespread in Gram-Negative Bacilli**

B. Hidalgo-Romano<sup>1</sup>, E. Valenzuela, Jr.<sup>1</sup>, S. A. Brown<sup>2</sup>, R. J. C. McLean<sup>1</sup>; <sup>1</sup>Texas State Univ., San Marcos, TX, <sup>2</sup>Univ. of Texas, Austin, TX

**1980 Detection of the NC10 Phylum in Cedar Swamp, Woods Hole, MA**  
**B. Kraft**<sup>1,2</sup>, C. Pepe-Ranney<sup>3,2</sup>, S. H. Zinder<sup>4,2</sup>, D. H. Buckley<sup>3,2</sup>; <sup>1</sup>Max Planck Inst. for Marine Microbiol., Bremen, Germany, <sup>2</sup>Microbial Diversity Course, Marine Biological Lab., Woods Hole, MA, <sup>3</sup>Dept. of Crop and Soil Sci., Cornell Univ., Ithaca, NY, <sup>4</sup>Dept. of Microbiol., Cornell Univ., Ithaca, NY

**1981 Phylogeny and Coding Potential of Microbial Dark Matter: Lessons Learned from 201 Single Cells**  
**C. Rinke**<sup>1</sup>, P. Schwientek<sup>1</sup>, A. Sczyrba<sup>2,1</sup>, N. N. Ivanova<sup>1</sup>, I. J. Anderson<sup>1</sup>, J.-F. Cheng<sup>1</sup>, A. Darling<sup>3</sup>, S. Malfatti<sup>1</sup>, B. K. Swan<sup>4</sup>, E. A. Gies<sup>5</sup>, J. A. Dodsworth<sup>6</sup>, B. P. Hedlund<sup>6</sup>, G. Tsiamis<sup>7</sup>, S. M. Sievert<sup>8</sup>, W.-T. Liu<sup>9</sup>, J. A. Eisen<sup>3</sup>, S. Hallam<sup>5</sup>, N. C. Kyrpides<sup>1</sup>, R. Stepanauskas<sup>4</sup>, E. M. Rubin<sup>1</sup>, P. Hugenholtz<sup>10</sup>, T. Woyke<sup>1</sup>; <sup>1</sup>DOE - Joint Genome Inst., Walnut Creek, CA, <sup>2</sup>Bielefeld Univ., CeBiTec, Bielefeld, Germany, <sup>3</sup>Univ. of California Davis, Davis, CA, <sup>4</sup>Bigelow Lab. for Ocean Sci., East Boothbay, ME, <sup>5</sup>Univ. of British Columbia, Vancouver, BC, Canada, <sup>6</sup>Univ. of Nevada, Las Vegas, NV, <sup>7</sup>Univ. of Western Greece, Agrinio, Greece, <sup>8</sup>Woods Hole Oceanographic Inst., Woods Hole, MA, <sup>9</sup>Univ. of Illinois at Urbana-Champaign, Urbana, IL, <sup>10</sup>The Univ. of Queensland, St. Lucia, Australia

**1982 D-lactate Dehydrogenase From *Sporolactobacillus Inulinus* CASD Is A Novel Bifunctional Enzyme**  
 L. Zhu, **B. Yu**, Y. Ma; Inst. of Microbiol., Chinese Academy of Sci., Beijing, China

## 177 Biofuels – I (Division O)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**1983 Biochemical Characterization of a Halophilic Thioesterase from *Chromohalobacter salexigens* for Use in Biofuel Production**  
**S. D. Schreck**, R. Killens-Cade, A. M. Grunden; North Carolina State Univ., Raleigh, NC

**1984 Dark-grown Algae Fed Corn and Sorghum Hydrosylates for Biodiesel Production**  
**K. K. Dandinet**, M. A. Schneegurt; Wichita State Univ., Wichita, KS

**1985 Lipid Production in *Rhodobacter sphaeroides*: From Photosynthetic Membranes to Biofuels**  
**K. C. Lemmer**, T. J. Donohue; Univ. of Wisconsin, Madison, WI

**1986 Isolation and Characterization of Methanol Resistant Mutants of *Gluconobacter frateurii* for Using Raw Glycerol Derived from Bio-diesel Fuel Production**  
 S. Sato, **H. Habe**; Natl. Inst. of Advanced Industrial Sci. and Technology, Tsukuba, Ibaraki, Japan

**1987 Enhancing Fatty Acid Production in *Escherichia coli* by Overexpression of a Dehydratase Domain from a Polyunsaturated Fatty Acid Synthase**  
**D. J. Oyola-Robles**<sup>1</sup>, C. R. Rullan-Lind<sup>1</sup>, N. M. Carballeira<sup>2</sup>, A. Baerga-Ortiz<sup>1</sup>; <sup>1</sup>UPR-Med. Sci. Campus, San Juan, PR, <sup>2</sup>UPR-Rio Piedras Campus, San Juan, PR

**1988 Characterization and Enhancement of Lipid Production in Cyanobacteria**  
**A. Peramuna**, M. L. Summers; California State Univ., Northridge, CA

**1989 Production of Butanol from Lignocellulosic Biomass Using Fusion Technology to Create New Thermophilic Clostridia**  
**Z. Golkar**, S. Emelife, O. Bagasra; Claflin Univ., Orangeburg, SC

**1990 Influence of the *budR* Gene on 2,3-butanediol Synthesis in *Klebsiella pneumoniae***  
**B. Kim**, S. Lee, M. Lu, J. Lee; Sogang Univ., Seoul, Republic of Korea

**1991 Observations of *bud* Gens Over-expressions on 2,3-Butanediol Production of *Klebsiella pneumoniae* by Metabolic Flux Analysis**  
**M. Lu**, S. Lee, B. Kim, C. Park, J. Lee; Chemical and Biomolecular Engineering Lab., Sogang Univ., Seoul, Republic of Korea

**1992 *Clostridium beijerinckii* SA-1 is a Butanol Hyper-Producing Strain**  
**W. J. Sandoval**, M. S. Chinn, J. M. Bruno-Barcena; North Carolina State Univ., Raleigh, NC

**1993 Biochemical Characterization of 6-phospho- $\beta$ -glucosidases to Gain Insights into Cellobiose Utilization by *Clostridium beijerinckii* NCIMB 8052**  
**S. Firkins**<sup>1</sup>, D. Licio<sup>1</sup>, L. B. Lai<sup>1</sup>, T. Ezejie<sup>2</sup>, V. Gopalan<sup>1</sup>; <sup>1</sup>The Ohio State Univ., Columbus, OH, <sup>2</sup>The Ohio State Univ., Wooster, OH

**1994 Microbial Fuel Cells with Anti-fouling Conductive Cathode Supports for Stationary Underwater Power Sources**  
**T. Huggins**; Univ. of Colorado, CO

**1995 Development of Anaerobic Biocathodes for Electrofuel and Chemical Production**  
**Z. Zaybak**<sup>1</sup>, J. M. Pisciotto<sup>1,2</sup>, J. C. Tokash<sup>1</sup>, B. E. Logan<sup>1</sup>; <sup>1</sup>The Pennsylvania State Univ., Dept. of Civil and Environmental Engineering, University Park, PA, <sup>2</sup>West Chester Univ., PA

**1996 Long-term Microbial Electrosynthesis with Autotrophic Microbiomes**  
**C. W. Marshall**<sup>1</sup>, D. E. Ross<sup>2</sup>, E. B. Fichot<sup>2</sup>, R. S. Norman<sup>2</sup>, H. D. May<sup>1</sup>; <sup>1</sup>Med. Univ. of South Carolina, Charleston, SC, <sup>2</sup>Univ. of South Carolina, Columbia, SC

**1997 Fermentation of Glycerol into Ethanol and Simultaneous Hydrogen Production in a Microbial Electrolysis Cell**  
**A. M. Speers**, J. M. Young, G. Reguera; Michigan State Univ., East Lansing, MI

**1998 Acetate Production Via Bioelectrochemical Reduction of Carbon Dioxide Using a Microbial Consortium Derived From Cow Rumen**  
**R. E. Hammonds**, J.-M. Oh, K. Whitehead, S. Creager, J. M. Henson; Clemson Univ., Clemson, SC

**1999 Evaluation of Efficiencies of Microbial Electrochemical Systems (MXCs)**  
**M. Padhiary**, S. Nagarajan, Z. Zhou; Natl. Univ. of Singapore, Singapore, Singapore

**2000 Genotypic Profile of a Hydrogen-Producing Mutant of *Azotobacter vinelandii***  
 J. D. Noar, J. M. Bruno-Barcena; North Carolina State Univ., Raleigh, NC

**2001 Manganese, an Important Microelement for H<sub>2</sub> Photoproduction by *Rhodobacter sphaeroides***  
**L. Gabrielyan**, A. Trchounian; Yerevan State Univ., Yerevan, Armenia

**2002 Hydrogen Production by Co-culture System of Hydrogenase and Nitrogenase in Recombinant *Escherichia coli***  
**H. Lee**<sup>1</sup>, Y.-H. Kim<sup>2</sup>, J. Min<sup>1</sup>; <sup>1</sup>Chonbuk Natl. Univ., Jeonju, Republic of Korea, <sup>2</sup>Chungbuk Natl. Univ., Cheongju, Republic of Korea

**2003 Evaluation of Hydrogen Production Rates and Uptake Rates for Microbial Electrosynthesis of Methane**  
**S. Chua**, S. Nagarajan, S. Chou, Z. Zhou; Natl. Univ. of Singapore, Singapore, Singapore

**2004 Characterization of Bidirectional Hydrogenase Mediated Fermentative Hydrogen Evolution from the Marine Intertidal Cyanobacteria**  
**A. Kothari**, F. Garcia-Pichel; Arizona State Univ., Tempe, AZ

**2005 Hydrogen Production From Cellulose in *Clostridium thermocellum***  
**K. J. Chou**, L. Magnusson, P.-C. Maness; Natl. Renewable Energy Lab (NREL), Golden, CO

**2006 The Potential of Cassava Biomass as a Feedstock for Sustainable Biogas Production in South Africa**  
**V. I. Okudoh**<sup>1</sup>, C. Trois<sup>2</sup>, T. Seyoum<sup>1</sup>; <sup>1</sup>Univ. of KwaZulu-Natal, Pietermaritzburg, South Africa, <sup>2</sup>Univ. of KwaZulu-Natal, Durban, South Africa

- 2007 Impact of Raw Syngas on the Growth of the Thermophilic Acetogen *Moorella thermoacetica* ATCC 39073**  
S. L. Daniel; Eastern Illinois Univ., Charleston, IL

**178 General Food Microbiology I (Division P)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 2008 Assessing Mesophilic and Thermophilic Sporeformer Prevalence and Levels in Raw Milk**  
R. A. Miller, S. N. Masiello, D. J. Kent, N. H. Martin, M. Wiedmann, K. J. Boor; Cornell Univ., Ithaca, NY
- 2009 Surface Micro-biota of Common and Indigenous Fresh Fruits and Vegetables in Nigeria**  
F. O. Tasie, III, U. O. George-Okafor, 111; Enugu State Univ. of Sci. and Technology, Agbani, Enugu, Nigeria
- 2010 Metagenome Analysis of Indonesian Tempeh as Revealed by Next Generation Sequencing**  
A. Suwanto<sup>1</sup>, C. A. Seumahu<sup>2</sup>, R. Luo<sup>3</sup>; <sup>1</sup>Bogor Agricultural Univ., Bogor, Indonesia, <sup>2</sup>Pattimura Univ., Ambon, Indonesia, <sup>3</sup>Life Technologies, Singapore, Singapore
- 2011 Antibiotic-Resistant *Enterococcus faecalis* Isolated from Food Canteens in Osun States, Nigeria**  
A. K. Olawale<sup>1</sup>, O. Famurewa<sup>2</sup>; <sup>1</sup>Dept. of Applied Sci., Osun State Polytechnic, Ire, Nigeria, <sup>2</sup>Dept. of Microbiol., Ekiti State Univ., Ado-Ekiti, Nigeria
- 2012 The Assessment of *Escherichia coli* as an Indicator of Microbial Quality of Irrigation Waters Used for Produce**  
N. A. Brassill, C. Rock, C. Gerba, K. Bright, J. McLain, K. Riley, K. Nolte, J. Sexton, J. Torrey; Univ. of Arizona, Tucson, AZ
- 2013 Development of a Carbohydrate-supplemental Semidefined Medium for the Semiselective Cultivation of *Lactobacillus* Spp.**  
J. M. Sturino, R. Menon, M. Shields, T. Duong; Texas A&M Univ., College Station, TX
- 2014 Microbiological Quality and Safety of Dietary Supplements in Saudi Arabia**  
S. O. Aljaloud<sup>1</sup>, S. A. Ibrahim<sup>1</sup>, A. Fraser<sup>2</sup>, D. Song<sup>3</sup>, A. Shabazi<sup>1</sup>; <sup>1</sup>North Carolina A&T State Univ., Greensboro, NC, <sup>2</sup>Dept. of Food Sci. and Human Nutrition, Clemson Univ., Clemson, NC, <sup>3</sup>The FDA, Washington, DC
- 2015 A New *Lactobacillus* species Associated with Late Gas Production in Cheese**  
C. J. Oberg<sup>1</sup>, M. D. Culumber<sup>1</sup>, T. Oberg<sup>2</sup>, J. R. Broadbent<sup>2</sup>, D. J. McMahon<sup>3</sup>; <sup>1</sup>Weber State Univ., Ogden, UT, <sup>2</sup>Western Dairy Ctr., Utah State Univ., Logan, UT, <sup>3</sup>Western Dairy Ctr., Utah State Univ., Ogden, UT
- 2016 Morphological and Molecular Characterization of Pathogenic Fungi in Postharvest Associated Symptoms of Anthracnose in Avocado**  
E. Valadez-Moctezuma, G. Sánchez-Bolón, T. Espinosa-Solares, M. Ochoa-Rosas, G. Mena-Nevarez, M. Acosta-Ramos; Univ. Autónoma Chapingo, Texcoco, Edo. de México, Mexico
- 2017 Persistence of *Escherichia coli* O157 and Non-O157 Strains in Soils**  
A. M. Ibekwe<sup>1</sup>, J. Ma<sup>1</sup>, C-H. Yang<sup>2</sup>, D. Crowley<sup>3</sup>; <sup>1</sup>USDA-ARS, Riverside, CA, <sup>2</sup>Univ. of Wisconsin, Milwaukee, WI, <sup>3</sup>Univ. of California, Riverside, CA
- 2018 Optimization of Culturing Conditions for the Production of Crude Dextran by *Weissella cibaria* CMG Dex3**  
K. Siddiqui; Ctr. for Molecular Genetics, Univ. of Karachi, Karachi, Pakistan
- 2019 Survival of Probiotic Bacteria in Commercial Infant Foods Preparations and Their Antimicrobial Activity against Food Borne Pathogens**  
I. Javed, R. F. S. Ali, M. Ayaz; Univ. of Vet. and Animal Sci., Lahore, Pakistan

- 2020 Production Plant Microbiome and Effect on Shelf Life of Vacuum Packed Sausages**  
J. Hultman, R. Rahkila, K. J. Björkroth; Univ. of Helsinki, Helsinki, Finland

- 2021 Antibiotic Susceptibility of Commercial Probiotics as Measured by Broth Microdilution and Disk Diffusion Methods**  
C. Cano, J. E. Stratton, A. Bianchini, B. Martinez; Univ. of Nebraska, Lincoln, NE

- 2022 Characterization of *Bacillus* Isolates from Organic Commodities**  
B. Catchings<sup>1</sup>, B. Williams<sup>1,2</sup>, C. Youngblood<sup>1</sup>, S. Leverette<sup>1</sup>, B. Garner<sup>1</sup>; <sup>1</sup>Tougaloo Coll., Jackson, MS, <sup>2</sup>Jackson State Univ., MS

- 2023 Characterization of Methicillin-Resistant Coagulase-negative Staphylococci (MRCoNS) and Methicillin-susceptible *Staphylococcus aureus* (MSSA) Isolates from Retail Meat to Investigate Their Role in the Emergence of MRSA**  
K. Bhargava, Y. Zhang; Wayne State Univ., Detroit, MI

- 2024 Development of a Predictive Model for the Growth of *Listeria monocytogenes* in Pasteurized Blue Crab (*Callinectes sapidus*) Meat**  
S. Parveen<sup>1</sup>, C. White<sup>1</sup>, M. Tamplin<sup>2</sup>; <sup>1</sup>Univ. of Maryland Eastern Shore, Princess Anne, MD, <sup>2</sup>Univ. of Tasmania, Hobart, Australia

**179 Methods in Environmental Microbiology (Division Q)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 2025 Early Warning Detection of Multiple Pathogens at a Public Drinking Water Utility**  
E. C. Chern<sup>1</sup>, N. Rosario<sup>1</sup>, B. McMinn<sup>2</sup>, E. Rhodes<sup>2</sup>, J. Tin<sup>1</sup>; <sup>1</sup>SFPUC, Millbrae, CA, <sup>2</sup>USEPA, Cincinnati, OH

- 2026 Comparative Assessment of PLC/PRC/5 and BGM Cell Lines for Enteric Viruses Detection in Wastewater Sludge/Biosolids**  
A. H. Tamimi, S. Abdel Maksoud, C. P. Gerba; The Univ. of Arizona, Tucson, AZ

- 2027 Enumeration of Ammonia and Nitrite Oxidizing Bacteria in the Metropolitan Water Reclamation District of Greater Chicago's Stickney Water Reclamation Plant Using the Molecular Gene Probe Method**  
G. K. Rijal, A. Glymph-Martin, H. Shukla; Metropolitan Water Reclamation District of Greater Chicago, Chicago, IL

- 2028 DNA-extraction Free Quantification of Genetic Markers Using Gene-Z: A Portable Amplification-based Device**  
R. D. Stedtfeld, T. M. Stedtfeld, J. Sorensen, M. Kronlein, T. Liu, J. Tiedje, S. Hashsham; Michigan State Univ., E. Lansing, MI

- 2029 Molecular Methods for Analysis of Synergistic Biodeterioration of Cellulosic Archival Materials**  
A. DeAraujo, A. Vasanthakumar, R. Mitchell; Harvard Univ., Cambridge, MA

- 2030 Comparative Microbial Diversity Analysis between the NASA Standard Assay and Molecular Approaches for the Mars Exploration and Mars Science Laboratory Rover Missions**  
J. N. Benardini, III<sup>1</sup>, P. Vaishampayan<sup>1</sup>, S. Smith<sup>2</sup>, W. Schubert<sup>3</sup>, S. Childers<sup>4</sup>, A. Paszczynski<sup>2</sup>; <sup>1</sup>Jet Propulsion Lab., Pasadena, CA, <sup>2</sup>Univ. of Idaho, Moscow, ID, <sup>3</sup>Jet Propulsion Lab., Pasadena, CA, <sup>4</sup>Colby Coll., Waterville, ME

- 2031 Multi-laboratory Validation of EPA Method 1611 a Quantitative Polymerase Chain Reaction (qPCR) Procedure for the Quantitative Detection of Enterococci in Marine and Fresh Recreational Water Matrices**  
Y. T. Chambers<sup>1</sup>, R. K. Oshiro<sup>2</sup>, R. Ghei<sup>1</sup>, E. King<sup>1</sup>, K. Miller<sup>1</sup>; <sup>1</sup>CSC, Alexandria, VA, <sup>2</sup>U.S. EPA, Washington, DC

- 2032 Comparing qPCR Marker Concentrations when Using RNA and DNA as Targets**  
T. Pitkänen<sup>1,2</sup>, H. Ryu<sup>2</sup>, M. Elk<sup>2</sup>, J. Santo Domingo<sup>2</sup>; <sup>1</sup>Natl. Inst. for Hlth. and Welfare, Kuopio, Finland, <sup>2</sup>U.S. EPA, Cincinnati, OH
- 2033 Low-Input Metatranscriptomics and Single Cell Sequencing Reveals Metabolic Interactions of an Alkane-Oxidizing Methanogenic Consortium**  
M. Embree<sup>1</sup>, H. Nagarajan<sup>1</sup>, N. S. Movahedi<sup>2</sup>, H. Chitsaz<sup>2</sup>, K. Zengler<sup>1</sup>; <sup>1</sup>Univ. of California, San Diego, La Jolla, CA, <sup>2</sup>Wayne State Univ., Detroit, MI
- 2034 Correction of Ambiguous Bases (N's) from the 454 Pyrosequencing System**  
S. Shin, J. Park; Yonsei Univ., Seoul, Republic of Korea
- 2035 Ultrasonic Gene Transfer in Natural Bacterial Communities**  
D. Boardman, C. Rose, R. Dwyer-Jones, W. Huang; Univ. of Sheffield, Sheffield, United Kingdom
- 2036 Impact on Beach Management Decisions Using a Single qPCR Measurement vs. Average of qPCR Replicates**  
M. R. Raith, K. de Leon, C. D. Pham, Y. Cao, J. F. Griffith; SCCWRP, Costa Mesa, CA
- 2037 Improved HF183 Reverse Primer and Probe for Greater Analytical Sensitivity of Human *Bacteroides* in the Environment**  
H. T. Millen<sup>1</sup>, S. K. Spencer<sup>2</sup>, O. C. Shanks<sup>3</sup>, H. C. Green<sup>3</sup>, R. A. Haugland<sup>3</sup>, J. C. Gonnering<sup>1</sup>, M. A. Borchardt<sup>2</sup>; <sup>1</sup>USGS Wisconsin Water Sci. Ctr., Marshfield, WI, <sup>2</sup>USDA-Agricultural Res. Service, Marshfield, WI, <sup>3</sup>EPA, Cincinnati, OH
- 2038 Evaluation of Alternative *Enterococcus* qPCR Methods for Recreational Water Monitoring**  
Y. Cao, M. R. Raith, J. F. Griffith; Southern California Coastal Water Res. Project, Costa Mesa, CA
- 2039 Validation of a Rapid Resin-Based Method for Concentration and Further Detection of F-RNA Coliphages in Different Water Sources of the New England Region**  
A. T. Perez-Mendez<sup>1</sup>, J. C. Chandler<sup>2</sup>, J. Paar<sup>3</sup>, M. Doolittle<sup>3</sup>, E. Bouthiette<sup>3</sup>, B. Bisha<sup>1</sup>, S. M. Coleman<sup>1</sup>, L. D. Goodridge<sup>1</sup>; <sup>1</sup>Colorado State Univ., Fort Collins, CO, <sup>2</sup>Lumiere Diagnostics, Fort Collins, CO, <sup>3</sup>U.S. EPA, North Chelmsford, MA
- 2040 Effects of Calcium Chloride and Magnesium Chloride as Divalent Cations on the Detection of F+ Coliphage in Environmental Waters**  
Y. Yuen, E. David, M. Sobsey; Univ. of North Carolina at Chapel Hill, Chapel Hill, NC
- 2041 WITHDRAWN**
- 2042 Evaluation of a New Method for the Accurate Identification of *Escherichia coli* in Irrigation Waters Used for Produce**  
F. Valadares, K. R. Riley, C. Rock; Univ. of Arizona, Tucson, AZ
- 2043 Evaluation of a 10 hour Test for Detecting Total Coliforms and *E. coli* in Drinking Water**  
C-I. Wong, F-C. Hsu; Scientific Methods Inc., Granger, IN
- 2044 An Improved Method for Rapid, High-quality RNA Isolation and Purification from *Escherichia coli* Exposed to Clay Mineral Mixtures and Leachates for Metatranscriptomic Analysis**  
A. N. Loes, S. E. Haydel; Arizona State Univ., Tempe, AZ
- 2045 A New Method of Protein Extraction from Soil Microorganisms that Minimizes Co-extraction of Humic Substances**  
H. Callahan, S. Kennedy, M. Brolaski; MO BIO Lab., Inc., Carlsbad, CA
- 2046 Rapid Quantitative Detection and Enumeration of Microbial Targets by Amplification From Blood, Food, Early Enrichment Cultures, and Other Inhibitor Prone Samples**  
A. M. McCoy; Bio-Rad Lab., Hercules, CA

- 2047 A Metrology Perspective on Quantifying Microbes**  
S. M. Da Silva, J. B. Morrow; NIST, Gaithersburg, MD
- 2048 Environmental DNA (eDNA)-based Monitoring of Invasive Species Using Microfluidic chips, Gene-Z, and Isothermal Amplification**  
M. R. Kronlein, R. D. Stedtfeld, E. Dreelin, J. Latimore, R. Stevenson, S. A. Hashsham; Michigan State Univ., East Lansing, MI
- 2049 Metabolic and Molecular Characterization of a Syntrophic Acetate-degrading Consortium**  
M. Martinez; Univ. of Puerto Rico, Maricao, PR
- 2050 A Novel Method for Rapid Extraction, Purification, and Concentration of Poliovirus RNA**  
E. Burton<sup>1</sup>, L. Lillis<sup>2</sup>, C. Fagnant<sup>1</sup>, N. Beck<sup>1</sup>, D. Boyle<sup>2</sup>, S. Meschke<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>PATH, Seattle, WA
- 2051 Swimming Pool Water Ingestion Exposure Assessment Using Videography and Exposure Questionnaires**  
K. A. Reynolds, L. M. Suppes; The Univ. of Arizona, Tucson, AZ
- 180 Microbial Interactions with Living Organisms (Division Q)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 2052 Effect of Age on Microbial Diversity in "agave atrovirens" (the Largest Agave in México)**  
A. C. Ruiz-Font<sup>1</sup>, F. M. J. Melo-Perez<sup>2</sup>; <sup>1</sup>IPN, Puebla, Mexico, <sup>2</sup>Univ. Autonoma de Puebla, Puebla, Mexico
- 2053 Uncorking the Diversity of *Wolbachia* at Southern Indiana Wineries**  
R. D. Hicks, K. B. Sheehan, I. L. G. Newton; Indiana Univ., Bloomington, IN
- 2054 Effect of Mycorrhizal Colonization and Light Limitation on Growth and Reproduction of Lima Bean (*Phaseolus lunatus* L.)**  
J. A. Millar, D. J. Ballhorn; Portland State Univ., Portland, OR
- 2055 Signaling Pathways Involved in 1-octen-3-ol Mediated Neurotoxicity in *Drosophila melanogaster*: Implication in Parkinson's Disease**  
A. A. Inamdar, J. Bennett; Rutgers, The State Univ. of New Jersey, New Brunswick, NJ
- 2056 Rhizosphere Engineering and Management Using Plant Growth Promoting Rhizobacterium (PGPR) for Sustainable Horticulture with Special Reference to Apple**  
R. Mahajan, C. K. Shirkot; Dr. Y.S. Parmar Univ. of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India
- 2057 *Vibrio metschnikovii* Associated with Brine Shrimp Eggs Isolated from the Great Salt Lake in Utah**  
H. Vachon, S. Peterson, J. Fritzier, K. Nakaoka; Weber State Univ., Ogden, UT
- 2058 Genetic Diversity of *Vibrio vulnificus* Within Individual Oysters**  
A. Chen<sup>1</sup>, N. A. Hasan<sup>1,2</sup>, B. J. Haley<sup>1</sup>, E. Taviani<sup>1</sup>, R. McKay<sup>3</sup>, D. White<sup>4</sup>, M. Tarnowski<sup>4</sup>, K. Brohawn<sup>3</sup>, A. Huq<sup>1</sup>, R. R. Colwell<sup>1,2,5,6</sup>; <sup>1</sup>Maryland Pathogen Res. Inst., Univ. of Maryland, Coll. Park, College Park, MD, <sup>2</sup>CosmosID, Inc., College Park, MD, <sup>3</sup>Maryland Dept. of the Environment, Annapolis, MD, <sup>4</sup>Maryland Dept. of Natural Resources, Annapolis, MD, <sup>5</sup>Johns Hopkins Bloomberg Sch. of Publ. Hlth., Baltimore, MD, <sup>6</sup>Ctr. for Bioinformatics and Computational Biol., Univ. of Maryland, Coll. Park, College Park, MD
- 2059 Two Virus Based Endocrine Disruptor Assays Effective Across Vertebrate Classes**  
P. C. Hartig, M. C. Cardon, K. L. Bobseine, L. E. Gray, Jr., V. S. Wilson; US EPA, RTP, NC



**2060 Abundance and Diversity of *Bacillus thuringiensis* Strains for Controlling Pests in Bangladesh Agriculture**  
M. M. Hoq, M. Shishir, S. N. Khan; Univ. of Dhaka, Dhaka, Bangladesh

**2061 Enteric Methane Production Mitigated Through Tailor-made Nanoparticles**  
E. Altermann<sup>1,2</sup>, K. Reilly<sup>1</sup>, R. S. Ronimus<sup>1</sup>, B. H. Rehm<sup>3</sup>; <sup>1</sup>AgRes. Limited, Palmerston North, New Zealand, <sup>2</sup>Riddet Inst., Massey Univ., Palmerston North, New Zealand, <sup>3</sup>Inst. of Molecular BioSci., Massey Univ., Palmerston North, New Zealand

**2062 A LuxI Gene is a Key Regulator for Antifungal Activity of the Chitinase Producing Biocontrol Strain *Chromobacterium* sp. C61**  
H. Kim<sup>1</sup>, J. Lee<sup>1</sup>, B. Kang<sup>2</sup>, Y. Kim<sup>1</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>JARES, Naju, Republic of Korea

**2063 The Sigma Factor, RpoS, Regulates Production of Several Factors Involved in Biocontrol Activity of the Rhizobacterium, *Pseudomonas chlororaphis* O6**  
Y. Kim<sup>1</sup>, H. Kim<sup>1</sup>, J. Park<sup>1</sup>, A. J. Anderson<sup>2</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>Utah State Univ., Logan, UT

**2064 Extracellular Chitinase and a New Cyclic Lipopeptide Contributes Synergically to the Biocontrol Activity in *Chromobacterium* sp. C61**  
H. Kim<sup>1</sup>, S.-J. Ko<sup>2</sup>, I. Kim<sup>1</sup>, Y. Kim<sup>1</sup>; <sup>1</sup>Chonnam Natl. Univ., Gwangju, Republic of Korea, <sup>2</sup>JARES, Naju, Republic of Korea

**2065 Identity and Lethality of an *Aspergillus* Fungus Shown to be Pathogenic to the Drywood Termite, *Incisitermes minor***  
G. M. Hansen, K. M. Ring, B. S. Bledsoe, S. M. Richart; Azusa Pacific Univ., Azusa, CA

**2066 *Schistosoma haematobium* and Urinary Tract Infection in Some Parts of Jos, Plateau State, Nigeria**  
J. A. Yohanna<sup>1</sup>, J. S. Luka<sup>1</sup>, D. A. Dakul<sup>1</sup>, D. A. Bigila<sup>2</sup>, S. F. Akut<sup>3</sup>; <sup>1</sup>Univ. of Jos, Jos, Nigeria, <sup>2</sup>Nigerian Air Force Hosp., Jos, Jos, Nigeria, <sup>3</sup>Victory Laboratory Clinic, Nabor Jos., Jos, Nigeria

## 181 Sampling and Sensor Methods (Division Q)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**2067 Using an Automated Bacterial Identification System to Identify Bacteria from the Rio Grande River**  
J. A. Barragan, J. Castor, C. Caddell, G. Robinson, I. C. Valdez, J. Delgado, J. Mendoza, M. Alvarez; El Paso Community Coll., El Paso, TX

**2068 A Novel MPN Technique to Quantify Pathogens from Environmental Surfaces Sampled with Swabs**  
A. Kossik, N. K. Beck, J. S. Meschke; Univ. of Washington, Seattle, WA

**2069 A Comparison of Hollow Fiber Filtration (HFF) and Charge-Based Microporous Filters (CMF) for Large-Volume Concentration of Enteroviruses and Bacteriophage from Tertiary-Treated Wastewater Effluent**  
R. A. Reinke, N. Allison, S. Adams, J. Jackson, J. Quach-Cu; Los Angeles County Sanitation Districts, Whittier, CA

**2070 Evaluation of Preservation Methods for Microbial Analyses**  
S. M. Rodriguez-Rivera<sup>1</sup>, M. R. Berrios-Cruz<sup>2</sup>, A. M. Alicea-Serrano<sup>1</sup>, K. M. De Jesús-Laboy<sup>1</sup>, M. G. Domínguez-Bello<sup>1</sup>; <sup>1</sup>Univ. of Puerto Rico-Rio Piedras Campus, San Juan, PR, <sup>2</sup>Univ. of Puerto Rico-Mayagüez Campus, Mayagüez, PR

**2071 Comparison of Results for Sample Concentration of Six Microbes using a Novel Concentrating Pipette Tip**  
M. L. Hornback<sup>1</sup>, P. S. Murowchick<sup>2</sup>; <sup>1</sup>InnovaPrep LLC, Drexel, MO, <sup>2</sup>AlburtyLab, Inc., Drexel, MO

**2072 Evaluation of Sample Preparation Methodologies for Generation of Bacterial Peptides for ESI LC-MS/MS Analysis**  
S. D. Leskinen, D. W. Hamilton, E. A. Kearns, D. V. Lim; Univ. of South Florida, Tampa, FL

**2073 Sensing Microbiologically Influenced Steel Corrosion with Quartz Crystal Microbalances**  
D. France, E. Mansfield; NIST, Boulder, CO

**2074 Toxicity Monitoring Using Lysosomal Responses In *Saccharomyces cerevisiae***  
N.-T. Nguyen, Jihee Yoon, Yang-Hoon Kim, Jiho Min; Dept. of Bioprocess Engineering, Chonbuk Natl. Univ., Jeonju, Republic of Korea

**2075 Rapid Evaluation of Sub-lethal Effects of Nanoparticles in *Escherichia coli***  
C. Kaweeteerawat<sup>1,2</sup>, A. Ivask<sup>2</sup>, H. Fischer<sup>3</sup>, P. Holden<sup>4,2</sup>, H. Godwin<sup>1,2</sup>; <sup>1</sup>Molecular Toxicology Inter Dept. al Program, Sch. of Publ. Hlth., Univ. of California, Los Angeles, California, Los Angeles, CA, <sup>2</sup>Univ. of California Ctr. of Environmental Implication of Nanotechnology, Univ. of California, Los Angeles, Los Angeles, CA, <sup>3</sup>Dept. of Biostatistics, Univ. of California, Los Angeles, Los Angeles, CA, <sup>4</sup>Donald Bren Sch. of Environmental Sci. and Management, Univ. of California, Santa Barbara, Santa Barbara, CA

**2076 Application of the Solvent Effect on Bioluminescent Reporter Bacteria as a Real-Time Membrane Toxicity Assay**  
P. Myer<sup>1</sup>, W. Dominguez<sup>2</sup>, R. Turco<sup>1</sup>, B. Applegate<sup>1</sup>; <sup>1</sup>Purdue Univ., West Lafayette, IN, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN

**2077 Development of a Whole-cell Bacterial Biosensor for the Detection and Measurement of Propionate**  
Y.-F. Li, Z. Yu; The Ohio State Univ., Columbus, OH

**2078 Sensor Box Using Single Cell Gene Expression Distribution to Indicate Environmental Conditions**  
X. Shi<sup>1</sup>, W. Gao<sup>1</sup>, S.-h. Chao<sup>1</sup>, W. Zhang<sup>2</sup>, D. Meldrum<sup>1</sup>; <sup>1</sup>Ctr. for Biosignatures Discovery Automation, Biodesign Inst., Tempe, AZ, <sup>2</sup>Sch. of Chemical Engineering & Technology, Tianjin Univ., Tianjin, China

**2079 Comparison of Filtration Methods for Poliovirus Recovery from Environmental Waters**  
C. S. Fagnant<sup>1</sup>, N. K. Beck<sup>1</sup>, M.-F. Yang<sup>1,2</sup>, K. S. Barnes<sup>1</sup>, E. D. Burton<sup>1</sup>, D. Boyle<sup>1,3</sup>, J. S. Meschke<sup>1</sup>; <sup>1</sup>Univ. of Washington, Seattle, WA, <sup>2</sup>Natl. Taiwan Univ., Taiwan, <sup>3</sup>Program for Appropriate Technology in Hlth., Seattle, WA

**2080 Standard Anti-Microbial Surface Testing Protocols are Not Valid for Anti-Adhesion Surfaces: A Systematic Modification of the ISO 22196 Protocol**  
R. May, K. Chung, M. Sogo, M. Hoffman, S. Reddy; Sharklet Technologies Inc., Aurora, CO

## 182 Genomics, Comparative Genomics, and Phylogenetics of Pathogens (Division R)

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**2081 Ecological and Taxonomic Distribution of  $\beta$ -Lactamases and Implications for Disease Occurrences**  
T. K. Chadha, J. C. Zak; Texas Tech Univ., Lubbock, TX

**2082 Emergence and Spread of Epidemic Multidrug-Resistance *Pseudomonas aeruginosa* (MDRP)**  
T. Miyoshi-Akiyama, T. Tada, N. Ohmagari, T. Kirikae; Natl. Ctr. for Global Hlth. and Med., Tokyo, Japan

**2083 Development and Validation of Supragenome Hybridization Arrays (SGH) for the Determination of Bacterial Gene Possession**  
R. A. Eutsey<sup>1</sup>, N. Hiller<sup>2</sup>, J. P. Ear<sup>1</sup>, M. E. Dahlgren<sup>1</sup>, A. Ahmed<sup>1</sup>, E. Powell<sup>1</sup>, M. Schultz<sup>1</sup>, J. R. Gilsdorf<sup>3</sup>, L. Zhang<sup>3</sup>, A. Smith<sup>4</sup>, T. F. Murphy<sup>5</sup>, S. Sethi<sup>5</sup>, K. Shen<sup>1</sup>, J. Post<sup>1</sup>, F. Z. Hu<sup>1</sup>, G. D. Ehrlich<sup>1</sup>; <sup>1</sup>Ctr. for Genomic Sci., ASRI, Pittsburgh, PA, <sup>2</sup>Carnegie Mellon Univ. and Ctr. for Genomic Sci., ASRI, Pittsburgh, PA, <sup>3</sup>Univ. of Michigan Sch. of Publ. Hlth., Ann Arbor, MI, <sup>4</sup>Univ. of Washington Sch. of Publ. Hlth., Seattle, WA, <sup>5</sup>State Univ. of New York at Buffalo, Buffalo, NY

**2084 Phylogenetics and Gene Content of the Genus *Escherichia***  
M. Feldgarden, S. Chapman, M. Fitzgerald, S. Gargaya, P. Godfrey, C. Murphy, S. Saif, S. Young, Q. Zeng, B. W. Birren, The Broad Sequencing Platform; The Broad Inst. of Harvard and MIT, Cambridge, MA

- 2085 Examining the Genomic Diversity of ETEC in Bangladesh**  
J. W. Sahl<sup>1</sup>, J. Sistrunk<sup>1</sup>, E. E. Hine<sup>1</sup>, A. Sheikh<sup>2</sup>, N. Ibrat Baby<sup>2</sup>, Y. Ara Begum<sup>2</sup>, C. M. Fraser<sup>1</sup>, F. Qadri<sup>2</sup>, J. M. Fleckenstein<sup>3</sup>, **D. A. Rasko<sup>1</sup>**;  
<sup>1</sup>Univ. of Maryland, Baltimore, MD, <sup>2</sup>Intl. Ctr. for Diarrhoeal Disease Res., Bangladesh, Dhaka, Bangladesh, <sup>3</sup>Washington Univ., St. Louis, MO
- 2086 Next Generation Multiplexed Target Resequencing for the Whole Genome Sequence Typing of *Escherichia coli* O157:H7**  
F. Sanjar<sup>1</sup>, A. Rodriguez<sup>1</sup>, T. Hazen<sup>2</sup>, S. S. K. Koenig<sup>1</sup>, W. T. Hierholzer<sup>1</sup>, A. Javid<sup>1</sup>, S. Agrawal<sup>2</sup>, K. Galens<sup>2</sup>, S. Daugherty<sup>2</sup>, C. Fraser<sup>2</sup>, J. Ravel<sup>2</sup>, D. Rasko<sup>2</sup>, **M. Eppinger<sup>1,3</sup>**; <sup>1</sup>Univ. of Texas at San Antonio, San Antonio, TX, <sup>2</sup>Univ. of Maryland, Baltimore, MD, <sup>3</sup>South Texas Ctr. for Emerging Infectious Diseases, San Antonio, TX
- 2087 Phylogenetic Analysis and Comparative Genomics of *Salmonella* Newport Clinical Strains from China by Whole Genome Sequence**  
G. Cao<sup>1</sup>, J. Zhang<sup>2</sup>, X. Xu<sup>3</sup>, H. Jin<sup>3</sup>, X. Yang<sup>2</sup>, H. Pan<sup>2</sup>, S. Zhao<sup>4</sup>, M. Allard<sup>5</sup>, E. Brown<sup>5</sup>, J. Meng<sup>1</sup>; <sup>1</sup>Univ. of Maryland, Coll. Park, College Park, MD, <sup>2</sup>Shanghai JiaoTong Univ., China, <sup>3</sup>Municipal Ctr. for Disease Control and Prevention, China, <sup>4</sup>Ctr. for Vet. Med., FDA, MD, <sup>5</sup>Ctr. for Food Safety and Applied Nutrition, FDA, College Park, MD
- 2088 Population Structure of *Salmonella enterica* ssp. Enterica**  
P. T. Desai<sup>1</sup>, S. Porwollik<sup>1</sup>, F. Long<sup>1</sup>, P. Cheng<sup>1</sup>, A. Wollam<sup>2</sup>, S. Clifton<sup>2</sup>, G. Weinstock<sup>2</sup>, M. McClelland<sup>1</sup>; <sup>1</sup>Univ. of California, Irvine, Irvine, CA, <sup>2</sup>The Genome Inst., Washington Univ. Sch. of Med., St. Louis, MO
- 2089 Genomic Comparison of *C. jejuni* Isolates Utilizing a New Technology for the Preparation of PCR-Free and Low-Input NGS Libraries**  
R. R. Spurbeck<sup>1</sup>, L. Kurihara<sup>1</sup>, R. Beaubien<sup>1</sup>, J. Perry<sup>1</sup>, V. Kelchner<sup>1</sup>, A. McUsic<sup>1</sup>, J. Laliberte<sup>1</sup>, J. Laliberte<sup>1</sup>, A. Perault<sup>2</sup>, S. Carpentier<sup>2</sup>, J. Johnson<sup>2</sup>, V. DiRita<sup>2</sup>, S. Chupreta<sup>1</sup>, V. Makarov<sup>1</sup>; <sup>1</sup>Swift BioSci., Ann Arbor, MI, <sup>2</sup>Univ. of Michigan Med. Sch., Ann Arbor, MI
- 2090 Identification, Genome Sequencing and Analysis of Ten Novel *Campylobacter* Taxa Isolated Primarily from Wildlife, Domestic Pets and Livestock in California**  
W. G. Miller, M. Chapman, E. Yee, R. E. Mandrell; USDA, ARS, WRRRC, Albany, CA
- 2091 Community – and Clinical-associated *Enterococcus faecium* are Distinguished by Genome Content**  
E. B. Kim, M. L. Marco; Dept. of Food Sci. and Technology, Univ. of California, Davis, CA
- 2092 A MLST for Fastidious Growing *Brachyspira* Species Directly From Clinical Samples: Targeting the ‘Dead, Scattered, Buried, and Hidden in the Crowd’-faction**  
L. J. Westerman<sup>1</sup>, H. V. Stel<sup>2</sup>, M. E. I. Schipper<sup>1</sup>, D. S. A. Ahad<sup>1</sup>, M. J. M. Bonten<sup>1</sup>, J. A. Wagenaar<sup>3</sup>, J. G. Kusters<sup>1</sup>; <sup>1</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>2</sup>Tergooziekenhuizen, Hilversum, Netherlands, <sup>3</sup>Faculty of Vet. Med., Utrecht Univ., Utrecht, Netherlands
- 2093 Whole Genome Comparative Analyses of Multiple Species from the Family Pasteurellaceae**  
J. P. Earl<sup>1</sup>, A. Ahamed<sup>1</sup>, E. Powell<sup>1</sup>, R. Eutsey<sup>1</sup>, B. Janto<sup>1</sup>, J. Hogg<sup>1</sup>, J. Gilsdorf<sup>2</sup>, T. Murphy<sup>3</sup>, F. Z. Hu<sup>1</sup>, G. D. Ehrlich<sup>1</sup>; <sup>1</sup>Ctr. for Genomic Sci./ASRI, Pittsburgh, PA, <sup>2</sup>Med. Sch. Dept. of Pediatrics Women’s Hosp., Ann Arbor, MI, <sup>3</sup>Sch. of Med. and BioMed. Sci., Univ. of Buffalo, Buffalo, NY
- 2094 A Comparative Genomic Study of the Evolution of *Streptococcus pyogenes* Strains**  
V. Reynoso<sup>1</sup>, **C. Putonti<sup>2</sup>**; <sup>1</sup>Univ. of Texas - Austin, Austin, TX, <sup>2</sup>Loyola Univ. Chicago, Chicago, IL
- 2095 Geographical Differentiation of the Meningococcal ‘ET-15 Clone’ Methylo**  
D. M. C. Hill<sup>1</sup>, T. A. Clark<sup>2</sup>, R. L. Paterson<sup>1</sup>, K. Luong<sup>2</sup>, R. D. Morgan<sup>3</sup>, H. B. Bratcher<sup>4</sup>, M. C. J. Maiden<sup>1</sup>, R. J. Roberts<sup>3</sup>, J. Korlach<sup>2</sup>; <sup>1</sup>Univ. of Oxford, Oxford, United Kingdom, <sup>2</sup>Pacific BioSci., Menlo Park, CA, <sup>3</sup>New England Biolabs, Ipswich, MA

- 2096 Pangenome Analysis of *Burkholderia pseudomallei*: Genome Evolution Preserves Gene Order Despite High Recombination Rates**  
S. M. Spring-Pearson<sup>1</sup>, J. K. Stone<sup>1</sup>, A. Doyle<sup>1</sup>, C. J. Allender<sup>1</sup>, M. Mayo<sup>2</sup>, H. S. Gibbons<sup>3</sup>, B. J. Currie<sup>2</sup>, D. M. Wagner<sup>1</sup>, P. Keim<sup>1</sup>, A. Tuanyok<sup>1</sup>; <sup>1</sup>Northern Arizona Univ., Flagstaff, AZ, <sup>2</sup>Menzies Sch. of Hlth. Res., Darwin, Australia, <sup>3</sup>BioSci. Div., Edgewood Chemical Biological Ctr., Aberdeen Proving Ground, MD
- 2097 Alternative Alleles of Modulators of Cyclic Diguanilate Monophosphate Define Niche Specificity in *Burkholderia cenocepacia***  
C. C. Traverse, L. M. Mayo-Smith, V. S. Cooper; Univ. of New Hampshire, Durham, NH
- 2098 Comparative Genomic Analyses of Forty-four Clinical Isolates of *Gardnerella vaginalis* Suggest it has Undergone Multiple Speciation Events**  
A. I. Ahmed<sup>1</sup>, J. P. Earl<sup>1</sup>, A. Retchless<sup>2</sup>, E. Powell<sup>1</sup>, S. L. Hillier<sup>3</sup>, L. K. Rabe<sup>4</sup>, B. A. Janto<sup>1</sup>, R. A. Eutsey<sup>1</sup>, F. Z. Hu<sup>1</sup>, G. D. Ehrlich<sup>1</sup>; <sup>1</sup>Ctr. for Genomic Sci., Allegheny-Singer Res. Inst., Pittsburgh, PA, <sup>2</sup>UC Berkeley, Berkeley, CA, <sup>3</sup>Magee-Womens Res. Inst., Univ. of Pittsburgh Med. Ctr., Pittsburgh, PA, <sup>4</sup>Magee-Womens Res. Inst., Pittsburgh, PA
- 2099 Comparative Genome Analysis Revealed Distinctive Features of Periodontal Pathogen “*Tannerella forsythia*” for Survival**  
A. Endo, T. Watanabe, C. Aikawa, T. Nozawa, F. Maruyama, I. Nakagawa, Y. Izumi; Tokyo Med. and Dental Univ., Tokyo, Japan
- 2100 CRISPR Regulation of Intra-species Diversification by Limiting IS Transposition and Inter-cellular Recombination**  
T. Watanabe, T. Nozawa, C. Aikawa, F. Maruyama, I. Nakagawa; Tokyo Med. and Dental Univ., Bunkyo-ku, Tokyo, Japan
- 2101 Comparative Analysis of the Highly Variable Region in Mitochondrial DNA of *Fusarium oxysporum* Species Complex**  
H. Hamzah, V. Singla, J. C. Kennell; Saint Louis Univ., Saint Louis, MO
- 2102 Phylogenetic Analysis of North American *Xylella fastidiosa* Genomes**  
A. C. Retchless<sup>1</sup>, D. C. Stenger<sup>2</sup>, R. P. Almeida<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>2</sup>United States Dept. of Agriculture, Agricultural Res. Service, Parlier, CA
- 2103 De-Novo Sequencing and Comparative Genomics of the Fish Pathogen *Piscirickettsia salmonis*: Evolutionary Insights in to Pathogenicity and Survival**  
A. D. Millar<sup>1</sup>, F. A. Gomez<sup>2</sup>, D. A. Guzman<sup>1</sup>, V. Henriquez<sup>2</sup>, S. H. Marshall<sup>2</sup>, J. Valdes<sup>1</sup>; <sup>1</sup>Bio-Computing Div., Ctr. for Systems Biotechnology, Fraunhofer Chile Res., Santiago, Chile, <sup>2</sup>Lab. of Molecular Genetics & Immunology, Catholic Univ. of Valparaiso, Valparaiso, Chile
- 2104 The Harveyi Clade: The First Face-To-Face Comparison Among Its Members**  
I. Espinoza-Valles<sup>1</sup>, B. Gómez-Gil<sup>1</sup>, G. Vora<sup>2</sup>, B. Lin<sup>2</sup>, Z. Wang<sup>2</sup>, P. Leekitcharoenphon<sup>3</sup>, D. Ussery<sup>4</sup>; <sup>1</sup>CIAD Mazatlan Unit, Mazatlán, Mexico, <sup>2</sup>Ctr. for Biol., Molecular Sci. & Engineering, Naval Res. Lab., WA, <sup>3</sup>Dept. of Systems Biol., CBS, and Natl. Food Inst., DTU, Denmark, <sup>4</sup>Dept. of Systems Biol., CBS, DTU, Denmark
- 183 Mycobacterial Detection, Epidemiology and Drug Susceptibility Testing (Division U)**  
10:45 a.m. – 12:30 p.m.; Exhibit Hall A
- 2105 Improved Screening Strategies for Tubal Factor Infertility for Egyptian Patients**  
H. Rashed, H. Salem, S. abd el Rady, S. El Yoneey; Assiut Univ., Faculty of Med., Assiut, Egypt
- 2106 Insight into the Biochemical and Antigenic Changes of Urine Treated Lipoarabinomannan**  
L. R. Martinez, A. G. Amin, J. S. Spencer, D. Chatterjee; Colorado State Univ., Fort Collins, CO

- 2107 Mycobacterial and Aerobic Actinomycete Culture: Are Two Media Types and Extended Incubation Times Still Necessary?**  
P. J. Simmer, K. Doerr, L. Steinmetz, N. Wengenack; Mayo Clinic, Rochester, MN
- 2108 Optimization of Transrenal *Mycobacterium tuberculosis* DNA Detection for the Development of Urine-based TB Assays**  
E. Torres-Chavolla, L. G. Klinkenberg, P. C. Karakousis; Johns Hopkins Univ. Sch. of Med., Baltimore, MD
- 2109 Rapid Concentration of *Mycobacterium tuberculosis* by Gravity Sedimentation from Non-Aqueous Solvents**  
M. S. Sander; Tuberculosis Reference Lab. Bamenda, Bamenda, Cameroon
- 2110 Next-Generation Ion Torrent Sequencing of Pyrazinamide Resistance in MDR/XDR South African *Mycobacterium tuberculosis* Strains**  
L. T. Daum<sup>1</sup>, S. V. Omar<sup>2</sup>, N. A. Ismail<sup>2</sup>, J. D. Rodriguez<sup>1</sup>, S. A. Worthy<sup>1</sup>, P. B. Fourie<sup>3</sup>, G. W. Fischer<sup>1</sup>; <sup>1</sup>Longhorn Vaccines & Diagnostics, San Antonio, TX, <sup>2</sup>Ctr. for Tuberculosis, Natl. Inst. of Communicable Diseases (NICD), Sandringham, South Africa, <sup>3</sup>Dept. of Med. Microbiol., Univ. of Pretoria, Pretoria, South Africa
- 2111 Evaluation of the MALDI Biotyper for Identification of Clinical *Mycobacterium* spp. Isolates**  
E. Richter<sup>1</sup>, S. Rüscher-Gerdes<sup>1</sup>, M. Timke<sup>2</sup>, B. Wegemann<sup>2</sup>, M. Kostrzewa<sup>2</sup>; <sup>1</sup>Natl. Reference Ctr. for Mycobacteria; Res. Ctr. Borstel, Borstel, Germany, <sup>2</sup>Bruker Daltonik GmbH, Bremen, Germany
- 2112 A Pyrosequencing Method to Detect Acid-Fast Bacteria (AFB) in Paraffin-Embedded Tissues**  
J. R. Bao, R. B. Clark, R. N. Master, B. Poselero, J. Belardo, M. A. Belardo, P. R. Tummala, A. E. Piscitelli, J. Wright, J. P. Windham, L. Eklund; Nichols Inst., Quest Diagnostics, Chantilly, VA
- 2113 An Occupationally Safe Sample Processing Method for Antibody-based Detection of *Mycobacterium Tuberculosis* Cells in Sputum**  
A. L. Becker, K. M. Weigel, S. Soelberg, S. Inoue, Z. Shu, J.-H. Kim, M. Hiraawa, A. Carins, H.-B. Lee, C. E. Furlong, K. Oh, K.-H. Lee, D. Gao, J.-H. Chung, G. A. Cangelosi; Univ. of Washington, Seattle, WA
- 2114 Differentiation of *Mycobacterium abscessus* Group Isolates by Sequence Analysis of the Inducible Macrolide Resistance Gene *erm(41)***  
E. S. Slechta<sup>1</sup>, C. L. Hamula<sup>1,2</sup>, A. P. Barker<sup>1,2</sup>, K. E. Hanson<sup>1,2</sup>; <sup>1</sup>ARUP Lab., Salt Lake City, UT, <sup>2</sup>Univ. of Utah, Salt Lake City, UT
- 2115 Basal Levels of Igm Anti-phospholipid Antibodies in Patients with Pulmonary Tuberculosis From a High-Incidence Setting in Panama Before Treatment Initiation**  
A. Goodridge<sup>1</sup>, C. Chavarria<sup>2</sup>, W. Franco<sup>3</sup>, C. Ordoñez<sup>1</sup>, C. Weeks<sup>1</sup>, L. Riley<sup>4</sup>; <sup>1</sup>INDICASAT-AIP, Panama, Panama, <sup>2</sup>Univ. of Panama, Panama, Panama, <sup>3</sup>Univ. of Panama, Panama, Panama, <sup>4</sup>Univ. of California, Berkeley, CA
- 2116 A Molecular Transport Medium for Collection, Transport and Detection of *Mycobacterium Tuberculosis* from Sputum Specimens**  
L. T. Daum<sup>1</sup>, Y. W. Choi<sup>2</sup>, S. A. Worthy<sup>1</sup>, J. D. Rodriguez<sup>1</sup>, G. W. Fischer<sup>1</sup>; <sup>1</sup>Longhorn Vaccines & Diagnostics, San Antonio, TX, <sup>2</sup>Battelle, Columbus, OH
- 2117 Value of QuantiFERON TB Gold In-Tube Assay for Diagnosis of Active Tuberculosis in Children**  
B. Bayraktar<sup>1</sup>, N. Dalgic<sup>2</sup>, M. Sancar<sup>3</sup>, E. Kadir<sup>4</sup>, A. Togay<sup>1</sup>, T. Kockaya<sup>5</sup>, H. Gencer<sup>6</sup>, E. Bulut<sup>1</sup>, A. Yalciner<sup>6</sup>; <sup>1</sup>Sisli Etfal Training and Res. Hosp., Div. of Clinical Microbiol., Istanbul, Turkey, <sup>2</sup>Sisli Etfal Training and Res. Hosp., Div. of Pediatric Infectious Disease, Istanbul, Turkey, <sup>3</sup>Marmara Univ. Faculty of Pharmacy, Div. of Clinical Pharmacy, Istanbul, Turkey, <sup>4</sup>Bezmialem Univ. Pediatric Disease, Istanbul, Turkey, <sup>5</sup>Sisli Etfal Training and Res. Hosp., Div. of Pediatric Disease, Istanbul, Turkey, <sup>6</sup>Duzen Lab. Group, Istanbul, Turkey

- 2118 Geographical Differences Associated with SNPs in Nine Gene Targets among Resistant Clinical Isolates of *Mycobacterium Tuberculosis***  
M. Hoshide<sup>1</sup>, L. Douglas<sup>1</sup>, K. Koster<sup>1</sup>, V. Crudu<sup>2</sup>, R. Warren<sup>3</sup>, T. Victor<sup>3</sup>, T. Tupasi<sup>4</sup>, J. Douglas<sup>1</sup>; <sup>1</sup>Univ. of Hawaii, Honolulu, HI, <sup>2</sup>Ctr. for Hlth. Policies and Studies, Chisinau, Moldova, Republic of, <sup>3</sup>Univ. of Stellenbosch, Tygerberg, South Africa, <sup>4</sup>Tropical Disease Fndn., Inc., Makati City, Philippines
- 2119 Weight Development in Goat Experimentally infected with *Mycobacterium avium* Subspecies Paratuberculosis to Induce Johne's Disease**  
A. N. Malone, D. M. Fletcher, M. B. Vogt, S. K. Meyer, A. M. Hess, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 2120 New Cellular Immune Assays for the Detection of Johne's Disease in Experimentally Infected Goats**  
M. B. Vogt, A. B. Genis, D. M. Fletcher, A. M. Hess, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 2121 Standard Diagnostic Cellular Immune Assays in Goats Experimentally Infected with *Mycobacterium avium* Subsp. Paratuberculosis**  
A. B. Genis, M. B. Vogt, D. M. Fletcher, M. M. Hayes, A. M. Hess, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 2122 Genotyping of *Mycobacterium kansasii* and Comparing Human and Environmental Isolates**  
C. Tolson<sup>1,2</sup>, C. Coulter<sup>1</sup>, R. Thomson<sup>3,4</sup>, F. Huygens<sup>2</sup>; <sup>1</sup>Queensland Mycobacterium Reference Lab., Pathology Queensland, Brisbane, Australia, <sup>2</sup>Cells and Tissues Domain, Inst. of Hlth. and BioMed. Innovation, Queensland Univ. of Technology, Brisbane, Australia, <sup>3</sup>Gallipoli Med. Res. Ctr., Greenslopes Private Hosp., Brisbane, Australia, <sup>4</sup>Thoracic Med., The Prince Charles Hosp., Brisbane, Australia
- 2123 Sequence-based Typing and Antimicrobial Resistance Determinants in *Mycobacterium xenopi* from Clinical Pulmonary Infection Cases in Ontario**  
F. B. Jamieson<sup>1,2</sup>, J. Ma<sup>1</sup>, S. Mirza<sup>2</sup>, T. Vodovitz<sup>3</sup>, J. V. Kus<sup>2</sup>, T. K. Marras<sup>2,4</sup>, D. C. Alexander<sup>5</sup>, D. J. Farrell<sup>1,2</sup>; <sup>1</sup>Publ. Hlth. Ontario, Toronto, ON, Canada, <sup>2</sup>Univ. of Toronto, Toronto, ON, Canada, <sup>3</sup>Univ. of Western Ontario, Toronto, ON, Canada, <sup>4</sup>Univ. Hlth. Network, Toronto, ON, Canada, <sup>5</sup>Saskatchewan Disease Control Lab., Regina, SK, Canada
- 2124 A Para-Ip-01 Based Lipid-elisa Detects Goats Experimentally Infected With *Mycobacterium avium* Subsp. Paratuberculosis During The First Year Of Infection**  
S. K. Meyer, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 2125 Differentiation of U.S. Isolates of *Mycobacterium abscessus* Using Multiple Genetic Targets, Including VNTRs**  
S. T. Howard, K. L. Newman, S. McNulty, B. A. Brown-Elliott, S. Vasireddy, R. J. Wallace, Jr.; Univ. of Texas Hlth. Sci. Ctr. at Tyler, Tyler, TX
- 2126 The Screening of Predictive Bio-markers in Developing Tuberculosis with Antibody Microarray Analysis**  
S.-E. Song<sup>1</sup>, J.-Y. Yang<sup>1</sup>, S.-H. Kim<sup>1</sup>, M.-S. Park<sup>1</sup>, H.-J. Kim<sup>2</sup>, S.-Y. Oh<sup>2</sup>, S.-H. Park<sup>1</sup>; <sup>1</sup>Div. of Tuberculosis and Bacterial Respiratory Infections, Korea NIH, Republic of Korea, <sup>2</sup>The Korean Inst. of Tuberculosis, Republic of Korea
- 2127 Changes in T-cell Subpopulations in Goats Experimentally Infected with *Mycobacterium avium* subsp. Paratuberculosis**  
D. M. Fletcher, M. B. Vogt, A. M. Hess, T. M. Eckstein; Colorado State Univ., Fort Collins, CO
- 2128 Evaluation of the Sensititre™ MYCOTB Plate Assay for Drug Susceptibility Testing in *Mycobacterium Tuberculosis* against the First- and Second-Line Drugs**  
M. Barnard<sup>1</sup>, R. Warren<sup>1</sup>, N. Parrish<sup>2</sup>, C. P. McArthur<sup>3</sup>; <sup>1</sup>Stellenbosch Univ., Cape Town, South Africa, <sup>2</sup>Johns Hopkins Med. Inst., Baltimore, MD, <sup>3</sup>Univ. of Missouri, Kansas City, MO



**184 Session (Division V)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 2129 The Effect of Bortezomib on Expression of Inflammatory Cytokines and Survival in an Experimental Model of Sepsis Induced by Cecal Ligation and Puncture**  
S. Han<sup>1</sup>, S. Jeong<sup>1</sup>, J. Woo<sup>2</sup>, M-W. Kang<sup>3</sup>, J. Kim<sup>1</sup>, J-S. Shin<sup>1</sup>, Y. Ahn<sup>1</sup>, J. Kim<sup>1</sup>, J. Kim<sup>1</sup>; <sup>1</sup>Yonsei Univ. Coll. of Med., Seoul, Republic of Korea, <sup>2</sup>Asan Med. Ctr., Univ. of Ulsan Coll. of Med., Seoul, Republic of Korea, <sup>3</sup>The Catholic Univ. of Korea Coll. of Med., Seoul, Republic of Korea
- 2130 Microsphere based Multiplex Antibody Capture Assay (MMACA) to Quantify *Bordetella pertussis* Antigens Specific Antibodies**  
E. Kim, L. Choi, S. Paulos, G. Carlone, E. Saile, N. E. Messonnier, G. Rajam; CDC, Atlanta, GA
- 2131 Discovery of *Streptococcus pneumoniae* Serogroup 6 Variants with Bi-specific WciNa**  
M. B. Oliver<sup>1</sup>, M. P. G. van der Linden<sup>2</sup>, S. A. Kuntzel<sup>2</sup>, J. Saad<sup>1</sup>, M. H. Nahm<sup>3</sup>; <sup>1</sup>Dept. of Microbiol., Univ. of Alabama at Birmingham, Birmingham, AL, <sup>2</sup>German Natl. Reference Ctr. for Streptococci, Dept. of Med. Microbiol., Univ. Hosp., Aachen, Germany, <sup>3</sup>Dept. of Pathology, Univ. of Alabama at Birmingham, Birmingham, AL
- 2132 Identification of Potential Diagnostic Antigenic Protein Markers from *Burkholderia pseudomallei***  
J. Yi<sup>1</sup>, K. Herring<sup>1</sup>, T. Sanchez<sup>2</sup>, S. Iyer<sup>2</sup>, J. K. Stone<sup>1</sup>, J. Lee<sup>1</sup>, M. Mayo<sup>3</sup>, B. Currie<sup>3</sup>, P. Keim<sup>1</sup>, A. Tuanyok<sup>1</sup>; <sup>1</sup>Northern Arizona Univ., Flagstaff, AZ, <sup>2</sup>Los Alamos Natl. Lab., Los Alamos, NM, <sup>3</sup>Charles Darwin Univ., Northern Territory, Australia
- 2133 Brucella Bacteriophages-Phage-Host Cell Interaction Peculiarities**  
I. Antadze<sup>1</sup>, M. Dadunashvili<sup>1</sup>, S. Gunia<sup>1</sup>, N. Balarjishvili<sup>1</sup>, L. Kvachadze<sup>1</sup>, E. Tevdoradze<sup>1</sup>, A. Kotorashvili<sup>2</sup>, R. J. OBISO, Jr<sup>3</sup>, J. Farlow<sup>2</sup>, M. Kutateladze<sup>1</sup>; <sup>1</sup>Elia Inst. of Bacteriophages, Tbilisi, Georgia, <sup>2</sup>Richard Lugar Ctr. for Publ. Hlth.Res., Tbilisi, Georgia, <sup>3</sup>The Microbe Company, Christiansburg, VA
- 2134 Practice Pattern of Quantiferon Testing in a Large Clinical Setting**  
M. E. Navas, B. Yen-Lieberman, T. Daly; Cleveland Clinic, Cleveland, OH
- 2135 WITHDRAWN**
- 2136 Impact of the 2012 Yosemite Hantavirus Outbreak on Hantavirus Antibody Testing at a National Reference Laboratory**  
H. E. Prince, J. M. Lieberman; Focus Diagnostics, Cypress, CA
- 2137 Seroprevalence of Leptospirosis in Young Thai Men in 2007 – 2008**  
N. Ruamsap, S. Gonwong, P. Khantapura, D. Islam, T. Chuenchitra, J. Gaywee, N. Sirisopana, C. J. Mason; Armed Forces Res. Inst. of Med. Sci., Bangkok, Thailand
- 2138 Comparison of APTIMA® Human Papillomavirus Assay with Digene Hybrid Capture 2 High-Risk HPV DNA Test**  
T. N. Weiler, A. D. Hennigar, G. M. Rupp, T. S. Uphoff; Div. of Lab. Med., Marshfield Clinic, Marshfield, WI
- 2139 Innate Immunity in Chickens Infected with Low Pathogenic Avian Influenza Viruses of Different Subtypes**  
A. Golovko<sup>1</sup>, B. Stegny<sup>2</sup>, M. Stegny<sup>2</sup>, D. Muzyka<sup>2</sup>, P. Shutchenko<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IECVI, NAAS, Kharkiv, Ukraine
- 2140 Immune Response of Serum Samples Obtained from Dairy Cattle of Central and Northwestern Mexico States against *E. coli* O104 LPS and Capsular K9 Antigen**  
A. Navarro<sup>1</sup>, D. Licon<sup>1</sup>, L. León<sup>1</sup>, G. Pérez<sup>1</sup>, M. Díaz<sup>2</sup>, S. Díaz<sup>3</sup>, M. Uribe<sup>3</sup>, P. Cauch<sup>4</sup>, J. Meza<sup>4</sup>, A. Cravioto<sup>5</sup>, C. Esclava<sup>1</sup>; <sup>1</sup>Facultad de Med., Univ. Natl. Autónoma de México, D. F., Mexico, <sup>2</sup>Ctr. de Investigación en Alimentación y Desarrollo, Hermosillo, Sonora, Mexico, <sup>3</sup>Univ. Autónoma de Sinaloa, Culiacán, Sinaloa, Mexico, <sup>4</sup>ENCB, Inst. Politécnico Natl., D. F., Mexico, <sup>5</sup>Intl. Vaccine Inst., Seoul, Republic of Korea

- 2141 The Study of Co-Infection With Malaria and Hepatitis B-Virus in Some Parts of Jos, Plateau State, Nigeria**  
J. A. Yohanna<sup>1</sup>, A. A. Iorkyaa<sup>1</sup>, J. I. Rotimi<sup>2</sup>, B. M. Nwibari<sup>1</sup>, P. A. Igavo<sup>3</sup>; <sup>1</sup>Univ. of Jos, Jos, Nigeria, <sup>2</sup>Faith Alive Hosp., Jos, Nigeria, <sup>3</sup>IGA Med. Lab., Jos, Nigeria

- 2142 Anti-FhTP16.5 Antibody-Detection: Serodiagnosis of Fascioliasis**  
J. F. Gaudier, A. M. Espino; Univ. of Puerto Rico-MS, San Juan, PR

**185 Public Health Aspects of Zoonotic Diseases and Enteric Pathogens (Division Y)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

- 2143 Molecular-Epizootological Characterization of Street Isolates of Rabies Virus in Ukraine**  
A. Golovko<sup>1</sup>, S. Nychyk<sup>2</sup>, I. Polupan<sup>2</sup>, M. Ivanov<sup>2</sup>, O. Deriabin<sup>2</sup>, V. Nedosekov<sup>2</sup>, A. Nikitova<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IVM, NAAS, Kyiv, Ukraine
- 2144 Commercially Distributed Meat as a Potential Vehicle for *Staphylococcus aureus* Transmission**  
D. Thapaliya, M. K. Quick, S. Farina, A. O'Brien, R. Nair, A. Nworie, B. Hanson, A. Kates, S. Wardyn, T. C. Smith; Dept. of Epidemiology, Ctr. for Emerging Infectious Disease, Univ. of Iowa, Iowa City, IA
- 2145 Prevalence Data for *Corynebacterium* spp. Nasal Carriage in Pigs and Their Farmers: Implications for Public Health**  
V. Boschert<sup>1</sup>, A. Berger<sup>1</sup>, R. Konrad<sup>1</sup>, I. Huber<sup>1</sup>, S. Hörmansdorfer<sup>1</sup>, S. Zöls<sup>2</sup>, M. Eddicks<sup>2</sup>, M. Ritzmann<sup>2</sup>, A. Sing<sup>1</sup>; <sup>1</sup>Bavarian Hlth. and Food Safety Authority, Oberschleißheim, Germany, <sup>2</sup>Ludwig-Maximilians-Univ. Munich, Oberschleißheim, Germany
- 2146 Extraction of *B. anthracis* Spores at Places with Anthrax Infected Animals Buried During 1940-1950 Years in Ukraine**  
A. Golovko<sup>1</sup>, S. Nychyk<sup>2</sup>, I. Polupan<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IVM, NAAS, Kyiv, Ukraine
- 2147 Wetland Ecoservices Protect Beach Water Quality from Avian-associated Pathogens and Fecal Contamination in Lake Erie**  
C. Rea, M. Bisesi, J. Lee; Ohio State Univ., Columbus, OH
- 2148 WITHDRAWN**
- 2149 Shared Serogroups Among Avian Pathogenic (APEC) and Human Extra-intestinal Pathogenic *Escherichia coli* (ExPEC)**  
R. P. Maluta<sup>1</sup>, C. M. Logue<sup>2</sup>, T. Meng<sup>2</sup>, E. A. L. Guastalli<sup>3</sup>, M. R. Tiba<sup>4</sup>, L. K. Nolan<sup>2</sup>, W. Dias da Silveira<sup>1</sup>; <sup>1</sup>State Univ. of Campinas, Campinas, Brazil, <sup>2</sup>Iowa State Univ., Ames, IA, <sup>3</sup>Inst. Biológico, APTA, Bastos, Brazil, <sup>4</sup>Inst. Adolfo Lutz, São Paulo, Brazil
- 2150 A Cross-Sectional Study to Evaluate Prevalent Serotypes of *Streptococcus pneumoniae* in North Indian Community**  
A. Chakraborti, M. Sharma, P. Ray, M. Gupta; Post Graduate Inst. of Med. Ed. and Res., Chandigarh, India
- 2151 Acute Diarrhea in Indigenous Adult Population in Nepal**  
L. Bodhidatta<sup>1</sup>, S. K. Shrestha<sup>2</sup>, L. Thapa<sup>3</sup>, B. Rayamajhi<sup>2</sup>, A. Srijan<sup>1</sup>, C. J. Mason<sup>1</sup>; <sup>1</sup>Armed Forces Res. Inst. of Med. Sci., Bangkok, Thailand, <sup>2</sup>Walter Reed, AFRIMS Res. Unit Nepal (WARUN), Kathmandu, Nepal, <sup>3</sup>Sukraraj Tropical and Infectious Diseases Hosp., Kathmandu, Nepal
- 2152 Prevalence of Brachyspira Species In Stool-Samples of Patients with Gastroenteritis**  
L. J. Westerman<sup>1</sup>, R. F. de Boer<sup>2</sup>, J. H. Roelfsema<sup>3</sup>, I. H. M. Friesema<sup>3</sup>, L. M. Kortbeek<sup>3</sup>, J. A. Wagenaar<sup>4</sup>, M. J. M. Bonten<sup>1</sup>, J. G. Kusters<sup>1</sup>; <sup>1</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>2</sup>Lab. for Infectious Diseases, Groningen, Netherlands, <sup>3</sup>Natl. Inst. for Publ. Hlth., Bilthoven, Netherlands, <sup>4</sup>Faculty of Vet. Med., Utrecht Univ., Utrecht, Netherlands
- 2153 EPEC and ETEC are Prevalent Pathogens in Guatemalan Children with Acute Diarrhea**  
V. Pattabiraman<sup>1</sup>, M. Lopez<sup>2</sup>, M. B. Parsons<sup>1</sup>, O. Morales<sup>2</sup>, B. Lopez<sup>2</sup>, S. Hernandez<sup>2</sup>, ViCo Team, D. Garcia<sup>2</sup>; <sup>1</sup>CDC, Atlanta, GA, <sup>2</sup>Univ. del Valle de Guatemala, Guatemala City, Guatemala



**2154 Geographic Origin of *Helicobacter pylori* Isolated from Costa Rican Patients**  
S. E. Molina-Castro<sup>1</sup>, D. Herrera-Ríos<sup>1</sup>, J. Garita-Cambronero<sup>1</sup>, W. Malespín-Bendaña<sup>1</sup>, F. Mégraud<sup>2</sup>, V. Ramírez-Mayorga<sup>1</sup>, C. Une<sup>1</sup>;  
<sup>1</sup>Univ. of Costa Rica, Ciudad Univ. Rodrigo Facio, Costa Rica, <sup>2</sup>Univ. Victor Segalen Bordeaux <sup>2</sup>, Bordeaux, France

**186 Commensal Organisms, Zoonotic Pathogens and Antibiotic-Resistance in the Host and Environment (Division Z)**

10:45 a.m. – 12:30 p.m.; Exhibit Hall A

**2155 Dissemination of Antibiotic-Resistant Bacteria in Chicken Raised In Huge Feedlot**  
Z. Cui<sup>1</sup>, Y. Zhou<sup>1</sup>, Q. Huang<sup>1</sup>, H. Wang<sup>1</sup>, C. Chen<sup>1</sup>, M. Cai<sup>1</sup>, K. Qin<sup>1</sup>, Y. Zhang<sup>1</sup>, K. Dong<sup>2</sup>, X. Guo<sup>2</sup>, J. Qin<sup>1</sup>; <sup>1</sup>Shanghai Jiao Tong Univ. School of Med., Shanghai, China, <sup>2</sup>Shanghai Jiao Tong Univ., Shanghai, China

**2156 *Helicobacter canis* Colonization in Sheep: A Zoonotic Link**  
A. G. Swennes<sup>1</sup>, M. L. Turk<sup>1</sup>, E. M. Trowel<sup>1</sup>, C. Cullin<sup>1</sup>, J. Pang<sup>1</sup>, Z. Shen<sup>1</sup>, F. E. Dewhirst<sup>2</sup>, J. G. Fox<sup>1</sup>; <sup>1</sup>Massachusetts Inst. of Technology, Cambridge, MA, <sup>2</sup>The Forsyth Inst., Cambridge, MA

**2157 Zoonotic Potential and Association of Enterohepatic *Helicobacter* spp. with Intestinal Adenocarcinoma in Rhesus Macaques**  
K. Lertpiriyapong<sup>1</sup>, Y. Feng<sup>1</sup>, T. W. Mitchell<sup>2</sup>, K. Lodge<sup>2</sup>, L. Hand<sup>2</sup>, Z. Shen<sup>1</sup>, J. G. Fox<sup>1</sup>; <sup>1</sup>MIT, Cambridge, MA, <sup>2</sup>Merck Res. Lab., West Point, PA

**2158 The Flawed Concept of an Avian Pathogenic *Escherichia coli* Pathotype in UK Broiler Chickens**  
K. Kemmett<sup>1</sup>, T. Humphrey<sup>1</sup>, S. Rushton<sup>2</sup>, A. Close<sup>2</sup>, P. Wigley<sup>1</sup>, N. J. Williams<sup>1</sup>; <sup>1</sup>Univ. of Liverpool, Neston, United Kingdom, <sup>2</sup>Newcastle Univ., United Kingdom

**2159 Antimicrobial Effects of Hops (*Humulus lupulus*) Beta-acid on the Growth And Ammonia Production of Caprine Rumen Hyper-Ammonia-Producing Bacteria**  
M. D. Flythe<sup>1,2</sup>, J. L. Klotz<sup>1,2</sup>, G. L. Gellin<sup>1</sup>, G. E. Aiken<sup>1,2</sup>; <sup>1</sup>ARS-USDA, Lexington, KY, <sup>2</sup>Univ. of Kentucky, Lexington, KY

**2160 Molecular-Genetic Analyses of the *rpoB* Gene of *M. bovis* and *M. tuberculosis*, which Were Isolated from Cattle in Ukraine**  
A. Golovko<sup>1</sup>, A. Zavgorodnii<sup>2</sup>, A. Gerilovych<sup>2</sup>, B. Stegnyy<sup>2</sup>, A. Paliy<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>IECVM, NAAS, Kharkiv, Ukraine, <sup>3</sup>NIIECVM, AAS, Kharkiv, Ukraine

**2161 Prevalence of Antibiotic-Resistance in Clostridium Species Isolated from Horses**  
A. Castaneda, K. Lee, S. Murinda, J. O. Jackson, W-J. Lin; California State Polytechnic Univ., Pomona, Pomona, CA

**2162 Recent Emergence and Rapid Dissemination of *bla*<sub>CTX-M</sub> among Dairy Calves in Washington State**  
M. A. Davis, L. P. Jones, D. V. Meyers, S. Ahmed, N. Suthar, W. M. Sischo, T. E. Besser; Washington State Univ., Pullman, WA

**2163 Incidence of *Clostridium perfringens* from 5-week-old Healthy Broilers in Taiwan**  
C-S. Lin, T-C. Chen, C-L. Wang, C-H. Chou, H-J. Tsai; Natl. Taiwan Univ., Taipei, Taiwan

**2164 TLR4 Single Nucleotide Polymorphisms (SNPs) Associated with *Salmonella* Shedding in Pigs**  
J. D. Kich<sup>1,2</sup>, J. J. Utte<sup>2,3</sup>, M. V. Benavides<sup>4</sup>, M. E. Cantao<sup>1</sup>, R. Zanella<sup>5</sup>, C. K. Tuggle<sup>3</sup>, S. M. D. Bearson<sup>2</sup>; <sup>1</sup>Embrapa Swine and Poultry, Concordia, Brazil, <sup>2</sup>USDA, Natl. Animal Disease Ctr., Ames, IA, <sup>3</sup>Iowa State Univ., Ames, IA, <sup>4</sup>Embrapa LabEx, Ames, IA, <sup>5</sup>Embrapa Swine and Poultry, CHPq, Concordia, Brazil

**2165 Extended-Spectrum  $\beta$ -Lactam Resistant *Escherichia coli* in Retail Ground Meat in Taiwan**  
T-L. Lauderdale, P-C. Chen, Y-R. Shiao, J-F. Lai; Natl. Hlth. Res. Inst., Zhunan, Taiwan

**2166 Correlating Dairy Calf Health and Development to Their Gut Microbial Communities while on Differing Diets**  
K. A. Dill-McFarland, A. Speich, G. Suen; Univ. of Wisconsin-Madison, Madison, WI

**2167 Proteomic Analysis of *Escherichia coli* O157 Cultured in Bovine Rumen Fluid**  
I. T. Kudva, T. B. Stanton, J. D. Lippolis; Natl. Animal Disease Ctr., USDA, ARS, Ames, IA

**2168 Mortality in Weaning-Age Kittens is Associated with a Shift from Ileum Mucosa-Associated *Enterococcus hirae* to Colonization by Multidrug-Resistant and Biofilm-Forming *Enterococcus faecalis***  
A. Ghosh<sup>1</sup>, L. Borst<sup>2</sup>, S. H. Stauffer<sup>2</sup>, M. Suyemoto<sup>2</sup>, P. Moisan<sup>3</sup>, J. L. Gookin<sup>2</sup>, L. Zurek<sup>1</sup>; <sup>1</sup>Kansas State Univ., Manhattan, KS, <sup>2</sup>North Carolina State Univ., Raleigh, NC, <sup>3</sup>NC Dept. of Agriculture and Consumer Services Vet. Diagnostic Lab., NC

**2169 Mutational Pathways and In Silico Structural Analysis for Understanding the Mechanisms of High-Level Fluoroquinolone Resistance in *Escherichia coli* Isolated from Companion Animals**  
B. Shaheen<sup>1</sup>, R. Nayak<sup>1</sup>, O. Kweon<sup>1</sup>, Y-D. Kim<sup>2</sup>, D. Boothe<sup>3</sup>; <sup>1</sup>U.S. FDA, Jefferson, AR, <sup>2</sup>Chungbuk Natl. Univ., Chungbuk, Korea, Democratic People's Republic of, <sup>3</sup>Auburn Univ., Auburn, AL

**2170 Characterization of *Staphylococcus aureus* Virulence Factors Isolated in Equine Populations**  
K. Rowe, T. Nygaard, S. Moreaux, J. Voyich; Montana State Univ., Bozeman, MT

**2171 Determination of *In vitro* Antiviral Effect against Canine Herpesvirus and Its Use in the Treatment of Skin Presentation in Dogs**  
G. Valdivia Anda<sup>1</sup>, J. I. Ángeles Solís<sup>1</sup>, C. Cuenca Verde<sup>1</sup>, G. E. Lara Reyes<sup>2</sup>, J. C. Del Río García<sup>1</sup>, E. G. Valdivia Lara<sup>1</sup>; <sup>1</sup>Facultad de Estudios Superiores, Cuautitlan, UNAM, Edo. Mexico, Mexico, <sup>2</sup>Especialidades en Diagnóstico SA de CV Laboratorio DIVET, Edo. Mexico, Mexico

**2172 Pathogenicity of *Bibersteinia trehalosi* in Cattle**  
C. J. Hanthorn, G. A. Dewell, P. Plummer, R. D. Dewell, V. Cooper; Iowa State Univ., Ames, IA

**2173 Detection of ESBL Genes and Conjugative Plasmids Associated with Multidrug-Resistance in *Escherichia coli* Isolated from Dogs and Humans of the Same Residence**  
C. A. Carvalho, L. R. Arais, A. V. Barbosa, P. F. Ribeiro, V. C. Carneiro, B. Araújo, A. M. F. Cerqueira; Univ. Federal Fluminense, Niterói, RJ, Brazil

**2174 A Novel Live Vaccine Expressing Enterotoxigenic *Escherichia coli* Fimbrial Antigens to Prevent Piglet Diarrhea**  
J. H. Lee; Chonbuk Natl. Univ., Coll. of Vet. Med., Jeonju, Republic of Korea

Tuesday, May 21

1:00 p.m. – 2:45 p.m.

**191 Antimicrobial Targets and Mechanisms (Division A)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2175 Inhibition of Antibiotic-Resistant Bacteria by Frequency-specific Pulsed Electrical Fields**  
H. Ahern<sup>1</sup>, M. Browne<sup>1</sup>, S. Foley<sup>1</sup>, A. Holland<sup>2</sup>; <sup>1</sup>SUNY Adirondack, Queensbury, NY, <sup>2</sup>Skidmore Coll., Saratoga Springs, NY

- 2176 Effects of  $\beta$ -Lactams on the Proteome of Daptomycin Susceptible and Nonsusceptible Methicillin-Resistant *Staphylococcus aureus* (MRSA)**  
C. Ricci-Tam, J. Newton, G. Sakoulas, V. Nizet, K. Pogliano, J. Pogliano; Univ. of California, San Diego, La Jolla, CA
- 2177 Competitive Inhibitors of the *Helicobacter pylori* Asp-tRNA<sup>Asn</sup> or Glu-tRNA<sup>Gln</sup> Amidotransferase: The Major Role of the Module Analogous to A76 of tRNA**  
V-H. Pham, C. Balg, S. Blais, J. Lapointe and R. Chênevert; Laval Univ., Quebec, QC, Canada
- 2178 Glycine Betaine and Proline Reverse the Antimicrobial Activity of Silver Nanoparticles**  
N. L. Jones; Howard Univ., Washington, DC
- 2179 A Disc Diffusion Cell-based Assay for Identification of Targets of Antibacterial Inhibitors**  
M. S. Ward, I. Silva, H. H. Xu; California State Univ., Los Angeles, Los Angeles, CA
- 2180 Gene Expression Profile for *E. coli* MG1655 after Exposure to Sub-lethal Concentrations of Triclosan**  
M. C. Montes-Matias; New York City Coll. of Technology, Brooklyn, NY
- 2181 The Effect of Antimicrobial Peptide Inhibition on the Growth of a Mucoid Strain of *Pseudomonas aeruginosa***  
E. Dosunmu; Alabama State Univ., Montgomery, AL
- 2182 Effect of Epicatechin Gallate on the Cell Envelope of Methicillin-Resistant *Staphylococcus aureus***  
H. Rosado<sup>1</sup>, R. D. Turner<sup>2</sup>, S. J. Foster<sup>2</sup>, P. W. Taylor<sup>1</sup>; <sup>1</sup>UCL Sch. of Pharmacy, London, United Kingdom, <sup>2</sup>Krebs Inst., Univ. of Sheffield, United Kingdom
- 2183 The Impact of Epicatechin Gallate on the Structural Integrity of the PBP2-PBP2a Division Complex in Methicillin Resistant *Staphylococcus aureus***  
S. Paulin<sup>1</sup>, M. Jamshad<sup>2</sup>, T. R. Dafforn<sup>2</sup>, D. I. Roper<sup>3</sup>, P. W. Taylor<sup>1</sup>; <sup>1</sup>Univ. Coll. London, London, United Kingdom, <sup>2</sup>Birmingham Univ., Birmingham, United Kingdom, <sup>3</sup>Warwick Univ., Coventry, United Kingdom
- 2184 Structure-Function Relationship of a Prokaryotic Antibacterial Lectin**  
M. G. K. Ghequire<sup>1</sup>, A. Garcia-Pino<sup>2,3</sup>, R. Loris<sup>2,3</sup>, R. De Mot<sup>1</sup>; <sup>1</sup>CMPPG, KU Leuven, Heverlee, Belgium, <sup>2</sup>Molecular Recognition Unit, VIB, Brussel, Belgium, <sup>3</sup>Structural Biol. Brussels, Vrije Univ. Brussel, Brussel, Belgium
- 2185 Epigallocatechin-3-gallate Inhibits Tax-dependent Activation of Nuclear Factor Kappa B and of Matrix Metalloproteinase 9 in Human T-Cell Lymphotropic Virus 1- Positive Leukemia Cells**  
S. Harakeh<sup>1</sup>, M. Diab-Assaf<sup>2</sup>, R. Azar<sup>2</sup>, K. Abou-El-Ardat<sup>3</sup>, G. Damanhour<sup>1</sup>, A. Abuzenadah<sup>1</sup>, T. Kumosani<sup>1</sup>, H. Hassan<sup>1</sup>, A. Chaudhary<sup>1</sup>, A. Abdel Nour<sup>1</sup>, A. Niedzwiecki<sup>4</sup>, M. Rath<sup>4</sup>, E. Barbour<sup>2</sup>; <sup>1</sup>King Abdulaziz Univ., Jeddah, Saudi Arabia, <sup>2</sup>Lebanese Univ., Hadath, Lebanon, <sup>3</sup>American Univ. of Beirut, Beirut, Lebanon, <sup>4</sup>Dr. Rath Res. Inst., Santa Clara, CA
- 2186 Membrane Damage: A Probable Mechanism of Action of Thymol in Inhibiting *Salmonella typhimurium***  
S. C. Kang<sup>1</sup>, A. K. Chauhan<sup>1</sup>, S. C. Koh<sup>2</sup>; <sup>1</sup>Daegu Univ., Gyung-san City, Republic of Korea, <sup>2</sup>Korea Maritime Univ., Pusan City, Republic of Korea
- 2187 Assay of Antibiotic Induced Free Radicals' Formation in *Staphylococcus aureus* Newman with ESR**  
Y. Wang, W. Paulander, M. L. Andersen, L. Skibsted, H. Ingmer; Univ. of Copenhagen, Frederiksberg, Denmark
- 2188 Redox-active Metal Ions from Antibacterial Clay Minerals Damage Macromolecules Via Oxidative Stress**  
C. C. Otto, J. Koehl, D. Solanky, S. E. Haydel; Arizona State Univ., Tempe, AZ

- 2189 Discovery and Evaluation of Inhibitors of the Aminoglycoside 6'-N-acetyltransferase Type Ib [AAC(6')-Ib]**  
D. Lin, T. Tran, C. Adams, S. Herron, M. E. Tolmasky; California State Univ. Fullerton, Fullerton, CA
- 2190 Isolation and Identification of a Novel Capsule Depolymerase from *Pusillimonas noertemannii* BS8 with the Capacity to Degrade Poly- $\gamma$ -D-Glutamic Acid**  
D. Negus<sup>1</sup>, P. Celejewski-Marciniak<sup>2</sup>, R. Stabler<sup>3</sup>, A. Pain<sup>4</sup>, A. Fouet<sup>5</sup>, P. W. Taylor<sup>1</sup>; <sup>1</sup>Univ. Coll. London, London, United Kingdom, <sup>2</sup>Med. Univ. of Warsaw, Warsaw, Poland, <sup>3</sup>London Sch. of Hygiene and Tropical Med., London, United Kingdom, <sup>4</sup>King Abdullah Univ. of Sci. and Technology, Thuwal, Saudi Arabia, <sup>5</sup>Inst. Cochin, Paris, France

**2191 WITHDRAWN**

## 192 Pharmacology Studies of Antimicrobials (Division A)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2192 Novel Murine Wound Model Used to Assess Antimicrobial Efficacy against a Military Clinical Isolate of Multidrug-Resistant *Acinetobacter baumannii***  
C. C. Black<sup>1</sup>, M. G. Thompson<sup>1</sup>, R. L. Pavlicek<sup>2</sup>, C. L. Honnold<sup>1</sup>, Y. Si<sup>1</sup>, Y. A. Alamneh<sup>1</sup>, M. C. Wise<sup>1</sup>, R. Williams<sup>2</sup>, R. K. Green<sup>1</sup>, S. Singh<sup>1</sup>, J. K. Moon<sup>1</sup>, A. C. Jacobs<sup>1</sup>, C. L. Jones<sup>1</sup>, B. C. Kirkup, Jr.<sup>1</sup>, D. P. Regis<sup>2</sup>, E. R. Hall<sup>2</sup>, T. J. Palys<sup>1</sup>, D. V. Zurawski<sup>1</sup>; <sup>1</sup>Walter Reed Army Inst. of Res., Silver Spring, MD, <sup>2</sup>Navy Med. Res. Ctr., Silver Spring, MD
- 2193 Experimental Infection Model to Study Drug-Bacteria Interactions: Colonization and Physiological Characteristics of *Bacteroides fragilis* Exposed to Subinhibitory Concentrations of Metronidazole**  
M. C. R. Freitas, A. B. Ferreira-Machado, A. B. Rezende, L. M. A. Oliveira, T. C. Nascimento, J. Gameiro, V. L. Silva, C. G. Diniz; Federal Univ. of Juiz de Fora, Juiz de Fora, Brazil
- 2194 Antibacterial and Wound Healing Enhancement of PAAG in Minor Species**  
S. Townsend, C. Perez, J. Uhrig, S. Garbers, H. Oien, S. Baker, W. Wiesmann; Synedgen, Inc., Claremont, CA
- 2195 Application of an Optimized Protocol in Chicken Embryos for Assessment of the Susceptibility of H9N2 Mutants to Oseltamivir**  
E. Barbour<sup>1</sup>, D. Ahmadieh<sup>1</sup>, a. Abdel Nour<sup>2</sup>, T. Kumosani<sup>3</sup>, E. Azhar<sup>2</sup>, S. Harakeh<sup>2</sup>; <sup>1</sup>American Univ. of Beirut, New York, NY, <sup>2</sup>King Abdulaziz Univ., Jeddah, Saudi Arabia, <sup>3</sup>King Abdulaziz Univ., Jeddah, Saudi Arabia
- 2196 The Effect of Atorvastatin on Infection Outcomes in *Escherichia coli*-Infected Mice**  
E. A. Rahal, D. Kalash El-Khoury, A. M. Abdelnoor; American Univ. of Beirut, Beirut, Lebanon
- 2197 Novel Small Molecule with Antifungal Activities against *Candida albicans***  
S. Wong, L. Samaranayake, R. Kao, Y. Wang, C. Seneviratne; Univ. of Hong Kong, Hong Kong, Hong Kong
- 2198 Biodistribution of a Novel Peptide Functionalized Gold Nanoparticles as Delivery Vehicle *In vivo***  
P. M. Tiwari<sup>1</sup>, E. Eroglu<sup>1</sup>, K. Vig<sup>1</sup>, M. Miller<sup>2</sup>, S. S. Bawage<sup>1</sup>, V. A. Dennis<sup>1</sup>, S. R. Singh<sup>1</sup>; <sup>1</sup>Ctr. for NanoBiotechnology Res., Alabama State Univ., Montgomery, AL, <sup>2</sup>Res. Instrumentation Facility, Auburn Univ., Auburn, AL
- 2199 Morpholinos that Reduce the Colonization and Virulence of Shiga Toxin (Stx)-Producing *Escherichia coli* in Mice or Inhibit the Expression of Stx *In vitro***  
Z-M. Liu<sup>1</sup>, A. R. Melton-Celsa<sup>1</sup>, L. D. Teel<sup>1</sup>, C. L. Ventura<sup>1</sup>, F. Alem<sup>1</sup>, P. L. Iversen<sup>2</sup>, A. D. O'Brien<sup>1</sup>; <sup>1</sup>Uniformed Services Univ. of Hlth. Sci., Bethesda, MD, <sup>2</sup>AVI Biopharma during these studies, WA

- 2200 Vancomycin and Aptamer to *Staphylococcus aureus* are Synergistic *In vivo***  
M. K. Doherty, P. Desai, L. Woods, M. Yang, J. Pinzon, N. Dao, B. C. Weimer; University of California - Davis, DAVIS, CA
- 2201 Feasibility of Enrolling Veterans with *Staphylococcus aureus* to a Study on Probiotics**  
M. N. Duster, S. Warrack, S. Valentine, D. Schulte, P. Panjkar, N. Safdar; Univ. of Wisconsin, Madison, WI
- 2202 Bactericidal Activity of Sitafloracin and Other New Quinolones against Antimicrobial Resistant *Streptococcus pneumoniae***  
I. Kobayashi<sup>1</sup>, A. Kanayama<sup>1</sup>, M. Hasegawa<sup>1</sup>, A. Kaneko<sup>2</sup>; <sup>1</sup>Dept. of Infection Control and Prevention, Sch. of Nursing, Faculty of Med., Toho Univ., Tokyo, Japan, <sup>2</sup>Dept. of Oral Surgery, Sch. of Med., Tokai Univ., Kanagawa, Japan
- 2203 Prognostic Factors in Patients with Community-onset Complicated Intraabdominal Infections**  
J-H. Woo<sup>1</sup>, Y. Chong<sup>1</sup>, Y. Kim<sup>1</sup>, J. Jun<sup>1</sup>, M. Kang<sup>2</sup>, J. Kim<sup>3</sup>; <sup>1</sup>Univ. of Ulsan, Asan Med. Ctr., Songpa-Gu, Republic of Korea, <sup>2</sup>Catholic Univ. of Korea, Seoul St. Mary Hosp., Seocho-Gu, Republic of Korea, <sup>3</sup>Yonsei Univ., Severance Hosp., Seodaemun-Gu, Republic of Korea
- 193 Biofilm Formation and Interactions of Pathogens – II (Division B)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2204 Examination of Phenotypic Differences in *Pseudomonas aeruginosa* Strain PA01 Biofilm Development Using Confocal Laser Scanning Microscopy**  
B. M. Bauer, L. Rogers, A. Woodrow, K. G. Tallman; Azusa Pacific Univ., Azusa, CA
- 2205 Separation of Quorum Sensing Molecules from the PA01 Strain of *Pseudomonas aeruginosa* Using High Performance Liquid Chromatography and Thin Layer Chromatography**  
M. Drummond, M. Conrad, E. Matsumoto, K. G. Tallman; Azusa Pacific Univ., Azusa, CA
- 2206 Mutations in the *rpoS* Gene are the Major Limiting Factor for Biofilm Formation in *Escherichia coli* Serotype O157:H7 Clinical Isolates**  
C-Y. Chen<sup>1</sup>, G. A. Uhlich<sup>1</sup>, T. P. Strobaugh, Jr.<sup>1</sup>, B. J. Cottrell<sup>1</sup>, E. G. Dudley<sup>2</sup>, C. S. Hofmann<sup>1</sup>, L. H. T. Nguyen<sup>1</sup>; <sup>1</sup>USDA-ARS, Wyndmoor, PA, <sup>2</sup>Penn State Univ., University Park, PA
- 2207 Metabolic Modulation of Staphylococcal Programmed Cell Death Facilitates Biofilm Development**  
V. C. Thomas, M. R. Sadykov, S. S. Chaudhari, D. Moormeier, J. L. Endres, K. W. Bayles; Univ. of Nebraska Med. Ctr., Omaha, NE
- 2208 Inhibitory Effect of Adenylate Cyclase Toxin (ACT) on *Bordetella* Biofilm Formation**  
C. L. Hoffman<sup>1</sup>, M. Gray<sup>1</sup>, G. Donato<sup>1</sup>, Y. Reyes<sup>1</sup>, A. Mahmoud<sup>1</sup>, J. Eby<sup>1</sup>, P. Cotter<sup>2</sup>, E. Hewlett<sup>1</sup>; <sup>1</sup>Univ. of Virginia, Charlottesville, VA, <sup>2</sup>Univ. of North Carolina, Chapel Hill, NC
- 2209 Role of the *rgf* Operon in Biofilm Formation in Group B *Streptococcus* (GBS)**  
R. Parker, R. Al Safadi, S. D. Manning; Michigan State Univ., East Lansing, MI
- 2210 Comparison of Quorum Signaling/Sensing Among Clinical Strains of Nontypeable *Haemophilus influenzae***  
J. L. Reimche, W. E. Swords; Wake Forest Sch. of Med., Winston-Salem, NC
- 2211 Mucosal Fluid Upregulates Expression of the T3SS in *Pseudomonas aeruginosa* Biofilms**  
Y. Wu<sup>1</sup>, C. Tam<sup>1</sup>, D. Evans<sup>1,2</sup>, S. Fleiszig<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, San Francisco, CA, <sup>2</sup>Coll. of Pharmacy, Toru Univ., Vallejo, CA

- 2212 AdeABC is Required for Biofilm Formation and Virulence in *Acinetobacter baumannii***  
G. E. Richmond<sup>1</sup>, M. E. Wand<sup>2</sup>, J. M. Sutton<sup>2</sup>, K. L. Chua<sup>3</sup>, L. J. V. Piddock<sup>1</sup>; <sup>1</sup>Univ. of Birmingham, Birmingham, United Kingdom, <sup>2</sup>Hlth. Protection Agency, Porton Down, United Kingdom, <sup>3</sup>Natl. Univ. of Singapore, Singapore
- 2213 Gene PIN0398 is Relevant for Homo- and Heterotypic Biofilms of *Prevotella intermedia***  
P. H. Rodrigues, G. M. Barbosa, M. R. L. Simionato; Univ. de São Paulo, São Paulo, Brazil
- 2214 Interactions between *Moraxella catarrhalis* and *Streptococcus pneumoniae***  
A. Perez, B. Pang, L. King, J. Reimche, K. Murrah, J. Wren, W. Swords; Wake Forest Univ. Sch. of Med., Winston-Salem, NC
- 2215 Structure-Function Analysis of the Biofilm Adhesin, LapA**  
C. D. Boyd<sup>1</sup>, I. E. Ivanov<sup>2</sup>, T. A. Camesano<sup>2</sup>, G. A. O'Toole<sup>1</sup>; <sup>1</sup>Geisel Sch. of Med. at Dartmouth, Hanover, NH, <sup>2</sup>Worcester Polytechnic Inst., Worcester, MA
- 2216 Influence of Sugar Supplementation on Extracellular Polysaccharide Production and Biofilm Formation in *Burkholderia multivorans* Variant Strains**  
S. A. Ruskoski<sup>1</sup>, R. C. Massey<sup>1</sup>, S. L. Toal<sup>2</sup>, S. W. Wallis<sup>3</sup>, F. R. Champlin<sup>1</sup>; <sup>1</sup>Oklahoma State University-CHS, Tulsa, OK, <sup>2</sup>Tulsa Community Coll., Tulsa, OK, <sup>3</sup>Oklahoma State Univ., Stillwater, OK
- 2217 Identification of Quorum Sensing Related Surface Proteins in *Escherichia coli* SE15 Isolated from Catheter by Proteomics**  
S-R. Kang<sup>1</sup>, S-S. Lee<sup>2</sup>; <sup>1</sup>Dept. of Bio-Engineering, Kyonggi Univ. of Korea, Suwon, Republic of Korea, <sup>2</sup>Dept. of Life Sci., Kyonggi Univ. of Korea, Suwon, Republic of Korea
- 2218 Nutritional Environments Influence Expression of Genes Involved in Biofilm Formation of *Pseudomonas aeruginosa***  
S. A. Alshalchi, M. Taylor, G. G. Anderson; Indiana Univ., Purdue Univ. Indianapolis, Indianapolis, IN
- 2219 Modulation of Angiogenesis by Biofilms of Clinical Wound Isolates**  
C. J. Sanchez, Jr., S. K. Hardy, D. R. Romano, C. L. Ward, C. R. Rathbone, J. C. Wenke; U.S. Army Inst. of Surgical Res., Ft. Sam Houston, TX
- 2220 Identification of Surface-dependent Regulators of Swarm Motility in *Pseudomonas aeruginosa***  
M. J. Sarna, J. D. Shrout; Univ. of Notre Dame, Notre Dame, IN
- 2221 Norspermidine Responsive Biofilm Formation in *Vibrio cholerae***  
S. R. Cockerell, S. S. Pendergraft, E. Karatan; Appalachian State Univ., Boone, NC
- 2222 The Operon (Kpn\_00353-00349) Involved in Regulating 1,3-propanediol Synthesis and Aggregation in *Klebsiella pneumoniae***  
W-T. Chung, Y-T. Horng, K-C. Chang, P-C. Soo; Tzu Chi Univ., Hualien, Taiwan, Taiwan
- 194 Diagnostic Mycobacteriology-All Methods and Susceptibility (Division C)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2223 Prospective Evaluation of Xpert MTB/RIF PCR Test for Detecting *Mycobacterium tuberculosis* in Respiratory Specimens**  
J. Aslanzadeh, P. Hamilton, I. Ratkiewicz, R. Voorhies, Y. Maldonado; Clinical Lab. Partners, Newington, CT

- 2224 Evaluation of Stool as a Specimen Source for Tuberculosis Culture and PCR**  
S. Buckwalter<sup>1</sup>, L. Louison<sup>1</sup>, K. Doerr<sup>1</sup>, B. Connelly<sup>1</sup>, D. Milne<sup>1</sup>, S. Gossman<sup>1</sup>, S. Clark<sup>1</sup>, C. Ang<sup>2</sup>, J. Montoya<sup>3</sup>, S. Cunanan<sup>4</sup>, V. Antonios<sup>5</sup>, J. Solon<sup>6</sup>, D. Tsukayama<sup>6</sup>, N. L. Wengenack<sup>1</sup>; <sup>1</sup>Mayo Clinic, Rochester, MN, <sup>2</sup>Philippine Gen. Hosp., Philippines, <sup>3</sup>Philippine Gen. Hosp., Philippines, <sup>4</sup>Santa Rosa City Hlth. Office, Philippines, <sup>5</sup>Coll. of Publ. Hlth. Univ. of the Philippines, Philippines, <sup>6</sup>Hennepin County Med. Ctr., Minneapolis, MN
- 2225 Identification of Mycobacteria by Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry in the Clinical Laboratory**  
J. Balada Llasat, K. Kamboj, P. Pancholi; The Ohio State Univ. Wexner Med. Ctr., Columbus, OH
- 2226 Comparison of the Bruker Biotyper MS and Biomerieux VITEK MS Matrix Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometers for Mycobacterial Identification Using a Simplified Protein Extraction Protocol**  
C. A. Mather, S. Butler-Wu; Univ. of Washington, Seattle, WA
- 2227 Copan ESwab Allows Collection and Transportation of Abscess Fluid and Pus for Tubercular and non Tubercular Mycobacterium Investigation**  
S. Castriciano<sup>1</sup>, C. Russo<sup>2</sup>, L. Coltella<sup>3</sup>, L. Mancinelli<sup>3</sup>, D. Menichella<sup>3</sup>; <sup>1</sup>Copan Italia, Brescia, Italy, <sup>2</sup>Ospedale Pediatrico "Bambino Gesù", Rome, Italy, <sup>3</sup>Ospedale Pediatrico Bambino Gesù, Rome, Italy
- 2228 Development of a Novel High-Resolution Melt PCR Assay for the Detection of Inducible Macrolide Resistance in Bacteria from the Mycobacterium chelonae-abscessus Complex**  
C. L. A. Hamula<sup>1</sup>, M. T. Seipp<sup>2</sup>, E. Slechta<sup>2</sup>, A. P. Barker<sup>1</sup>, K. E. Hanson<sup>3,4</sup>; <sup>1</sup>Dept. of Pathology, Univ. of Utah, Salt Lake City, UT, <sup>2</sup>ARUP Inst. for Clinical and Experimental Pathology, Salt Lake City, UT, <sup>3</sup>Div. of Infectious Diseases, Univ. of Utah Sch. of Med., Salt Lake City, UT, <sup>4</sup>ARUP Lab., Salt Lake City, UT
- 2229 Identification of Mycobacteria Using a New MALDI-ToF Protocol and Reference Library**  
K. Van Horn<sup>1</sup>, R. Clark<sup>2</sup>, L. Stewart<sup>1</sup>, F. Yohannes<sup>2</sup>; <sup>1</sup>Focus Diagnostics, Cypress, CA, <sup>2</sup>Quest Diagnostics, Nichols Inst., Chantilly, VA
- 2230 MALDI-ToF Identification of Mycobacteria from BacT/ALERT MP Bottles**  
M. Mahmeister, D. Newton; Univ. of Michigan, Ann Arbor, MI
- 2231 Comparison of Heat Inactivation and Cell Disruption Inactivation Protocols in the Identification of Mycobacteria from Solid Culture Media for MALDI-ToF VITEK MS RUO Mass Spectrum Analysis**  
A. Machen<sup>1</sup>, M. Park<sup>2</sup>, T. Drake<sup>3</sup>, D. Parampal<sup>4</sup>, M. Connelly<sup>2</sup>, Y. Wang<sup>1,3</sup>; <sup>1</sup>Emory University Sch. of Med., Atlanta, GA, <sup>2</sup>Georgia Publ. Hlth. Lab., Atlanta, GA, <sup>3</sup>Grady Mem. Hosp., Atlanta, GA, <sup>4</sup>bioMérieux, Inc., Durham, NC
- 2232 Species Level Identification of Organisms within the Mycobacterium abscessus Group**  
S. E. Totten, P. Yong, L. Mast, P. Godo, M. Po, A. Marrs, P. Reynolds, M. Salfinger; Natl. Jewish Hlth., Denver, CO
- 2233 Rapid Susceptibility Testing of Mycobacterium Tuberculosis Using the MODS-MYCOTB Combined Assay**  
L. Harrison, K. Dionne, P. Salee, K. Carroll, N. Parrish; The Johns Hopkins Hosp., Baltimore, MD
- 2234 Direct Susceptibility Testing of Mycobacterium Tuberculosis Using the Trek Sensititre® MYCOTB Plate**  
K. Dionne, P. Salee, K. Carroll, N. Parrish; Johns Hopkins Hosp., Baltimore, MD
- 2235 Migration of a Laboratory Designed Assay for the Detection of M. tuberculosis Complex to the Automated BD-MAX™ System**  
J. H. B. Van de Bovenkamp, I. O. M. Op den Buijs, A. R. Jansz, R. T. J. M. Roymans; PAMM Lab., Lab. for Med. Microbiol., Veldhoven, Netherlands

- 2236 Comparison of a Laboratory-developed Real-time PCR Test to the Amplified MTD for Detection of Mycobacterium Tuberculosis in Pulmonary Specimens**  
A. C. Pérez-Osorio<sup>1</sup>, K. A. Musser<sup>2</sup>, T. A. Halse<sup>2</sup>, A. Ostash<sup>1</sup>, Y. Houze<sup>1</sup>, R. K. Gautam<sup>1</sup>, B. T. Leader<sup>1</sup>; <sup>1</sup>Washington State Publ. Hlth. Lab. (WA-PHL), Shoreline, WA, <sup>2</sup>New York State Dept. of Hlth. Wadsworth Ctr., Albany, NY
- 2237 Identification of Mycobacteria using 16S Sequencing and MALDI-ToF MS**  
S. P. Buckwalter, B. J. Connelly, S. L. Olson, B. C. Lucas, A. A. Rodning, K. A. Doerr, S. M. Deml, S. L. Wohlfiel, N. L. Wengenack; Mayo Clinic, Rochester, MN
- 2238 Evaluation of an Algorithm Including secA1 Sequencing for the Direct Identification of Mycobacteria from Smear-Positive Clinical Specimens**  
M. J. Tuohy, S. Vogel, G. W. Procop, S. M. Harrington; Cleveland Clinic, Cleveland, OH
- 2239 Evaluation of the Sensititre MycoTB Plate Assay and the HAIN Line Probe Assays for Drug Susceptibility Testing in Mycobacterium Tuberculosis against the first- and Second-Line Drugs**  
M. Barnard<sup>1,2</sup>, R. Warren<sup>2</sup>, P. Van Helden<sup>2</sup>, N. Parrish<sup>3</sup>, C. McArthur<sup>4</sup>; <sup>1</sup>Natl. Hlth. Lab. Service (NHLS), Cape Town, South Africa, <sup>2</sup>Dept. of Sci. and Technology/Natl. Res. Fndn. Ctr. of Excellence in BioMed. Tuberculosis Res., Univ. of Stellenbosch/MRC Ctr. for Molecular and Cellular Biol., Dept. of BioMed. Sci., Cape Town, South Africa, <sup>3</sup>Dept. of Pathology, Johns Hopkins Med. Inst., Baltimore, MD, <sup>4</sup>Univ. of Missouri, Kansas City, MO
- 195 Laboratory Management and Quality Assurance; Specimen Collection Transportation and Processing (Division C)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2240 Improving Blood Culture (BC) Turnaround Time: A Quality Improvement Project**  
J. Contezac, K. Monson Jobe, S. Gebrehawot, T. Drake, E. Vetter, P. Melton, M. Baisch, R. Patel; Mayo Clinic, Rochester, MN
- 2241 Evaluation of Fastidious Bacterial Survival in Two Different Flocked Swab Transport System**  
S. Silbert, S. Knight, R. Widen; Tampa Gen. Hosp., Tampa, FL
- 2242 A Comparison of Two Flocked Swabs: The Copan Elution Swab (ESwab) and the Puritan HydraFlockR Flocked Swab**  
M. Sarina, M. Frost; Central Coast Pathology Lab., San Luis Obispo, CA
- 2243 Maintenance of Viability and Recovery of Respiratory Pathogens from Simulated Sputum Samples**  
F. O. Wegerhoff, V. C. Walker, J. A. Bowman, M. L. Sears; Covance Central Lab. Services, Indianapolis, IN
- 2244 Manual and WASP Automation Gram Smear Preparation with Specimens Collected in ESwab**  
S. Castriciano<sup>1</sup>, J. Steenbergen<sup>2</sup>, M. Stalpaert<sup>2</sup>; <sup>1</sup>Copan Italia, Brescia, Italy, <sup>2</sup>A.M.L. BVBA, Antwerpen, Belgium
- 2245 Performance of Copan Fecal and ESwab Devices in Storage and Transportation of Fecal Specimens for Detection of Diarrheagenic Bacteria**  
J. J. Hirvonen, S.-S. Kaukoranta; Vaasa Central Hosp., Vaasa, Finland
- 2246 Febrile Nonhemolytic Transfusion Reactions Mimicked by Bacteremia or Fungemia during Transfusion through Central Venous Catheters**  
K. Ricci, F. Martinez, B. Lichtiger, X.-Y. Han; Univ. of Texas MD Anderson Cancer Ctr., Houston, TX
- 2247 Optimization of Time to Reporting of Microbiology Cultures**  
C. Young, D. Newton; Univ. of MI Hlth. System, Ann Arbor, MI



- 2248 A Successful Intervention to Increase the Volume of Blood Collected for Blood Cultures**  
A. Charnot-Katsikas<sup>1</sup>, S. Matushek<sup>1</sup>, S. Boonlayangoor<sup>1</sup>, V. Tesic<sup>1</sup>, K. M. Frank<sup>1,2</sup>; <sup>1</sup>Univ. of Chicago, Chicago, IL, <sup>2</sup>NIH, Bethesda, MD
- 2249 Increasing Pediatric Blood Culture Positivity with Simplified Volume Guidelines**  
E. B. Dowell<sup>1</sup>, S. L. Hamilton<sup>1</sup>, S. A. Dolan<sup>1</sup>, S. R. Dominguez<sup>1,2</sup>, J. K. Todd<sup>1,2</sup>; <sup>1</sup>Children's Hosp. Colorado, Aurora, CO, <sup>2</sup>Univ. of Colorado, Aurora, CO
- 2250 Workflow and Cost Evaluation of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Molecular Diagnostic Testing in a Hospital Laboratory**  
R. Miick<sup>1</sup>, E. Liu<sup>2</sup>, S. Lett<sup>1</sup>, M. Wright<sup>1</sup>, T. Bilyj<sup>1</sup>, M. Lawson<sup>2</sup>, M. Schoonmaker<sup>2</sup>; <sup>1</sup>Einstein Med. Ctr.-Philadelphia, Philadelphia, PA, <sup>2</sup>Cephed, Sunnyvale, CA
- 2251 Evaluation of COPAN SLsolution (SL) for Liquefying Clinical Respiratory (RESP) Specimens in Preparation for Planting on the Walkaway Automated Specimen Processor (WASP)**  
P. Lo<sup>1,2</sup>, C. Bezaire<sup>1</sup>, B. Mustachi<sup>1,3</sup>, G. Small<sup>1,2</sup>, B. Willey<sup>1,2</sup>, S. Poutanen<sup>1,2,4</sup>; <sup>1</sup>Mount Sinai Hosp., Toronto, ON, Canada, <sup>2</sup>Univ. Hlth. Network, Toronto, ON, Canada, <sup>3</sup>Univ. Hlth. Network, ON, Canada, <sup>4</sup>Univ. of Toronto, Toronto, ON, Canada
- 2252 Improving Molecular Diagnostic Workflow Efficiency with Mixed Batch Testing for Microbiology Applications Using the Roche cobas® 4800 System with Clinical Samples**  
J. Siow, J. Cheung, J. Nolley, M. Lewinski, J. Osiecki, S. Shams; Roche Molecular Systems, Inc., Pleasanton, CA
- 2253 The Patient Centered Microbiology Laboratory, Improve Turn Around Time and Quality While Reducing Cost**  
D. Towle<sup>1</sup>, D. Furguson<sup>1</sup>, N. Smith<sup>1</sup>, V. Piscitelli<sup>1</sup>, D. Callan<sup>1</sup>, T. Murray<sup>1,2,3</sup>, D. Peaper<sup>1,2</sup>; <sup>1</sup>Yale New Haven Hosp., New Haven, CT, <sup>2</sup>Yale Univ., New Haven, CT, <sup>3</sup>Quinnipiac Univ., Hamden, CT
- 2254 Comparison of ESwab and Wasp Versus Standard Swab and Manual Plating for the Recovery of *S. agalactiae* from Pre-natal Vaginal/rectal Screening**  
B. W. Buchan<sup>1</sup>, T.-L. A. Mackey<sup>2</sup>, N. A. Ledeboer<sup>1</sup>; <sup>1</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>2</sup>Dynacare Lab., Milwaukee, WI
- 2255 Improvement in Blood Culture Volume Collection Through Cooperative Communication with Staff and a Targeted Re-education Strategy**  
G. A. Capraro, Jr., A. Jones, M. Dillard-Wayne; LSU Hlth., Shreveport, Shreveport, LA
- 2256 Use of Portable Incubators to Reduce Turn-around-time of Urine Cultures for Satellite Laboratories**  
E. Richards<sup>1</sup>, L. Abdolrazzak<sup>1</sup>, S. Young<sup>1,2</sup>, K. D. Culbreath<sup>1,2</sup>; <sup>1</sup>TriCore Reference Lab., Albuquerque, NM, <sup>2</sup>Univ. of New Mexico Dept. of Pathology, Albuquerque, NM
- 2257 The Reduction of Unnecessary Duplicate Test Orders using an Electronic Clinical Decision Support Tool**  
G. Procop; Cleveland Clinic, Cleveland, OH
- 2258 Strategies for Improving Rapid Influenza Diagnostic Testing (RIDT) in Ambulatory Settings (SIRAS): Disseminating RIDT Information via an e-learning Platform**  
N. Kupka<sup>1</sup>, L. O. Williams<sup>2</sup>, J. Chmielewski<sup>1</sup>, G. Riccio<sup>1</sup>; <sup>1</sup>The Joint Commission, Oakbrook Terrace, IL, <sup>2</sup>CDC, Atlanta, GA
- 2259 Evaluation of the Impact of Implementing a MALDI-ToF Mass Spectrometry System**  
K. Alby<sup>1</sup>, A. Kerr<sup>1</sup>, P. H. Gilligan<sup>2,1</sup>; <sup>1</sup>UNC Healthcare, Chapel Hill, NC, <sup>2</sup>UNC Sch. of Med., Chapel Hill, NC
- 2260 Comparison of the New Bact/Alert FAPlus, FNplus, and PFplus Blood Culture Bottles with Current Media for Detection of Pathogens and Direct Processing using MALDI-ToF**  
T. Hoppe<sup>1</sup>, J. Brandenburg<sup>1</sup>, U. Aurbach<sup>1</sup>, H. Wisplinghoff<sup>2</sup>; <sup>1</sup>Lab. Med. Cologne, Dres. Wisplinghoff & Colleagues, Cologne, Germany, <sup>2</sup>Inst. for Med. Microbiol., Immunology and Hygiene, Univ. of Cologne, Cologne, Germany

- 2261 Evaluation of the Walk Away Specimen Processor (WASP)® for Urine Specimens**  
S. Harrington, L. Austin, J. Beal, P. Kostyack, C. McCoy, H. Howard; Cleveland Clinic, Cleveland, OH
- 2262 Aberrant Morphology And Staining Patterns of Gram-Negative Rods In Specimens From 4 Clinical Cases**  
N. Hubbard, R. F. Relich, T. E. Davis; Indiana Univ. Med. Ctr., Indianapolis, IN
- 2263 Comparison of the BD InoqulATM Automated Inoculation System to a Manual Method for Bacterial Quantitation**  
T. Wiles, M. Votta, P. Williams, S. Kircher, V. White; BD Diagnostics, R&D, Sparks, MD
- 2264 Comparison Of Eswab And Gel Swab For Transport And Recovery Of Anaerobic Organisms**  
B. W. Buchan<sup>1</sup>, T.-L. A. Mackey<sup>2</sup>, K. M. Riebe<sup>2</sup>, N. A. Ledeboer<sup>1</sup>; <sup>1</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>2</sup>Dynacare Lab., Milwaukee, WI
- 2265 Copan ESwab, an LBM Device, Allows Rapid Strep A Antigen and Confirmatory Culture from the Same Sample**  
S. Castriciano, R. Botrugno, B. Massetti, L. Conter, R. Paroni; Copan Italia, Brescia, Italy
- 2266 Throat Culture Follow-up of Negative Rapid Antigen Detection Tests (RADTs) for Group A Streptococcal Pharyngitis (GAS) in Adults in a Large Health System Setting**  
F. A. Meier, K. Varma, R. J. Tibbetts, L. P. Samuel; Henry Ford Hlth. System, Detroit, MI
- 2267 Cell Morphology Preservation in Specimens Collected in ESwab for Gram Smears Preparation**  
S. Castriciano<sup>1</sup>, M. Favaro<sup>2</sup>, C. Fontana<sup>2</sup>; <sup>1</sup>Copan Italia, Brescia, Italy, <sup>2</sup>Tor Vergata Univ., Rome, Italy
- 196 Molecular Detection of *C. difficile* and other Stool Pathogens (Division C)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2268 Comparison of Two Processing/Extraction Methods for Use With Two Different Commercially Available Gastrointestinal Real Time PCR Assays**  
E. Tyler, S. Visuri; Gen-Probe Prodesse Inc., Waukesha, WI
- 2269 Comparison of Four Commercial Molecular Assays for Direct Detection of *C. difficile* Toxin**  
K. C. Chapin<sup>1,2</sup>, L. McVeigh<sup>1</sup>, S. Andrea<sup>1</sup>; <sup>1</sup>Dept. of Pathology, Providence, RI, <sup>2</sup>The Brown Alpert Med. Sch., Providence, RI
- 2270 Comparative Performance of GeneXpert and Quick Chek Complete Kit Assays for the Detection of *Clostridium difficile* Antigen and Toxins**  
W. Y. Jamal<sup>1</sup>, V. Rotimi<sup>2</sup>; <sup>1</sup>MOH Anaerobe Reference Lab., Dept. of Microbiol., Faculty of Med., Kuwait Univ., Safat, Kuwait, <sup>2</sup>MOH Anaerobe Reference Lab., Dept. of Microbiol., Faculty of Med., Kuwait Univ., Safat, Kuwait
- 2271 Comparison of Four PCR Assays for the Detection of *Clostridium difficile***  
V. G. Loo<sup>1</sup>, S. Fenn<sup>1</sup>, A.-C. Labbe<sup>2</sup>, L. Poirier<sup>2</sup>, C. Frenette<sup>1</sup>; <sup>1</sup>McGill Univ. Hlth.Ctr., Montreal, QC, Canada, <sup>2</sup>Hosp. Maisonneuve Rosemont, Montreal, QC, Canada
- 2272 Evaluation of the Molecular BD MAX™ Cdiff Assay for Detection of *Clostridium difficile* Directly from Stool Specimens**  
S. Zimmermann<sup>1</sup>, M. Hofko<sup>1</sup>, M. Zorn<sup>2</sup>, A. H. Dalpke<sup>1</sup>; <sup>1</sup>Dept. of Infectious Diseases, Heidelberg, Germany, <sup>2</sup>Dept. of Internal Med. I and Clinical Chemistry, Heidelberg, Germany
- 2273 Laboratory Verification of the Verigene *Clostridium difficile* Nucleic Acid Test**  
S. Tan<sup>1</sup>, B. C. Ellis<sup>1</sup>, R. Seeley<sup>1</sup>, C. M. Vargas<sup>1</sup>, P. D. Stamper<sup>1</sup>, J. Marion<sup>2</sup>, E. A. Trevino<sup>3</sup>, A. S. Weissfeld<sup>3</sup>, K. C. Carroll<sup>1</sup>; <sup>1</sup>Johns Hopkins Hosp., Baltimore, MD, <sup>2</sup>Nanosphere, Inc, Northbrook, IL, <sup>3</sup>Microbiol. Specialists, Inc, Houston, TX

**2274 Evaluation of the BD MAX™ Cdiff Assay\* and of the Xpert® C. difficile Assay for the Detection of the *Clostridium difficile* toxin B (tcdB) Gene in Human Soft or Liquid Stool Specimens**  
R. Therrien<sup>1</sup>, A. Weissfeld<sup>2</sup>, E. Trevino<sup>2</sup>, A. Crist Jr<sup>3</sup>, D. Bankert<sup>3</sup>, M. Smith<sup>3</sup>, N. Paquette<sup>1</sup>, C. Roger-Dalbert<sup>1</sup>; <sup>1</sup>GeneOhm Sci. Canada Inc., Quebec, QC, Canada, <sup>2</sup>Microbiol. Specialists Inc., Houston, TX, <sup>3</sup>York Hosp., York, PA

**2275 Evaluation of a Rapid, Real-Time PCR Assay for the Detection of *Clostridium difficile* from Stool Specimens Targeting TCDA/B on 3 Instruments**  
E. T. Beck<sup>1</sup>, P. A. Granato<sup>2</sup>, P. Pancholi<sup>3</sup>, N. A. Ledebor<sup>4</sup>, M. Raczkowski<sup>2</sup>, L. Swyers<sup>2</sup>, B. R. Alkins<sup>2</sup>, B. W. Buchan<sup>4</sup>, G. C. Reymann<sup>1</sup>, T. T. Stenzel<sup>5</sup>; <sup>1</sup>Dynacare Lab., Milwaukee, WI, <sup>2</sup>Lab. Alliance of Central New York, Liverpool, NY, <sup>3</sup>The Ohio State Univ., Wexner Med. Ctr., Columbus, OH, <sup>4</sup>Dept. of Pathology, Med. Coll. of Wisconsin, Milwaukee, WI, <sup>5</sup>Quidel, San Diego, CA

**2276 Evaluation of an Isothermal Amplification Assay for the Detection Of Toxigenic *Clostridium difficile* Compared To The Cell Culture Cytotoxicity Neutralization Assay (CCNA)**  
J. J. Dunn<sup>1</sup>, P. Pancholi<sup>2</sup>, P. A. Granato<sup>3</sup>, N. A. Ledebor<sup>4</sup>, M. Raczkowski<sup>2</sup>, L. Swyers<sup>2</sup>, J. Rogers<sup>1</sup>, B. R. Alkins<sup>3</sup>, B. W. Buchan<sup>4</sup>, T. Biney-Assan<sup>4</sup>, T. T. Stenzel<sup>5</sup>; <sup>1</sup>Cook Children's Med. Ctr., Fort Worth, TX, <sup>2</sup>The Ohio State Univ., Wexner Med. Ctr., Columbus, OH, <sup>3</sup>Lab. Alliance of Central New York, Liverpool, NY, <sup>4</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>5</sup>Quidel, San Diego, CA

**2277 Detection of *Clostridium difficile* with the BD-MAX™ System**  
I. O. M. Op den Buijs, R. T. J. M. Roymans, J. H. T. Tjhie, J. H. B. van de Bovenkamp; PAMM, Veldhoven, Netherlands

**2278 Clinical and Economic Evaluation of the Luminex Gastrointestinal Pathogen Panel (GPP) in a Large Centralized Microbiology Laboratory in Calgary, Canada**  
D. R. Pillai<sup>1,2</sup>, T. Lloyd<sup>2</sup>, D. Church<sup>1,2</sup>, J. Carson<sup>2,1</sup>, D. Gregson<sup>1,2</sup>; <sup>1</sup>Univ. of Calgary, Calgary, AB, Canada, <sup>2</sup>Calgary Lab. Services, Calgary, AB, Canada

**2279 Real Time PCR Assay for the Identification of Bacterial Enteropathogens in Feces**  
T. J. Novicki<sup>1</sup>, T. S. Uphoff<sup>1</sup>, L. A. Baeten<sup>1</sup>, T. R. Fritsche<sup>1,2</sup>, B. J. Olson<sup>3</sup>, T. N. Weiler<sup>1</sup>; <sup>1</sup>Marshfield Clinic, Marshfield, WI, <sup>2</sup>Univ. of Wisconsin La Crosse, La Crosse, WI, <sup>3</sup>Marshfield Clinic Res. Fdn., Marshfield, WI

**2280 Evaluation of Infectious Diarrhea in Travelers to Peru using the Film Array GI Panel**  
M. Gregory<sup>1</sup>, M. Bernal<sup>1</sup>, M. Cabada<sup>2</sup>, K. Bourzac<sup>3</sup>, M. Vaughn<sup>3</sup>, C. Li<sup>3</sup>, R. Wallace<sup>3</sup>, B. Harrel<sup>3</sup>, R. Trausch<sup>3</sup>, R. Crisp<sup>3</sup>, A. Pavia<sup>4</sup>, T. Barney<sup>5</sup>, J. Daly<sup>5,4</sup>, M. Rogatcheva<sup>3</sup>; <sup>1</sup>Naval Med. Res. Unit No. Six, Lima, Peru, <sup>2</sup>Cayetano Heredia Univ., Lima, Peru, <sup>3</sup>BioFire Diagnostics Inc., Salt Lake City, UT, <sup>4</sup>Univ. of Utah, Salt Lake City, UT, <sup>5</sup>Primary Children's Med. Ctr., Salt Lake City, UT

**2281 Clinical Performance of the BD MAX™ Enteric Bacterial Panel (EBP) for Rapid Detection of *Salmonella* spp., *Shigella* spp., *Campylobacter* (*coli* and *jejuni*), and Shiga-Toxin Producing *E. coli***  
E. Klein, E. Alexander, A. Anderson, I. Ashman, M. Hankin, Y. J. Liu, M. Porter, C. Whiteford, D. Wolfe, C. Zhang; Becton Dickinson, Sparks, MD

**2282 Development of a Rapid Molecular Assay for the Detection of *Clostridium difficile***  
D. Mead, Y. Chander, M. J. Moser, A. J. Klingele, T. Schoenfeld, C. Mielke, A. Shrago; Lucigen Corp., Middleton, WI

**2283 Comparison of the Real-Time *C. difficile* toxB PCR Assay on the Sample-to-Result Platform BD MAX™ with the GeneXpert *C. difficile* Assay**  
M. D. Oethinger<sup>1</sup>, I. Thomas<sup>1</sup>, S. Onofrei<sup>1</sup>, D. S. Podzorski<sup>2</sup>, N. A. Ledebor<sup>2</sup>, B. W. Buchan<sup>2</sup>; <sup>1</sup>Providence Hlth. & Services, Portland, OR, <sup>2</sup>Med. Coll. of Wisconsin and Dynacare Lab., Milwaukee, WI

**2284 Repeat *Clostridium difficile* Nucleic Acid Amplification Test within Seven Days by Loop Mediated Isothermal Amplification**  
B. K. Lopansri<sup>1</sup>, R. R. Mehta<sup>1</sup>, J. Lee<sup>2</sup>, M. Ul Hasan<sup>2</sup>, G. Hinde<sup>2</sup>, J. P. Burke<sup>1</sup>; <sup>1</sup>Intermountain Med. Ctr., Murray, UT, <sup>2</sup>Intermountain Healthcare Central Microbiol. Lab, Murray, UT

**2285 Evaluation of Luminex xTAG® Gastrointestinal Pathogen Panel in Immunocompromised Patients**  
J. Chen, K. Gilhuley, Y-W. Tang, E. N. Babady; Mem. Sloan-Kettering Cancer Ctr., New York, NY

**2286 Evaluation of the ProGastro SSCS Assay for the Detection Of *Salmonella*, *Shigella*, *Campylobacter* and Toxin Encoding *stx1* and *stx2* Genes in Clinical Stool Specimens**  
B. W. Buchan<sup>1</sup>, M. Pezewski<sup>2</sup>, T-L. A. Mackey<sup>2</sup>, N. A. Ledebor<sup>1</sup>; <sup>1</sup>Med. Coll. of Wisconsin, Milwaukee, WI, <sup>2</sup>Dynacare Lab., Milwaukee, WI

**2287 Comparison of the BD MAX Enteric Bacterial Panel to Routine Culture Methods for the Detection of *Salmonella*, *Shigella*, and *Campylobacter* in Preserved Stool Specimens**  
N. W. Anderson, B. W. Buchan, N. A. Ledebor; Med. Coll. of Wisconsin, Milwaukee, WI

**2288 Evaluation of the Performance of the Portrait Toxigenic *C. difficile* Assay from Stools Stored at Room Temperature**  
D. Fuller, A. June, K. Newcomer, J. Talbott, R. Buckner; Wishard Mem. Hosp.-Indiana Univ. Sch. of Med., Indianapolis, IN

**2289 Incidence of *Clostridium difficile* Colonization and Infection at Carolinas Medical Center (CMC)**  
F. K. Mougeot, W. Strader, J-L. Mougeot, R. L. Sautter, M. Scobey, R. Lovell; Carolinad Med. Ctr., Charlotte, NC

**2290 *Clostridium difficile* in Companion Animals: Prevalence, Ribotyping, and Toxin Characterization**  
A. Mohamed, G. Reddy, W. Abdela; Tuskegee Univ., Tuskegee, AL

**2291 Evaluation of a Shiga-toxin Producing Enzyme Immunoassay and the Implications of Multiple Shiga Toxin Producing *E. coli* in an HUS Patient**  
J. T. Popko, D. A. Stolberg, D. S. Myers, D. W. Craft; Penn State Milton Hershey Med. Ctr. and Coll. of Med., Hershey, PA

## 197 Human Microbiome (Division D)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2292 Mining Gut Microbiota Sequence Data for Correlations with Life Style Factors and Disease Markers**  
T. Culpepper<sup>1</sup>, M. Ukhanova<sup>1</sup>, V. Vedam-Mai<sup>1</sup>, X. Wang<sup>1</sup>, Y. Sun<sup>2</sup>, V. Mai<sup>1</sup>; <sup>1</sup>Univ. of Florida, Gainesville, FL, <sup>2</sup>SUNY Buffalo, Buffalo, NY

**2293 Neonatal Emergence of Compositionally Distinct Distal Gut and Oral Microbiomes in Low-Birthweight Infants**  
E. K. Costello<sup>1</sup>, E. M. Carlisle<sup>2</sup>, E. M. Bik<sup>1</sup>, M. J. Morowitz<sup>3</sup>, D. A. Relman<sup>1,4</sup>; <sup>1</sup>Stanford Univ. Sch. of Med., CA, <sup>2</sup>Univ. of Chicago Pritzker Sch. of Med., IL, <sup>3</sup>Univ. of Pittsburgh Sch. of Med., PA, <sup>4</sup>VA Palo Alto Healthcare System, CA

**2294 Microbes, Metabolites, and Bacterial Vaginosis: An Improved Understanding from Integrated Information**  
C. J. Yeoman<sup>1</sup>, S. M. Thomas<sup>2</sup>, M. E. Berg Miller<sup>2</sup>, A. V. Ulanov<sup>2</sup>, M. Creggers<sup>2</sup>, R. Stumpf<sup>2</sup>, D. J. Creedon<sup>3</sup>, M. A. Smith<sup>4</sup>, J. S. Weisbaum<sup>5</sup>, K. E. Nelson<sup>6</sup>, S. R. Leigh<sup>2</sup>, B. A. Wilson<sup>2</sup>, B. A. White<sup>2</sup>; <sup>1</sup>Montana State Univ., Bozeman, MT, <sup>2</sup>Univ. of Illinois, Urbana, IL, <sup>3</sup>Mayo Clinic, Rochester, MN, <sup>4</sup>Christie Clinic, Urbana, IL, <sup>5</sup>Carle Clinic, Urbana, IL, <sup>6</sup>JCVI, Rockville, MD

**2295 Analysis of Oral Microbiota in Human Cancer Subjects**  
E. M. Fletcher<sup>1,2</sup>, P. Torres<sup>1</sup>, S. T. Kelley<sup>1</sup>, K. S. Doran<sup>1,2</sup>; <sup>1</sup>San Diego State Univ., San Diego, CA, <sup>2</sup>Univ. of California San Diego, La Jolla, CA

**2296 Mapping the Biogeography of the Human Colonic Microbiota: Segregation of Luminal and Mucosal Communities**  
G. Lennon<sup>1,2</sup>, A. J. Lavelle<sup>1,2</sup>, A. Balfe<sup>1,2</sup>, N. G. Docherty<sup>3</sup>, O. O'Sullivan<sup>4</sup>, F. Shanahan<sup>4</sup>, J. C. Coffey<sup>5</sup>, D. C. Winter<sup>1,2</sup>, P. R. O'Connell<sup>1,2</sup>; <sup>1</sup>Univ. Coll. Dublin, Dublin, Ireland, <sup>2</sup>Ctr. for Colorectal Disease, St Vincent's Univ. Hosp., Dublin, Ireland, <sup>3</sup>Trinity Coll. Dublin, Dublin, Ireland, <sup>4</sup>Alimentary Pharmabiotic Ctr., Univ. Coll. Cork, Cork, Ireland, <sup>5</sup>Univ. of Limerick, Limerick, Ireland

**2297 A Core Microbiome Associated with the Peritoneal Tumors of Pseudomyxoma Peritonei**  
J. J. Gilbreath<sup>1</sup>, C. Semino-Mora<sup>1</sup>, C. Friedline<sup>2</sup>, K. Bodi<sup>3</sup>, A. Voohris<sup>4</sup>, M. Sogin<sup>4</sup>, T. McAvoy<sup>5</sup>, A. Sardi<sup>6</sup>, A. Dubois<sup>1</sup>, A. Camilli<sup>3</sup>, T. Testerman<sup>7</sup>, D. Merrell<sup>1</sup>; <sup>1</sup>USUHS, Bethesda, MD, <sup>2</sup>VCU, Richmond, VA, <sup>3</sup>Tufts Univ., MA, <sup>4</sup>MBL, MA, <sup>5</sup>Univ. of Maryland, MD, <sup>6</sup>Mercy Med. Ctr., Baltimore, MD, <sup>7</sup>LSU Hlth. Sci. Ctr., LA

**2298 Impact of Occlusion on the Skin Microbiome**  
D. W. Koenig<sup>1</sup>, R. Vongsa<sup>1</sup>, C. Korir<sup>2</sup>, J. Li<sup>2</sup>, L. Peed<sup>2</sup>, D. Roe<sup>3</sup>; <sup>1</sup>Kimberly Clark Corp., Neenah, WI, <sup>2</sup>Kimberly Clark Corp., Roswell, GA, <sup>3</sup>Kimberly Clark Corp., Beaverton, OR

**2299 A Metagenome-wide Association Study of Gut Microbiota in Complex Disease**  
J. Qin<sup>1</sup>, Y. Li<sup>1</sup>, Z. Cai<sup>2</sup>, S. Li<sup>1</sup>, J. Zhu<sup>1</sup>, F. Zhang<sup>3</sup>, S. Liang<sup>1</sup>, W. Zhang<sup>1</sup>, Y. Guan<sup>1</sup>, D. Shen<sup>1</sup>, Y. Peng<sup>1</sup>, D. Zhang<sup>1</sup>, Z. Jie<sup>1</sup>, W. Wu<sup>1</sup>, Y. Qin<sup>1</sup>, J. Li<sup>1</sup>, L. Han<sup>3</sup>, D. Lu<sup>3</sup>, P. Wu<sup>3</sup>, Y. Dai<sup>3</sup>, X. Sun<sup>2</sup>, Z. Li<sup>2</sup>, A. Tang<sup>1</sup>, S. Zhong<sup>4</sup>, J. Wang<sup>1,5,6</sup>; <sup>1</sup>BGI-Shenzhen, Shenzhen, China, <sup>2</sup>Shenzhen Second People's Hosp., The First Affiliated Hosp. of Shenzhen Univ., Shenzhen, China, <sup>3</sup>Peking Univ. Shenzhen Hosp., Shenzhen, China, <sup>4</sup>Med. Res. Ctr. of Guangdong Gen. Hosp., Guangdong Academy of Med. Sci., China, <sup>5</sup>The Novo Nordisk Fdn. Ctr. for Basic Metabolic Res., Univ. of Copenhagen, Denmark, <sup>6</sup>Dept. of Biol., Univ. of Copenhagen, Copenhagen, Denmark

**2300 Microbiome Changes in Murine Small Intestines are Associated with Probiotic-induced Amelioration of Chemical Colitis**  
J. Mar, N. Nagalingham, Y. Song, S. Lynch; UCSF, San Francisco, CA

**2301 Diversified Microbiota of Meconium from Diabetic, Gestational Diabetic and Non-diabetic Mothers**  
J. Hu<sup>1</sup>, I. Peter<sup>1</sup>, A. Bashir<sup>1</sup>, S. Itzkowitz<sup>1</sup>, Z. Pei<sup>2</sup>, Y. Hurd<sup>1</sup>, H. Fernandez-hernandez<sup>1</sup>, M. Grabie<sup>1</sup>, S. Bienstock<sup>1</sup>, S. Gambell<sup>1</sup>, Y. Nomura<sup>3,1</sup>; <sup>1</sup>Icahn Sch. of Med. at Mount Sinai, New York City, NY, <sup>2</sup>Langone Med. Ctr. of New York Univ., New York City, NY, <sup>3</sup>Queens Coll. of CUNY, Flushing, NY

**2302 Metagenomic and Biochemical Analyses Identify Oral Bacterial Communities that Contribute Nitrite and Nitric Oxide to the Host**  
E. R. Hyde<sup>1</sup>, F. Andrade<sup>2</sup>, G. Tribble<sup>2</sup>, H. B. Kaplan<sup>2</sup>, N. S. Bryan<sup>2</sup>, J. F. Petrosino<sup>1</sup>; <sup>1</sup>Baylor Coll. of Med., Houston, TX, <sup>2</sup>The Univ. of Texas Hlth. Sci. Ctr.-Houston, Houston, TX

**2303 Commensal Colonization Factors Promote Specificity and Stability of the Gut Microbiome**  
G. P. Donaldson<sup>1</sup>, M. Lee<sup>1</sup>, Z. Mikulski<sup>2</sup>, K. Ley<sup>2</sup>, S. K. Mazmanian<sup>1</sup>; <sup>1</sup>California Inst. of Technology, Pasadena, CA, <sup>2</sup>La Jolla Inst. for Allergy and Immunology, La Jolla, CA

**2304 The Spatiotemporal Variability of the Human Supragingival Microbiota**  
D. M. Proctor<sup>1</sup>, P. M. Loomer<sup>2</sup>, S. P. Holmes<sup>3</sup>, D. A. Relman<sup>1,4</sup>; <sup>1</sup>Stanford Univ. Sch. of Med., Stanford, CA, <sup>2</sup>UCSF Sch. of Dentistry, San Francisco, CA, <sup>3</sup>Stanford Univ., Stanford, CA, <sup>4</sup>VA Palo Alto Healthcare System, Palo Alto, CA

**2305 Diversity-Generating Retroelements in the Human Gut Symbiont *Bacteroides fragilis***  
Y. Wang<sup>1</sup>, L. Clark<sup>1</sup>, S. Lee<sup>2</sup>, S. Mazmanian<sup>2</sup>, J. F. Miller<sup>1</sup>; <sup>1</sup>Univ. of California-Los Angeles, Los Angeles, CA, <sup>2</sup>California Inst. of Technology, Pasadena, CA

**2306 Bacterial Community Analysis of Dental Plaque In Experimental Gingivitis**  
J. Kistler<sup>1</sup>, V. Booth<sup>1</sup>, D. Bradshaw<sup>2</sup>, W. Wade<sup>1</sup>; <sup>1</sup>King's Coll. London, London, United Kingdom, <sup>2</sup>GlaxoSmithKline, Weybridge, United Kingdom

**2307 HuMiChip for Identifying and Characterizing Human Microbiomes**  
Z. He<sup>1</sup>, Q. Tu<sup>1</sup>, Y. Li<sup>1,2</sup>, Z. Shi<sup>1</sup>, Y. Deng<sup>1</sup>, C. Chen<sup>3</sup>, J. Beleno<sup>3</sup>, M. Jorgenson<sup>3</sup>, J. D. Van Nostrand<sup>1</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>The Univ. of Oklahoma, Norman, OK, <sup>2</sup>Sichuan Univ., Chengdu, China, <sup>3</sup>Univ. of Southern California, Los Angeles, CA

**2308 Cultivation of Fastidious Vaginal Anaerobes Associated with Bacterial Vaginosis**  
M. Sizova<sup>1</sup>, S. Srinivasan<sup>2</sup>, K. Depner<sup>2</sup>, D. Stanczyk<sup>1</sup>, M. Munch<sup>2</sup>, L. K. Sycuro<sup>2</sup>, T. Fiedler<sup>2</sup>, S. Epstein<sup>1</sup>, D. N. Fredricks<sup>2,3</sup>; <sup>1</sup>Northeastern Univ., Boston, MA, <sup>2</sup>Fred Hutchinson Cancer Res. Ctr., Seattle, WA, <sup>3</sup>Univ. of Washington, Seattle, WA

**2309 *Lactobacillus johnsonii* Feeding Affects Host Tryptophan Flux: The Role of Hydrogen Peroxide Mediated Inhibition of Intestinal Indoleamine 2,3-Dioxygenase**  
C. F. Gonzalez, R. Valladares, A. Potts, L. Bojilova, E. Cameron, C. Gardner, G. Lorca; Univ. of Florida, Gainesville, FL

**2310 Effect of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) on Segmented Filamentous Bacteria in the Gut of C57BL/6 Mice**  
P. Bhaduri, A. K. Kopeck, T. R. Zacharewski, N. E. Kaminski, J. M. Tiedje, S. A. Hashsham; Michigan State Univ., East Lansing, MI

**2311 The Effect of Sub-Therapeutic Antibiotic Treatment on Microbial Community Dynamics and Host Metabolism**  
L. M. Cox<sup>1</sup>, J. Sohn<sup>2</sup>, E. Venturini<sup>3</sup>, S. Owens<sup>4</sup>, A. Lorch<sup>3</sup>, A. V. Alekseyenko<sup>5</sup>, M. J. Blaser<sup>6,7</sup>; <sup>1</sup>NYU Sackler Inst. of Graduate BioMed. Sci., New York, NY, <sup>2</sup>New York Univ., New York, NY, <sup>3</sup>NYU Genome Technology Ctr., New York, NY, <sup>4</sup>Argonne Natl. Lab., Lemont, IL, <sup>5</sup>NYU Ctr. for Hlth. Informatics and Bioinformatics, New York, NY, <sup>6</sup>NYU Langone Med. Ctr., New York, NY, <sup>7</sup>New York Harbor Dept. of Veterans Affairs Med. Ctr., New York, NY

**2312 Skin Bacterial Community Structure Associated with the Initial Presentation of Pediatric Atopic Dermatitis**  
A. B. Narrowe<sup>1</sup>, C. B. Green<sup>2</sup>, T. M. Roane<sup>1</sup>; <sup>1</sup>Univ. of Colorado Denver, Denver, CO, <sup>2</sup>The Marshfield Clinic, Marshfield, WI

**2313 Intra- and Interpersonal Changes in the Skin Microbiome from Infancy to Adulthood**  
K. A. Capone<sup>1</sup>, F. Kirchner<sup>1</sup>, S. Cox<sup>2</sup>, E. Zaleski<sup>1</sup>, C. Mack Correa<sup>1</sup>, G. Stamatatos<sup>3</sup>, J. Nikolovski<sup>1</sup>; <sup>1</sup>Johnson & Johnson, Skillman, NJ, <sup>2</sup>Res. & Testing Lab., Lubbock, TX, <sup>3</sup>Johnson & Johnson, Sante Beaute, Issy-les-Moulineaux, France

**2314 Tigecycline Treatment Alters the Gut Microbiota and Induces *Clostridium difficile* Susceptibility in a Mouse Model**  
C. M. Bassis, C. M. Theriot, V. B. Young; Univ. of Michigan, Ann Arbor, MI

**2315 The Effect of Stress Hormones Corticosterone and Epinephrine on Bacteria Isolated from the Zebra Finch Gut**  
D. Sjoquist, B. Bashor, R. Wenig, D. J. Bailey, D. W. Hunnicutt; St. Norbert Coll., De Pere, WI

**2316 A Murine Model for Diet-induced Gastrointestinal Dysbiosis**  
J. M. Sturino<sup>1</sup>, R. Menon<sup>1</sup>, S. E. Watson<sup>1</sup>, L. N. Thomas<sup>1</sup>, C. D. Allred<sup>1</sup>, A. Dabney<sup>1</sup>, M. Azcarate-Peril<sup>2</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>Univ. of North Carolina, Chapel Hill, NC

**2317 Effects of Periodontal Treatment on Gum Pocket Bacterial Communities**  
K. Schwarzbach, R. Le, B. Bharti, R. A. Gottlieb, S. T. Kelley; San Diego State Univ., San Diego, CA



## 198 Inflammation and Immunopathology (Division E)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2318 The Role of Macrophage Inflammatory Protein-2 (MIP-2) Following Burn-Injury and *E. faecalis* Infection**  
C. Ellison, N. Raja, H. Wang, N. Fazal; Chicago State Univ., Chicago, IL
- 2319 The Effects of Naturally Occurring Cardioprotective Compounds and Possible Synergy with Resveratrol on Macrophage Function**  
J. Soares, P. J. King; St. Edward's Univ., Austin, TX
- 2320 A Role for TNF-alpha in Protection from *Clostridium difficile* Colitis**  
A. J. McDermott, K. E. Higdon, R. Muraglia, J. R. Erb-Downward, N. R. Falkowski, R. A. McDonald, V. B. Young, G. B. Huffnagle; Univ. of Michigan Med. Sch., Ann Arbor, MI
- 2321 Macrophage Extracellular Trap Formation in Response to *Mannheimia haemolytica* or its Leukotoxin is Altered by Co-incubation with Bovine Herpes Virus-1 Infected Bronchiolar Epithelial Cells**  
H. Korth<sup>1</sup>, N. Sennakayala<sup>2</sup>, C. J. Czuprynski<sup>2</sup>, N. A. Aulik<sup>1,2</sup>; <sup>1</sup>Winona State Univ., Winona, MN, <sup>2</sup>Univ. of Wisconsin- Madison, Madison, WI
- 2322 Regulation of *Borrelia burgdorferi*-Induced, Interleukin-17-Mediated Inflammation by Interleukin-10**  
E. S. Hansen, V. Medic, D. T. Nardelli; Univ. of Wisconsin-Milwaukee, Milwaukee, WI
- 2323 Corticotropin Releasing Hormone Receptor-1 Antagonism Increases Mortality Rate and Th17 bias during Pneumococcal Infection**  
B. N. Mott, H. Jones, D-M. Su; Univ. of North Texas Hlth. Sci. Ctr., Fort Worth, TX
- 2324 A Bacterial Stress Protein with Chemotactic Properties**  
K. M. Pietrosimone<sup>1</sup>, S. R. Davis<sup>1</sup>, D. Laukens<sup>2</sup>, M. A. Lynes<sup>1</sup>; <sup>1</sup>Univ. of Connecticut, Storrs, CT, <sup>2</sup>Univ. of Ghent, Ghent, Belgium
- 2325 A PG0717 Deletion Mutant of *Porphyromonas gingivalis* W83 Strain Displays Decreased Induction of Host Pro-inflammatory Signaling**  
R. P. Chastain-Gross<sup>1</sup>, L. Reyes<sup>1</sup>, P. H. Rodrigues<sup>2</sup>, E. M. Phillips<sup>1</sup>, S. Dholakia<sup>1</sup>, H. A. Diffee<sup>1</sup>, S. M. Wallet<sup>1</sup>, R. P. Darveau<sup>3</sup>, E. Eiler-McManis<sup>1</sup>, A. Progulski-Fox<sup>1</sup>; <sup>1</sup>Univ. of Florida, Gainesville, FL, <sup>2</sup>Inst. de Ciências Biomédicas, São Paulo, Brazil, <sup>3</sup>Univ. of Washington, Seattle, WA
- 2326 Female Neutrophils Produce Less Neutrophil Extracellular Traps in Response to the *Escherichia coli* Hemolysin than Male Neutrophils**  
H. Garding<sup>1</sup>, N. A. Aulik<sup>1,2</sup>, K. Robinson<sup>1</sup>; <sup>1</sup>Winona State Univ., Winona, MN, <sup>2</sup>Univ. of Wisconsin- Madison, Madison, WI
- 2327 Contrasting Immune Responses Mediate *Campylobacter jejuni* Induced Colitis and Autoimmunity**  
A. Malik, L. Mansfield; MSU, East Lansing, MI
- 2328 The Effects of 17β-Estradiol Supplementation on the Susceptibility of Male C57Bl/6 Mice to *Candida albicans* Infection**  
M. Arroyo-Mendoza<sup>1</sup>, N. E. Buckley<sup>2</sup>; <sup>1</sup>California State Polytechnic Univ., Pomona, Anaheim, CA, <sup>2</sup>California State Polytechnic Univ., Pomona, Pomona, CA
- 2329 Clinical and Microbiological Characteristics of *Klebsiella pneumoniae* Liver Abscess**  
D-X. Shen, J. Wang, D. Li, L. Ye; Chinese Gen. Hosp. of PLA, Beijing, China

- 2330 Virulence Potential of Pathogen Communities in the Gut of Critically Ill Patients**  
A. Zaborin<sup>1</sup>, J. Gilbert<sup>2</sup>, D. Smith<sup>2</sup>, K. Garfield<sup>3</sup>, J. Quensen<sup>3</sup>, J. Tiedje<sup>3</sup>, O. Y. Zaborina<sup>1</sup>, J. C. Alverdy<sup>1</sup>; <sup>1</sup>Univ. of Chicago, Chicago, IL, <sup>2</sup>Argonne Natl. Lab., Argonne, IL, <sup>3</sup>Michigan State Univ., East Lansing, MI

- 2331 Superantigen Profiles of *Staphylococcus aureus* Isolates from Diabetic Foot Ulcer Patient**  
B. G. Vu, C. S. Stach, W. Salgado-Pabón, D. J. Diekema, S. E. Gardner, P. M. Schlievert; Univ. of Iowa, Iowa City, IA

- 2332 The Relationship Between Different Gastric Pathological Lesions and ABO Blood Groups in *Helicobacter pylori* Infection**  
S. Ahmed, I. Ellakany, M. Gad, E. Ahmed, A. Awad; Faculty of Medicine Alexandria Univ., Alexandria, Egypt

- 2333 Correlation of Different Blood Groups in Type 2 Diabetes Mellitus**  
A. Fakhruddin<sup>1</sup>, S. G. Nadeem<sup>1</sup>, S. T. HAKIM<sup>2</sup>; <sup>1</sup>Med. Mycology Res. & Reference Lab., Dept. of Microbiol., Jinnah Univ. for Women, Karachi, Pakistan, <sup>2</sup>Virology & Tissue Culture Lab., Jinnah Univ. For Women, Karachi, Pakistan

## 199 Clinical Mycology – Diagnosis, Treatment, Epidemiology (Division F)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2334 Oral Colonization of *Candida* species in a Child Population in Merida, Yucatan, Mexico**  
F. Rueda-Gordillo, S. E. Hernández-Solís, C. Godoy-Montañez; Dept. de Microbiología Oral y Biología Molecular. Facultad de Odontología, Univ. Autónoma de Yucatán, Mérida, Yucatán, Mexico
- 2335 Widespread Azole Resistance in Oral *Candida* Species isolated from HIV-positive Cameroonian Patients**  
P. Abrantes<sup>1</sup>, C. Africa<sup>2</sup>, L. Ayuk<sup>3</sup>, C. Awason<sup>3</sup>, C. P. McArthur<sup>1</sup>; <sup>1</sup>Univ. of Western Cape, Cape Town, South Africa, <sup>2</sup>Univ. of Western Cape, Kansas City, South Africa, <sup>3</sup>Regional Hosp., Bamenda, Cameroon, <sup>4</sup>Univ. of Missouri, Kansas City, MO
- 2336 Detection of *Cryptococcus* from CSF in HIV and Non-HIV Patients by Nested PCR and their Antifungal Susceptibility Profile**  
R. S. K. Marak, A. K. Dixit, K. N. Prasad, T. N. Dhole; Sanjay Gandhi Postgraduate Inst. of Med. Sci., Lucknow, India
- 2337 The Impact of Atorvastatin on *Candida albicans* Infection in BALB/c Mice**  
E. A. Rahal, W. Constantin, N. Zeidan, A. M. Abdelnoor; American Univ. of Beirut, Beirut, Lebanon
- 2338 *Candida* spp. in the Oral Cavity of Children with Orthopedic Braces**  
S. E. Hernández-Solís, F. Rueda-Gordillo, K. C. Amaya-Guardia; Dept. de Microbiología Oral y Biología Molecular. Facultad de Odontología, Univ. Autónoma de Yucatán, Mérida, Yuc, Mexico
- 2339 Dermatophytoses Among School Children in Ozuitem: A Rural Community in Eastern Nigeria**  
A. C. Ngwogu, O. Obioma, K. O. Ngwogu; Abia State Univ., Uturu, Abia State, Nigeria.
- 2340 An *In vitro* Analysis of Flufenamic Acid against *Candida albicans* Biofilms**  
A. A. Chavez-Dozal<sup>1,2</sup>, S. M. Bernardo<sup>1,3</sup>, K. Asare<sup>2</sup>, M. Jahng<sup>2</sup>, S. A. Lee<sup>1,3</sup>; <sup>1</sup>Univ. of New Mexico, Albuquerque, NM, <sup>2</sup>Univ. of New Mexico Hlth. Sci. Ctr., Albuquerque, NM, <sup>3</sup>Univ. of New Mexico Hlth. Sci. Ctr., NM
- 2341 Identification of Molds by MALDI-ToF MS: Evaluation of Two Different Extraction Protocols (Liquid vs. Solid Media) and Two Different Fungal Databases**  
W. Memon<sup>1</sup>, A. Lau<sup>2</sup>, R. Lee<sup>1</sup>, T. Watkins<sup>3</sup>, T. Watkins<sup>3</sup>, K. Frank<sup>2</sup>, S. X. Zhang<sup>1</sup>, A. Zelazny<sup>2</sup>; <sup>1</sup>Johns Hopkins Hosp., Baltimore, MD, <sup>2</sup>NIH, Bethesda, MD, <sup>3</sup>Johns Hopkins Univ. Sch. of Med., Baltimore, MD



- 2342 Evaluation of the BD Phoenix Yeast ID Panels for the Rapid Identification of Yeast and Yeast-like Organisms**  
R. Green, R. Lee, N. Kwiatkowski, T. Watkins, K. Carroll, S. Zhang; Johns Hopkins Hosp., Baltimore, MD
- 2343 Prevalence of *Candida* Species in the Oral Cavity in a Geriatric Population**  
J. L. Villamil-Urzaiz, S. E. Hernández-Solís, F. Rueda-Gordillo; Univ. Autónoma de Yucatan, Mérida, Yuc, Mexico
- 2344 Comparison of Cryptococcal Antigenemia between Antiretroviral Naïve and Antiretroviral Experienced HIV Positive Patients at Two Hospitals in Ethiopia**  
T. B. Tufa<sup>1</sup>, Y. W. Amaneul<sup>1</sup>, D. Asrat<sup>1</sup>, G. Ayana<sup>2</sup>; <sup>1</sup>Addis Ababa Univ., Addis Ababa, Ethiopia, <sup>2</sup>Regional Capacity Building Directorate, Ethiopia Hlth. and Nutrition Res. Inst., Addis Ababa, Ethiopia
- 2345 Invasive Fungal Infection Caused by Dematiaceous Mold *Cladophialophora bopii* in an Immune-compromised Patient: A Case Report**  
N. A. Elkhizzi<sup>1</sup>, S. Bakheshwain<sup>2</sup>, S. Parvez<sup>2</sup>; <sup>1</sup>Div. of Med. Microbiol., Central Lab. and Blood Bank, Prince Sultan Military Med. City, Riyadh, Saudi Arabia, <sup>2</sup>Div. of Med. Microbiol., Dept. of Central Lab. and Blood Bank, Prince Sultan Military Med. City, Riyadh, Saudi Arabia
- 2346 Frequency of Nosocomial Epidemic Genotypes of *Candida albicans* and *C. parapsilosis* as the Cause of Fungemia in Neonatal Intensive Care Units**  
P. Escibano<sup>1,2</sup>, L. Marcos-Zambrano<sup>1,2</sup>, M. Rodríguez-Créixems<sup>1,2</sup>, B. Padilla<sup>1,2</sup>, E. Bouza<sup>1,2</sup>, J. Guinea<sup>1,2</sup>; <sup>1</sup>Hosp. General Univ. Gregorio Marañón, Madrid, Spain, <sup>2</sup>Instituto De Investigación Sanitaria Gregorio Marañón, Madrid, Spain
- 2347 Identification of *Trichosporon* Species by Matrix-assisted Laser Desorption/Ionization Time-of-flight Mass Spectrometry (MALDI-ToF MS)**  
T. N. Watkins<sup>1</sup>, X. Lu<sup>2</sup>, R. Lee<sup>3</sup>, H. Wang<sup>4</sup>, Y.-C. Xu<sup>4</sup>, Y. Liu<sup>5</sup>, L. Shen<sup>6</sup>, E. M. Brown<sup>6</sup>, S. E. Richardson<sup>6,7</sup>, K. V. Ota<sup>8</sup>, K. L. McGowan<sup>8</sup>, A. Zelazny<sup>9</sup>, E. S. Slechta<sup>10</sup>, K. E. Hanson<sup>10</sup>, L. Sigler<sup>11</sup>, J. Fuller<sup>12</sup>, M. Castanheira<sup>13</sup>, D. J. Diekema<sup>14</sup>, T. Sugita<sup>15</sup>, S. X. Zhang<sup>13</sup>; <sup>1</sup>Johns Hopkins Univ., Baltimore, MD, <sup>2</sup>Dalian Hosp. for Skin Diseases, Dalian, China, <sup>3</sup>Johns Hopkins Hosp., Baltimore, MD, <sup>4</sup>Peking Union Med. Coll. Hosp., Beijing, China, <sup>5</sup>Xin-Hua Hosp., Shanghai, China, <sup>6</sup>Publ. Hlth. Lab., Toronto, ON, Canada, <sup>7</sup>The Hosp. for Sick Children, Toronto, ON, Canada, <sup>8</sup>The Children's Hosp. of Philadelphia, Philadelphia, PA, <sup>9</sup>NIH, Bethesda, MD, <sup>10</sup>ARUP Lab., Salt Lake City, UT, <sup>11</sup>Univ. of Alberta Microfungus Collection and Herbarium, Edmonton, AB, <sup>12</sup>Univ. of Alberta Hosp., Calgary, AB, Canada, <sup>13</sup>JMI Lab., North Liberty, IA, <sup>14</sup>Univ. of Iowa, Iowa City, IA, <sup>15</sup>Meiji Pharmaceutical Univ., Tokyo, Japan
- 2348 Opportunistic Fungal Infections in HIV Patients Attending DOTS Clinic in a Tertiary Hospital in South-East Nigeria**  
I. B. Enweani<sup>1</sup>, B. O. M. T. Ochiabuto<sup>1</sup>, A. Nwankwo<sup>2</sup>, R. C. Chukwuanukwu<sup>1</sup>, M. Nwankwo<sup>2</sup>, I. Nwafuluaku<sup>2</sup>; <sup>1</sup>Nnamdi Azikiwe Univ., Awka, Anambra State, Nigeria, <sup>2</sup>Nnamdi Azikiwe Univ. Teaching Hosp., Nnewi, Anambra State, Nigeria
- 2349 Rapid Identification of Fungal Pathogens in Blood from Hospitalized Patients by Semi-automated Reverse Line Blot Assay**  
A. Jain<sup>1</sup>, K. Hennessey<sup>1</sup>, S. Furniss<sup>1</sup>, S. Shekar<sup>1</sup>, D. Snydman<sup>2</sup>, S. Doron<sup>2</sup>, N. Krueger<sup>1</sup>, A. Levin<sup>1</sup>; <sup>1</sup>Immunetics Inc, Boston, MA, <sup>2</sup>Tufts Med. Ctr., Boston, MA
- 2350 Simultaneous Detection and Differentiation of Medically Important Fungal Pathogens - *Candida*, *Aspergillus*, and *Cryptococcus* spp. - on ICEplex System**  
K. Madanahally Divakar, J. Riley, L. Kong; Primera Dx, Mansfield, MA
- 2351 Phenotypic and Genotypic Identification, Antifungal Susceptibility and Biofilm Formation of *Candida* Species Isolated from Patients with Surgical Site Infection in Karachi Pakistan**  
R. Erum, F. Samad, S. U. Kazmi; Univ. of Karachi, Karachi, Pakistan

- 2352 Antibody Induction and Detection with Individual or Combinations of *Blastomyces dermatitidis* Yeast Lysate Antigens**  
J. Wright, T. Harrild, T. Allison, G. Scalapone; Idaho State Univ., Pocatello, ID
- 2353 Comparative Evaluation of Two Commercial Matrix-Assisted Laser Desorption/Ionization Time of Flight (MALDI-ToF) Mass Spectrometry Platforms for Identification of Clinically Relevant Moulds**  
A. N. Schuetz<sup>1</sup>, A. Robertson<sup>2</sup>, E. Miranda<sup>3</sup>, J. Choudhury<sup>2</sup>, R. C. Walchak<sup>4</sup>, N. L. Wengenack<sup>4</sup>, S. Jenkins<sup>1</sup>, Y. W. Tang<sup>3</sup>, D. Larone<sup>1</sup>, E. N. Babady<sup>3</sup>; <sup>1</sup>Weill Cornell Med. Ctr., New York, NY, <sup>2</sup>New York-Presbyterian Hosp., New York, NY, <sup>3</sup>Mem. Sloan-Kettering Cancer Ctr., New York, NY, <sup>4</sup>Mayo Clinic, Rochester, MN
- 2354 *In vitro* Measurement of Coccidioidal Cellular Immunity Among Subjects with Various Forms of Coccidioidomycosis**  
N. M. Ampel<sup>1</sup>, L. A. Nesbit<sup>1</sup>, S. M. Johnson<sup>2</sup>, D. Pappagianis<sup>2</sup>; <sup>1</sup>Univ. of Arizona, Tucson, AZ, <sup>2</sup>Univ. of California at Davis, Davis, CA
- 2355 Development of a Highly Sensitive and Specific Blastomycosis Antibody Enzyme Immunoassay Using *Blastomyces Dermatitidis* Surface Protein Bad-1**  
S. M. Richer<sup>1</sup>, M. L. Smedema<sup>1</sup>, M. M. Durkin<sup>1</sup>, T. T. Brandhorst<sup>2</sup>, C. A. Hage<sup>3</sup>, P. A. Connolly<sup>1</sup>, A. de Oliveira<sup>4</sup>, B. S. Klein<sup>2</sup>, L. Wheat<sup>1</sup>; <sup>1</sup>MiraVista Diagnostics, Indianapolis, IN, <sup>2</sup>Univ. of Wisconsin Sch. of Med., Madison, WI, <sup>3</sup>Indiana Univ. Sch. of Med. and Roudebush Veterans' Admin. Med. Ctr., Indianapolis, IN, <sup>4</sup>CDC, Atlanta, GA
- 200 DNA Replication, Recombination, Repair, and Transfer (Division H)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2356 Molecular Analysis of Two-independent Plasmid Partition System by Non-coding DNA**  
H. Hayashi<sup>1</sup>, Y. Kuru<sup>2</sup>; <sup>1</sup>Tokyo Univ. of Agriculture and Technology, Japan, <sup>2</sup>Ibaraki Univ., Japan
- 2357 Repression of Oxidative Base (8-oxo-deoxyguanine) in *Synechocystis* sp. PCC6803**  
K. Narita, Y. Kuru; Coll. of Agriculture, Ibaraki Univ., Inashiki, Japan
- 2358 Sequence Requirements for the Origin of Transfer (*oriT*) of the *Bacteroides fragilis* Plasmid pLV22a During Conjugal Transfer**  
S. E. Kralicek<sup>1,2</sup>, J. R. Smith<sup>3</sup>, D. W. Hecht<sup>1,2</sup>; <sup>1</sup>Loyola Univ. Med. Ctr., Maywood, IL, <sup>2</sup>Hines VA Hosp., Hines, IL, <sup>3</sup>Triton Coll., River Grove, IL
- 2359 Analysis of the Role of Replication Protein A Phosphorylation on Telomere Length Regulation in the Budding Yeast *Saccharomyces cerevisiae***  
A. Pattison, M. McQuilken, A. P. Walther; Cedar Crest Coll., Allentown, PA
- 2360 UmuD/C Proteins of Plasmid pUM505 Confer Tolerance to Stress**  
A. Díaz-Magaña, C. Cervantes, M. I. Ramírez-Díaz; Univ. Michoacana, Morelia, Mexico
- 2361 Role of a Pseudopilus in Pneumococcal Transformation**  
M. Balaban, P. Böttig, S. M. Tirier, S. Normark, B. Henriques-Normark; Karolinska Inst., Stockholm, Sweden
- 2362 Characterization of SetCD-binding Sites in the Integrating Conjugative Elements of the SXT/R391 Family and the Genomic Islands They Mobilize**  
D. Poulin-Laprade, T. Bashar, V. Burrus; Univ. de Sherbrooke, Sherbrooke, QC, Canada
- 2363 Multiple DNA-Independent Interactions between Archaeal RadA Recombinase and Its Paralog in the Hyperthermophilic Acidophile *Sulfolobus solfataricus***  
A. M. Vallejo, M. L. Rolfmeier, C. A. Haseltine; Washington State Univ., Pullman, WA

**2364 Survey of Keio Collection *Escherichia coli* Mutants for Sensitivity to UV and X-radiation**  
N. P. Gularde, D. A. Hudman, N. J. Sargentini; ATSU, Kirksville Coll. of Osteopathic Med., Kirksville, MO

**2365 Regulation of Protein-Protein Interactions by Phosphorylation of Replication Protein A in *Saccharomyces cerevisiae***  
C. Mahoney<sup>1</sup>, K. Hager<sup>1</sup>, N. Krogan<sup>2</sup>, A. Walther<sup>1</sup>; <sup>1</sup>Cedar Crest Coll., Allentown, PA, <sup>2</sup>Univ. of California, San Francisco, CA

**2366 Direct Interactions between TnsA, TnsB and TnsC Control Tn7 Transposition**  
K. Choi<sup>1</sup>, Y. Li<sup>2</sup>, R. Sarnovsky<sup>2</sup>, J. M. Spencer<sup>2</sup>, N. L. Craig<sup>1</sup>; <sup>1</sup>Howard Hughes Med. Inst., Dept. of Molecular Biol. and Genetics, Johns Hopkins Sch. of Med., Baltimore, MD, <sup>2</sup>Dept. of Molecular Biol. and Genetics, Johns Hopkins Sch. of Med., Baltimore, MD

**2367 Identification and Characterization of Chromosomal Origins of Replication of the Two Chromosomes in *Rhodobacter sphaeroides***  
B-E. Myagmarjav, M. Choudhary; Sam Houston State Univ., Huntsville, TX

**2368 Role of *Pseudomonas aeruginosa* LexA-like Genes in DNA Damage Repair and Survival**  
J. N. Penterman<sup>1</sup>, P. K. Singh<sup>2</sup>, G. C. Walker<sup>1</sup>; <sup>1</sup>MIT, Cambridge, MA, <sup>2</sup>Univ. of Washington Med. Sch., Seattle, WA

**2369 The Uve1 Endonuclease is Regulated by the White Collar Complex to Protect *Cryptococcus neoformans* from UV Damage**  
S. Verma, A. Idnurm; Sch. of Biological Sci., UMKC, Kansas City, MO

**2370 Purine Nucleotides Regulate *Haemophilus influenzae* Competence by Inhibiting Sxy (TfoX) Translation**  
S. Sinha, J. C. Mell, R. J. Redfield; Univ. of British Columbia, Vancouver, BC, Canada

## 201 Biofilms (Division I)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2371 Bactericidal Effects Using Atmospheric Plasma on *In vitro* Biofilm Wound Models**  
M. E. Wintenberg<sup>1</sup>, K. Kelly-Wintenberg<sup>1</sup>, A. Wintenberg<sup>1</sup>, M. Karlstad<sup>2</sup>, K. R. Kirker<sup>3</sup>, S. Fisher<sup>3</sup>, G. A. James<sup>3</sup>; <sup>1</sup>Advanced Plasma Products, Knoxville, TN, <sup>2</sup>The Univ. of Tennessee Graduate Sch. of Med., Knoxville, TN, <sup>3</sup>The Ctr. for Biofilm Engineering, Montana State Univ., Bozeman, MT

**2372 Comparison of the Effect of Grapefruit Essential Oil on Gene expression of Two *Staphylococcus aureus* Isolates in Biofilms**  
E. C. Adukwu, S. Allen, C. A. Phillips; Univ. of Northampton, Northampton, United Kingdom

**2373 A Novel Dynamic Method to Analyze the Activity of Contact Lens Care Solutions against Microbial Biofilms**  
M. Artini<sup>1</sup>, A. Cellini<sup>1</sup>, G. Scoarughi<sup>1</sup>, R. Papa<sup>1</sup>, S. Palma<sup>2</sup>, L. Selan<sup>1</sup>; <sup>1</sup>Sapienza Univ., Roma, Italy, <sup>2</sup>D'Annunzio Univ., Chieti, Italy

**2374 Novel Micro-Patterned Surfaces Reduce Biofilm Formation of *Staphylococcus aureus* and *Pseudomonas aeruginosa***  
R. May<sup>1</sup>, M. Hoffman<sup>1</sup>, M. Sogo<sup>1</sup>, G. O'Toole<sup>2</sup>, A. Parker<sup>3</sup>, S. Reddy<sup>1</sup>; <sup>1</sup>Sharklet Technologies Inc., Aurora, CO, <sup>2</sup>Geisel Sch. of Med. at Dartmouth, Hanover, NH, <sup>3</sup>Montana State Univ., Bozeman, MT

**2375 Transmission of Multidrug-Resistant Organisms and Other Pathogens Via Contaminated Endoscopes: Can Buildup Biofilm Be Eliminated by Routine Cleaning and High-Level Disinfection?**  
A. M. Dirlam Langlay<sup>1</sup>, P. K. Tosh<sup>2</sup>, M. J. Alfa<sup>3,4</sup>, H. P. Wetzler<sup>1</sup>, C. L. Ofstead<sup>1</sup>; <sup>1</sup>Ofstead & Associates, Inc., Saint Paul, MN, <sup>2</sup>Mayo Clinic, Rochester, MN, <sup>3</sup>Diagnostic Services of Manitoba, Winnipeg, MB, Canada, <sup>4</sup>Univ. of Manitoba, Dept. of Med. Microbiol., Winnipeg, MB, Canada

**2376 Antibiofilm Activities of *Carex* Family and its Metabolites against *Pseudomonas aeruginosa***  
H. Cho, J.-H. Lee, M. Cho, J. Lee; Yeungnam Univ., Gyeongsan, Republic of Korea

**2377 Antimicrobial Resistance in *Yersinia enterocolitica* Isolated from Objects of Veterinary-Sanitary Control**  
A. Golovko<sup>1</sup>, V. Ushkalov<sup>2</sup>, L. Vygovska<sup>2</sup>; <sup>1</sup>NAAS, Kyiv, Ukraine, <sup>2</sup>SSCIBMS, Kyiv, Ukraine

**2378 The Anti-Biofilm Activity Secreted by Antarctic *Pseudoalteromonas haloplanktis***  
R. Papa<sup>1</sup>, E. Parrilli<sup>2</sup>, F. Sannino<sup>2</sup>, S. Carillo<sup>2</sup>, M. M. Corsaro<sup>2</sup>, M. Tilotta<sup>3</sup>, A. Servello<sup>3</sup>, C. Genovese<sup>3</sup>, M. L. Tutino<sup>2</sup>, M. Artini<sup>1</sup>, L. Selan<sup>1</sup>; <sup>1</sup>Sapienza Univ., Rome, Italy, <sup>2</sup>Federico II Univ., Naples, Italy, <sup>3</sup>Catania Univ., Catania, Italy

**2379 *In vitro* Treatment of Staphylococcal and Pseudomonal Biofilms Using Intermittent Low-intensity Electrical Current**  
J. Cede, S. M. Schmidt, J. Mandrekar, R. Patel; Mayo Clinic, Rochester, MN

**2380 Carbon Source, Mannitol Enhances Biocontrol Efficacy of a 2,4-Diacetylphloroglucinol-Producing *Pseudomonas* sp. NJ134 to Control Tomato Fusarium Wilt**  
B.-R. Kang, S.-J. Ko, D.-I. Kim, D.-S. Choi, J.-D. Park; JARES, Najusi, Jeonnam, Republic of Korea

**2381 Hydrogen Peroxide and Nitrite-Mediated Killing of *Pseudomonas aeruginosa* by Oral Streptococcal Species**  
J. Scofield, H. Wu; Univ. of Alabama at Birmingham, Birmingham, AL

## 202 Quorum Sensing (Division K)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2382 Identification of the Stability, Specificity, and Functional Determinants of the *Vibrio harveyi* Quorum-sensing Non-coding RNAs and Analysis of Their Roles in mRNA Target Selection and Regulation**  
Y. Shao<sup>1</sup>, L. Feng<sup>1</sup>, B. L. Bassler<sup>1,2</sup>; <sup>1</sup>Princeton Univ., Princeton, NJ, <sup>2</sup>Howard Hughes Med. Inst., Chevy Chase, MD

**2383 Modulation Quorum Sensing in *Pseudomonas aeruginosa* via Small Molecule Inhibitors of LasR and RhlR**  
C. T. O'Loughlin<sup>1</sup>, L. C. Miller<sup>1</sup>, K. Drescher<sup>1</sup>, A. Siryaporn<sup>1</sup>, M. F. Semmelhack<sup>1</sup>, B. L. Bassler<sup>1,2</sup>; <sup>1</sup>Princeton Univ., Princeton, NJ, <sup>2</sup>HHMI/Princeton Univ., NJ

**2384 Growth Domain and Environment Modulate *comX* Induction by CSP and XIP in *Streptococcus mutans***  
Q. Guo<sup>1,2</sup>, S.-J. Ahn<sup>1</sup>, J. Kaspar<sup>1</sup>, X. Zhou<sup>2</sup>, R. A. Burne<sup>1</sup>; <sup>1</sup>Univ. of Florida, Gainesville, FL, <sup>2</sup>Sichuan Univ., Chengdu, China

**2385 Regulation of *Vibrio harveyi* Quorum Sensing by the Qrr sRNAs**  
S. T. Rutherford<sup>1</sup>, B. L. Bassler<sup>2</sup>; <sup>1</sup>Princeton Univ., Princeton, NJ, <sup>2</sup>Princeton Univ., HHMI, Princeton, NJ

**2386 Defining Ligand Specificity for the LuxN Quorum-Sensing Receptor**  
X. Ke, B. Bassler; Princeton Univ., Princeton, NJ

**2387 Evidence for N-acyl-homoserine Lactone Activity by *Rickettsia typhi*, the Etiologic Agent of Murine Typhus**  
R. S. Pelc, S. M. Ceraul; Univ. of Maryland Baltimore, Baltimore, MD

**2388 Quenching and Processing the Interspecies AI-2-mediated Signal**  
K. B. Xavier<sup>1,2</sup>, J. C. Marques<sup>1,3</sup>, P. Lamosa<sup>2</sup>, S. T. Miller<sup>4</sup>, S. Tanner<sup>4</sup>, I. K. Oh<sup>4</sup>; <sup>1</sup>Inst. Gulbenkian de Ciencia, Oeiras, Portugal, <sup>2</sup>Inst. de Tecnologia Química e Biológica, Oeiras, Portugal, <sup>3</sup>Champalimaud Ctr. for the Unknown, Lisbon, Portugal, <sup>4</sup>Swarthmore Coll., Swarthmore, PA

**2389 The Quorum Signaling Compound PQS Induces Pyoverdinin Production in a Novel *Pseudomonas* Species**  
K. Shikula, S. L. Seifert, L. R. Aaronson; Utica Coll., Utica, NY

- 2390 Quorum Sensing Anticipates Stationary-phase Stress in *Burkholderia glumae***  
E. Goo<sup>1</sup>, J. An<sup>1</sup>, H. Ham<sup>1</sup>, H. Jeong<sup>1</sup>, Y-s. Seo<sup>2</sup>, I. Hwang<sup>1</sup>; <sup>1</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>2</sup>Pusan Natl. Univ., Busan, Republic of Korea
- 2391 Structural Characterization of Acyl-Homoserine Lactone-Hindered Quorum-Sensing Regulator EsaR**  
K. K. Pennerman, X. Jing, F. D. Schubot, A. M. Stevens; Virginia Tech, Blacksburg, VA
- 2392 Defining Direct Targets of OpaR in the Quorum-Sensing Regulator of *Vibrio parahaemolyticus***  
A. L. Kernell<sup>1</sup>, L. T. C. Guthrie<sup>1</sup>, R. V. Jensen<sup>1</sup>, L. M. McCarter<sup>2</sup>, A. M. Stevens<sup>1</sup>; <sup>1</sup>Virginia Tech, Blacksburg, VA, <sup>2</sup>Univ. of Iowa, Iowa City, IA
- 2393 Biochemical Analysis of the Lrp Protein from *Pseudomonas aeruginosa***  
S. D. Larson, M. C. Griffin; Kennesaw State Univ., Kennesaw, GA
- 2394 Leucine is an Environmental Sensor for Global Lrp Regulation in *Pseudomonas aeruginosa***  
L. Garcia, L. M. Amodio, III, S. D. Larson, M. C. Griffin; Kennesaw State Univ., Kennesaw, GA
- 2395 The Rnd Type Efflux System MexMN of *Pseudomonas aeruginosa* Extrudes "Pseudomonas" Quinolone Signal (PQS) and 4-hydroxy-2-heptylquinoline-n-oxide (HQNO), Interfering with Growth of *Staphylococcus aureus***  
S. Minagawa<sup>1</sup>, K. Shinno<sup>1</sup>, Y. Kitakaze<sup>1</sup>, K. Fujii<sup>2</sup>, F. Kato<sup>3</sup>, T. Kitayama<sup>2</sup>, M. Sugai<sup>3</sup>, N. Gotoh<sup>1</sup>; <sup>1</sup>Kyoto Pharmaceutical Univ., Kyoto, Japan, <sup>2</sup>Kinki Univ., Nara, Japan, <sup>3</sup>Hiroshima Univ., Hiroshima, Japan
- 203 Agricultural Microbial Ecology (Division N)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2396 Gene Expression Changes in the Swine Microbiota with the in-feed Antibiotic Carbadox**  
T. P. Looft<sup>1</sup>, H. K. Allen<sup>1</sup>, A. Severin<sup>2</sup>, U. Y. Levine<sup>3</sup>, D. O. Bayles<sup>1</sup>, D. P. Alt<sup>1</sup>, T. B. Stanton<sup>1</sup>; <sup>1</sup>Natl. Animal Disease Lab, USDA-ARS, Ames, IA, <sup>2</sup>Iowa State Univ., Ames, IA, <sup>3</sup>Novozymes Biologicals, Salem, VA
- 2397 The Herbicide Glyphosate Impacts Rhizosphere Soil Exoenzyme Activities and Microbial Community Structure Associated with Glyphosate-Resistant and Non-Resistant Corn**  
M. B. Jenkins<sup>1</sup>, M. A. Locke<sup>1</sup>, K. N. Reddy<sup>2</sup>, D. S. McChesney<sup>1</sup>, R. W. Steinriede<sup>2</sup>; <sup>1</sup>USDA-Agriculture Res. Service, Oxford, MS, <sup>2</sup>USDA-Agriculture Res. Service, Stoneville, MS
- 2398 Comparative Genomics Reveals the Source and Mechanisms of a *Salmonella* Kentucky Epidemic on a Dairy Farm**  
B. Haley<sup>1</sup>, M. Allard<sup>2</sup>, E. Brown<sup>2</sup>, J. S. Karns<sup>1</sup>, E. Hovingh<sup>3</sup>, J. S. Van Kessel<sup>1</sup>; <sup>1</sup>Environmental Microbial and Food Safety Lab., Beltsville Agricultural Res. Ctr., USDA-ARS, Beltsville, MD, <sup>2</sup>Div. of Microbiol., Ctr. for Food Safety and Nutrition, FDA, College Park, MD, <sup>3</sup>Dept. of Vet. and BioMed. Sci., Pennsylvania State Univ., University Park, PA
- 2399 Livestock Exhibit a Unique Vaginal Microbiota that Changes with Pregnancy**  
J. Swartz, M. Lachman, C. J. Yeoman; Montana State Univ., Bozeman, MT
- 2400 Shifts in Ileal Mucosa Microbiota Throughout the Production Stages of Swine**  
J. Rehberger<sup>1</sup>, E. Davis<sup>1</sup>, C. V. Maxwell<sup>2</sup>, D. Petri<sup>1</sup>; <sup>1</sup>Animal and Environmental Applications, DuPont Nutrition and Hlth., Waukesha, WI, <sup>2</sup>Dept. of Animal Sci., Univ. of Arkansas, Fayetteville, AR
- 2401 Investigation of Methane Emission and Bacterial and Archaeal Communities in Rice Paddy Soil during Rice Cultivation**  
C. Jeon, H. Lee; Chung-Ang Univ., Seoul, Republic of Korea
- 2402 Phylogenetic Analysis of an Actively Aerated Compost Tea**  
D. N. Prater<sup>1</sup>, G. S. Prater<sup>1</sup>, J. A. Eisen<sup>2</sup>; <sup>1</sup>Private, Muncie, IN, <sup>2</sup>Univ. of California Davis, Davis, CA

- 2403 The Effects of Specialized Pigment on Feather-Degrading Bacilli**  
R. G. Thomas, L. Tuhela; Ohio Wesleyan Univ., Delaware, OH
- 2404 The Effect of Medium Viscosity on Motility, Feather Degradation, and Chemotactic Response in *Bacillus* spp. Isolated from Songbird Plumage**  
E. A. Herder, L. Tuhela; Ohio Wesleyan Univ., Delaware, OH
- 204 Microbiome of Insects, Birds, Mammals, & Amphibians (Division N)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2405 A Novel Bacterial Culture Collection from the South American Herbivorous Hoatzin**  
K. M. De Jesús-Laboy<sup>1</sup>, F. Godoy-Vitorino<sup>2</sup>, D. McDonald<sup>3</sup>, J. John<sup>4</sup>, M. Cox<sup>4</sup>, M. G. Domínguez-Bello<sup>1</sup>; <sup>1</sup>Univ. of Puerto Rico Río Piedras Campus, San Juan, PR, <sup>2</sup>Inter American Univ. of Puerto Rico, San Juan, Puerto Rico, <sup>3</sup>Univ. of Colorado, Boulder, CO, <sup>4</sup>Anaerobe Systems, Morgan Hill, CA
- 2406 The Effect of Prebiotics on the Intestinal Microbiota of Wild Type (wt) 129 Mice**  
A. Monteagudo-Mera<sup>1</sup>, J. C. Arthur<sup>1</sup>, S. Daghey<sup>2</sup>, C. Jobin<sup>1</sup>, T. Keku<sup>1</sup>, J. M. Bruno-Barcena<sup>2</sup>, M. Azcarate-Peril<sup>1,3</sup>; <sup>1</sup>Univ. of North Carolina, Chapel Hill, NC, <sup>2</sup>North Carolina State Univ., Raleigh, NC, <sup>3</sup>Microbiome Core Facility, Chapel Hill, NC
- 2407 Microbiota of Cave Roosting Bats across New Mexico**  
K. J. Hughes<sup>1</sup>, D. Buecher<sup>2</sup>, N. Caimi<sup>1</sup>, J. Young<sup>1</sup>, D. E. Northup<sup>1</sup>, A. Porras-Alfaro<sup>3</sup>; <sup>1</sup>Univ. of New Mexico - Main Campus, Albuquerque, NM, <sup>2</sup>Buecher Biological Consulting, Tuscon, AZ, <sup>3</sup>Dept. of Biol., Western Illinois Univ., IL
- 2408 Microbial Dynamics and the Core Microbiome on Red-backed Salamanders (*Plethodon cinereus*)**  
A. H. Loudon<sup>1</sup>, D. C. Woodhams<sup>2</sup>, L. W. Parfrey<sup>2</sup>, H. Archer<sup>2</sup>, R. Knight<sup>2</sup>, V. J. McKenzie<sup>2</sup>, R. N. Harris<sup>1</sup>; <sup>1</sup>James Madison Univ., Harrisonburg, VA, <sup>2</sup>Univ. of Colorado, Boulder, CO
- 2409 Role of *Anopheles gambiae* in the Transmission and Maintenance of *Mycobacterium ulcerans***  
J. C. Hoxmeier, B. D. Thompson, B. D. Foy, K. M. Dobos; Colorado State Univ., Fort Collins, CO
- 2410 Symbiotic Microbial Assemblages on the Skin of Bullfrogs and Eastern Newts**  
J. B. Walke, M. H. Becker, G. Cormier, R. Jensen, L. K. Belden; Virginia Tech, Blacksburg, VA
- 2411 Variations in Bacterial and Archaeal Diversity within the Intestinal Tract of the Florida Manatee, *Trichechus manatus latirostris*: Seasonal and Sex Variations**  
S. Bediako, J. M. Henson; Clemson Univ., Clemson, SC
- 2412 Diversity and Distribution of Carbon Monoxide Dehydrogenase Genes within the Gut Microbial Communities of Phylogenetically Higher Termites**  
B. Fechter<sup>1</sup>, E. Matson<sup>1</sup>, J. Leadbetter<sup>2</sup>; <sup>1</sup>Univ. of Wisconsin Oshkosh, Oshkosh, WI, <sup>2</sup>California Inst. of Technology, Pasadena, CA
- 2413 The Western Lowland Gorilla (*G. gorilla gorilla*) Gastrointestinal Microbiome Sheds Light on their Ecology and Conservation**  
A. M. Gomez<sup>1</sup>, C. J. Yeoman<sup>2</sup>, K. Petzelkova<sup>3</sup>, B. A. White<sup>1</sup>, A. Todd<sup>4</sup>, R. Stumpf<sup>5</sup>, K. E. Nelson<sup>6</sup>, M. Gillis<sup>6</sup>, M. Torralba<sup>6</sup>, F. Carbonero<sup>1</sup>, H. R. Gaskins<sup>1</sup>, B. A. Wilson<sup>7</sup>, S. R. Leigh<sup>8</sup>; <sup>1</sup>Inst. for Genomic Biol., Dept. of Animal Sci., Univ. of Illinois, Urbana, IL, <sup>2</sup>Montana State Univ., Bozeman, MT, <sup>3</sup>Inst. Vertebrate Biol., Czech Acad of Scis; Liberec Zoo, Liberec, and Dept. Pathology and Parasitology, Univ. Vet. and Pharmaceutical Scis, Brno, Czech Republic, <sup>4</sup>World Wildlife Fndn., Bangui, Central African Republic, <sup>5</sup>Dept. of Anthropolog., Univ. of Illinois, Urbana, IL, <sup>6</sup>Craig Venter Inst., Rockville, MD, <sup>7</sup>Inst. for Genomic Biol., Dept. of Microbiol., Univ. of Illinois, Urbana, IL, <sup>8</sup>Dept. of Anthropology, Univ. of Colorado Boulder, Boulder, CO



- 2414 Bats: The Viral Frontier**  
J. M. Young; Univ. of New Mexico, Albuquerque, NM
- 2415 Perturbations to the Midgut Microbiota of *Pieris rapae* in Response to Diet and Antibiotics**  
L. M. McKinnon, I. T. Harris, C. J. Robinson; Howard Univ., Washington, DC
- 2416 Distinct Bacterial Communities in Attini Ants Species**  
A. C. Marchiori, M. Bacci Júnior; UNESP, Rio Claro - SP, Brazil
- 2417 Cyanobacterial Community in Gastric Contents of Egrets with Symptoms of Steatitis in an Agricultural Reservoir**  
M. Shirai<sup>1</sup>, Y. Neagari<sup>2</sup>, T. Miura<sup>1</sup>, M. Asayama<sup>1</sup>, K. Murata<sup>3</sup>, K-I. Harada<sup>4</sup>, T. Nishizawa<sup>5</sup>; <sup>1</sup>Ibaraki Univ., Ibaraki, Japan, <sup>2</sup>NIES, Ibaraki, Japan, <sup>3</sup>Nihon Univ., Kanagawa, Japan, <sup>4</sup>Meijo Univ., Nagoya, Japan
- 2418 Exploring Microbial Diversity Among Wild Ruminant Animals**  
M. Lachman, J. Swartz, C. J. Yeoman; Montana State Univ., Bozeman, MT
- 2419 Gut Microbial Diversity in Oophagous Tadpole of *Kurixalus Eiffingeri*: A Species that Breeds in Bamboo Stump**  
Y-T. Hsu<sup>1</sup>, Y-H. Chang<sup>2</sup>, C-Y. Chen<sup>2</sup>, Y-C. Yang<sup>3</sup>, H-C. Ho<sup>1</sup>; <sup>1</sup>Dept. of Anatomy, Tzu-Chi Univ., Hualien, Taiwan, <sup>2</sup>Dept. of Life Sci., Tzu-Chi Univ., Hualien, Taiwan, <sup>3</sup>Endemic Species Res. Inst., Council of Agriculture, R.O.C., Nantou, Taiwan
- 2420 Bacterial Community Composition and Structure in the Tick Vector *Amblyomma americanum***  
A. J. Williams-Newkirk<sup>1</sup>, L. A. Rowe<sup>2</sup>, T. R. Mixson-Hayden<sup>2</sup>, G. A. Dasch<sup>2</sup>; <sup>1</sup>Ctr. for Disease Control, Emory Univ., Atlanta, GA, <sup>2</sup>CDC, Atlanta, GA
- 205 Plant-Microbe Interactions (Division N)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A
- 2421 Diversity of Fungi in the Crop of the Folivorous South American Hoatzin**  
F. Godoy-Vitorino<sup>1</sup>, G. Vargas<sup>1</sup>, K. de Jesus Laboy<sup>2</sup>, M. Garcia-Amado<sup>3</sup>, M. Dominguez-Bello<sup>2</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico - Metropolitan Campus, San Juan, PR, <sup>2</sup>Univ. of Puerto Rico, Rio Piedras Campus, San Juan, PR, <sup>3</sup>Inst. Venezolano de Investigaciones Científicas, Caracas, Venezuela, Bolivarian Republic of
- 2422 Deciphering the Bacterial Microbiome for HLB-affected Citrus Treated with Antibiotics**  
M. Zhang<sup>1,2,3</sup>, C. A. Powell<sup>1</sup>, C. Yang<sup>1,4</sup>, Y. Duan<sup>5</sup>; <sup>1</sup>Univ. of Florida, Fort Pierce, FL, <sup>2</sup>State Key Lab for Conservation and Utilization of Subtropical Agro-bioresources, Guangxi Univ., Nanning, Guangxi, China, <sup>3</sup>USDA-ARS, U.S. Horticultural Lab, Fort Pierce, FL, <sup>4</sup>Fujian Agricultural and Forestry Univ, Fuzhou, China, <sup>5</sup>USDA-ARS, U.S. Horticultural Lab., Fort Pierce, FL
- 2423 Nanoparticles Reprogram the Metabolism of a Beneficial Plant-Associated Microbe, *Pseudomonas chlororaphis* O6**  
J. Goodman, C. Dimkpa, J. McLean, D. Britt, A. Anderson; Utah State Univ., Logan, UT
- 2424 The Effect of Fungal Volatiles on *Arabidopsis thaliana* Seedling Formation**  
R. Hung, S. Lee, J. W. Bennett; Rutgers, The State Univ. of New Jersey, New Brunswick, NJ
- 2425 Diversification of *Bacillus subtilis* Ecotypes in Rhizosphere and Free Soil**  
S. N. Aracena<sup>1</sup>, A. Suarez<sup>2</sup>, D. Andrade<sup>2</sup>, S. Kopac<sup>1</sup>, M. Goodwyn<sup>1</sup>, M. Koren<sup>1</sup>, A. Rooney<sup>3</sup>, C. Ramirez<sup>2</sup>, F. M. Cohan<sup>1</sup>; <sup>1</sup>Wesleyan Univ., Middletown, CT, <sup>2</sup>Univ. de Antioquia, Medellín, Colombia, <sup>3</sup>U.S. Dept. of Agriculture, Champaign, IL
- 2426 Changes in the Bacterial Community Associated with the Stem and the Vase Water of Economically Important Fresh-cut Flower Varieties**  
R. J. Watson, M. E. Kiesner, A. H. Smith, E. A. Galbraith, T. G. Rehberger; DuPont Nutrition and Hlth., Waukesha, WI
- 2427 WITHDRAWN**

- 2428 Changes in Energy Status of a *Pseudomonas* Biosensor by ZnO and CuO Nanoparticles are Modulated by Environmental Factors Exuded from Plant Roots**  
C. Dimkpa, N. Martineau, J. McLean, D. Britt, A. Anderson; Utah State Univ., Logan, UT
- 2429 Does *Populus deltoides* Select for Unique Microbial Communities among Adjacent Heterospecific Trees?**  
M. S. Robeson, II<sup>1</sup>, Z. K. Yang<sup>1</sup>, M. Kerley<sup>1</sup>, M. Podar<sup>1</sup>, M. Shakya<sup>1</sup>, G. M. Bonito<sup>2</sup>, G. A. Tuskan<sup>1</sup>, R. Vilgalys<sup>2</sup>, C. Schadt<sup>1</sup>; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Duke Univ., Durham, NC
- 2430 Screening and Characterization of Potential PGPR/*Bacillus* sp. Strains Isolated From Various Rhizospheres**  
L. Giroux, P. Auger, J-M. Juteau, M. Sirois; Univ. Québec Trois-Rivières, Trois-Rivières, QC, Canada
- 2431 Microbial Communities of Pitcher Fluids of Three *Nepenthes* Pitcher Plant Species (Nepenthaceae) from Peninsular Malaysia using 16s rDNA Clone Libraries**  
L. Chou, C. M. Clarke, G. A. Dykes; Monash Univ., Bandar Sunway, Malaysia
- 2432 Aerobic Compost Tea (ACT) Protects Tomato Plants from *Phytophthora capsici***  
P. Burlakoti, R. W. Nicol; Univ. of Guelph - Ridgetown Campus, Ridgetown, ON, Canada
- 2433 Lack of Bacterial Infection in Progeny Seedlings that Express Symptomatic Phenotypes and Are Derived from Citrus Trees Infected with '*Candidatus Liberibacter asiaticus*' Suggests a Possible Epigenetic Effect on Seedling Development**  
M. E. Hilf; USDA-ARS, Fort Pierce, FL
- 2434 Characterization of the Fungal Microbial Community Inhabiting Grapevine: Identification of a Biocontrol Agent for Pierce's Disease**  
J-i. Yang<sup>1</sup>, C. Roper<sup>1</sup>, J. Borneman<sup>1</sup>, J. Gloer<sup>2</sup>, K. Maloney<sup>3</sup>, P. Rolshausen<sup>1</sup>; <sup>1</sup>Univ. of California, Riverside, Riverside, CA, <sup>2</sup>The Univ. of Iowa, Iowa city, IA, <sup>3</sup>Point Loma Nazarene Univ., San Diego, CA
- 2435 Morphological and Biochemical Characterization of '*Rhizobium* sp.' Isolated from '*Leucaena leucocephala*' in Yucatán, Mexico**  
M. Tzec-Gamboa<sup>1,2</sup>, J. Ramón-Sierra<sup>1</sup>, F. J. Solorio<sup>2</sup>, E. L. Ortiz-Vázquez<sup>1</sup>; <sup>1</sup>Inst. Tecnológico de Mérida, Mérida, Yucatán, Mexico, <sup>2</sup>Univ. Autónoma de Yucatán, Mérida, Yucatán, Mexico
- 2436 The Plant-Microbe Interfaces Project: Defining and Understanding the Relationships Between *Populus* and its Microbiome**  
C. W. Schadt<sup>1</sup>, D. Pelletier<sup>1</sup>, T. Tschaplinski<sup>1</sup>, E. Uberbacher<sup>1</sup>, R. Cottingham<sup>1</sup>, G. Hurst<sup>1</sup>, E. P. Greenberg<sup>2</sup>, C. Harwood<sup>2</sup>, A. Schaefer<sup>2</sup>, R. Vilgalys<sup>3</sup>, F. Martin<sup>4</sup>, The Plant Microbe Interfaces Team; <sup>1</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>2</sup>Univ. of Washington, Seattle, WA, <sup>3</sup>Duke Univ., Durham, NC, <sup>4</sup>Inst. Natl. de la Recherche Agronomique, Nancy, France
- 2437 Microbial Community Contributions to the Plasticity of the Tropical Tree *Tabebuia heterophylla* in Puerto Rico**  
B. Hernández<sup>1</sup>, K. Acevedo<sup>1</sup>, Y. López<sup>1</sup>, X. Olivieri<sup>1</sup>, J. Vázquez<sup>2</sup>, E. Santiago<sup>2</sup>, S. Malfatti<sup>3</sup>, S. G. Tringe<sup>3</sup>, F. Godoy-Vitorino<sup>1</sup>; <sup>1</sup>Inter American Univ. of Puerto Rico - Metropolitan Campus, San Juan, PR, <sup>2</sup>Univ. of Puerto Rico, Rio Piedras Campus, San Juan, PR, <sup>3</sup>DOE Joint Genome Inst., Walnut Creek, CA
- 2438 Isolation and Identification of Genetically Diverse Endophytic Diazotrophs from the Wild Rice *Oryza Alta* and *Oryza Officinalis***  
H. J. Chaudhary<sup>1</sup>, T. Zhiyuan<sup>2</sup>; <sup>1</sup>Dept. of Plant Sci., Quaid-i-Azam Univ., Islamabad, Pakistan, <sup>2</sup>Coll. of Agriculture, South China Agricultural Univ., Guangzhou, China
- 2439 Characterization of Fungal-Bacterial Consortia from Switchgrass Bales to Develop Enzyme Systems for Conversion of Switchgrass to Bioproduct Precursors**  
A. Jain, J. M. Henson; Clemson Univ., Clemson, SC



## 206 Soils & Sediments (Division N)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

### 2440 Soil Bacterial Diversity in SW Pennsylvania: A Three-Year Ecological Monitoring Study

C. M. Dee, S. R. Maragiri, S. R. Gupta, A. Shanmuganathan; Washington and Jefferson Coll., Washington, PA

### 2441 Microbial Community Structure and Function in Saturated Riverbed and Laboratory Sediments

D. Li<sup>1</sup>, M. Alidina<sup>2</sup>, J. E. Drewes<sup>1</sup>, J. O. Sharp<sup>1</sup>; <sup>1</sup>Colorado Sch. of Mines, Golden, CO, <sup>2</sup>Kaust, Thuwal, Saudi Arabia

### 2442 Compositional and Functional Response of a Near-Surface Soil Microbial Community to a Simulated Underground CO<sub>2</sub> Storage Leak

W. E. Holben<sup>1</sup>, S. E. Morales<sup>2</sup>; <sup>1</sup>The Univ. of Montana, Missoula, MT, <sup>2</sup>Univ. of Otago, Dunedin, New Zealand

### 2443 Compositional and Functional Changes within Microbial Communities Along an Elevational Gradient

Y. Deng<sup>1</sup>, Y. Zhang<sup>2</sup>, C. Yang<sup>1</sup>, J. van Nostrand<sup>1</sup>, J. Cong<sup>3</sup>, Z. He<sup>1</sup>, J. Zhou<sup>1</sup>; <sup>1</sup>Univ. of Oklahoma, Norman, OK, <sup>2</sup>Chinese Academy of Forestry, Beijing, OK, <sup>3</sup>Chinese Academy of Forestry, Beijing, China

### 2444 The Response of Sedimentary Microbial Communities to Oil Contamination from the Deepwater Horizon Oil Spill in the Gulf of Mexico

W. A. Overholt<sup>1</sup>, K. P. Marks<sup>1</sup>, A. Canion<sup>2</sup>, S. J. Green<sup>3</sup>, J. Delgadino<sup>1</sup>, J. Kaba<sup>2</sup>, C. Hagan<sup>2</sup>, W. Wells<sup>2</sup>, N. Norton<sup>2</sup>, M. Huettel<sup>4</sup>, L.-M. Rodriguez-R<sup>1</sup>, K. T. Konstantinidis<sup>1</sup>, J. E. Kostka<sup>1</sup>; <sup>1</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>Florida State Univ., Tallahassee, FL, <sup>3</sup>Univ. of Illinois at Chicago, Chicago, IL, <sup>4</sup>Florida State Univ., Tallahassee, FL

### 2445 *Mangrovibacter Diazotrophicus* Gen. Nov., Sp. Nov., a Nitrogen-fixing Bacterium Isolated from Mangrove Sediment, and Proposal of *Marinaceae* Fam. Nov

J. Dong<sup>1,2</sup>, X. Huang<sup>1</sup>, X. Tian<sup>1</sup>, S. Zhang<sup>1</sup>; <sup>1</sup>South China Sea Inst. of Oceanology, Chinese Academy of Sci. South China Sea Inst. of Oceanology, Chinese Academy of Sci., China, <sup>2</sup>Natl. Experiment Station of Tropical Marine Biol., Chinese Academy of Sci., China

### 2446 Spatial and Temporal Changes in Distribution of Typical and Atypical Nitrous Oxide Reductase (nosZ) Genes in Two Contrasting Agricultural Soils

J. C. Chee Sanford<sup>1</sup>, A. K. Welsh<sup>2</sup>, L. M. Connor<sup>1</sup>, F. E. Loeffler<sup>3,4</sup>, R. A. Sanford<sup>2</sup>; <sup>1</sup>USDA-ARS, Urbana, IL, <sup>2</sup>Univ. of Illinois, Urbana, IL, <sup>3</sup>Univ. of Tennessee, Knoxville, TN, <sup>4</sup>Oak Ridge Natl. Lab., Oak Ridge, TN

### 2447 Enrichment of Nitrous Oxide Reducing Organisms from Coastal Marine and Marsh Sediments

K. T. B. Nguyen, D. Sobolev; Univ. of Houston-Victoria, Victoria, TX

### 2448 Microbial Community Response to Nutrient Addition in the Earliest Stages of Soil Development

J. Knelman<sup>1</sup>, S. O'Neill<sup>1</sup>, R. Lynch<sup>1</sup>, J. Darcy<sup>1</sup>, S. Castle<sup>2</sup>, C. C. Cleveland<sup>2</sup>, S. K. Schmidt<sup>1</sup>, D. R. Nemerut<sup>1</sup>; <sup>1</sup>Univ. of Colorado at Boulder, Boulder, CO, <sup>2</sup>Univ. of Montana, Missoula, MT

### 2449 Small Genomes Indicate Obligate Community Dependence in Sediment-associated Bacteria from Diverse Lineages Lacking Cultivated Representatives

R. S. Kantor<sup>1</sup>, K. C. Wrighton<sup>1</sup>, L. A. Hug<sup>1</sup>, I. Sharon<sup>1</sup>, C. J. Castelle<sup>1</sup>, K. Handley<sup>2</sup>, B. C. Thomas<sup>1</sup>, J. F. Banfield<sup>1,3</sup>; <sup>1</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>2</sup>Argonne Natl. Lab., Argonne, IL, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

### 2450 Variability in Traits Explains Co-existence of Different Phylogenetic Groups of *Bacillus* in the Sediment Community of the Churince Water System at Cuatro Ciénegas, Coahuila, Mexico

M. D. Rodríguez Torres<sup>1</sup>, A. Islas<sup>1</sup>, I. Hernandez<sup>1</sup>, V. Souza<sup>2</sup>, G. Olmedo Álvarez<sup>1</sup>; <sup>1</sup>CINVESTAV Irapuato, Irapuato, Mexico, <sup>2</sup>UNAM Inst. de Ecología, DF, Mexico

### 2451 Seasonal and Spatial Variability of Denitrifier Diversity in San Francisco Bay Estuary

J. A. Lee, C. A. Francis; Stanford Univ., Stanford, CA

### 2452 Identification of Bacterial 16S Ribosomal Sequences in Alpine Soil at Rocky Mountain National Park

T. Arends<sup>1</sup>, M. Balas<sup>2</sup>, J. Janke<sup>1</sup>, J. Odden<sup>1</sup>; <sup>1</sup>Metropolitan State Univ. of Denver, Denver, CO, <sup>2</sup>Univ. of Colorado Denver Anschutz Med. Campus, Denver, CO

### 2453 Nitrogen Fertilization Creates New Niches for Ammonia-oxidizing Microbial Communities in Aridland Soil

Y. Marusenko, S. J. Hall, F. Garcia-Pichel; Arizona State Univ., Tempe, AZ

### 2454 Change in the Microbial Community Composition in an Oil Field Subjected to Nitrate Injection

A. Agrawal, D. An, J. Voordouw, S. Caffery, G. Voordouw; Univ. of Calgary, Canada, Calgary, AB, Canada

### 2455 Environmental Controls Over the Distribution of Microorganisms and Organic Matter Reactivity at the Ecosystem Scale in a Northern Peatland

X. Lin<sup>1</sup>, M. Tfaily<sup>2</sup>, P. Chanton<sup>1</sup>, J. M. Steinweg<sup>3</sup>, J. Chanton<sup>2</sup>, W. Cooper<sup>2</sup>, C. Schadt<sup>3</sup>, J. Kostka<sup>1</sup>; <sup>1</sup>Georgia Inst. of Technology, Atlanta, GA, <sup>2</sup>Florida State Univ., Tallahassee, FL, <sup>3</sup>Oak Ridge Natl. Lab., Oak Ridge, TN

### 2456 Single Addition of Nano-Titanium Dioxide Triggers Short Term Responses in Abundance, Activity and Composition of Sediment Bacterial Communities in Model Streams

A. S. Ozaki<sup>1</sup>, C. T. T. Binh<sup>1</sup>, T. Tong<sup>2</sup>, J. Gaillard<sup>2</sup>, K. Gray<sup>2</sup>, J. J. Kelly<sup>1</sup>; <sup>1</sup>Loyola Univ. Chicago, Chicago, IL, <sup>2</sup>Northwestern Univ., Evanston, IL

### 2457 Transcriptome Analysis of Adaptation to Water Stress by *Pseudomonas fluorescens* Pf0-1 Growing in Soil

D. Marshall<sup>1</sup>, S. B. Levy<sup>2</sup>, M. W. Silby<sup>1</sup>; <sup>1</sup>Univ. of Massachusetts Dartmouth, North Dartmouth, MA, <sup>2</sup>Tufts Univ. Sch. of Med., Boston, MA

### 2458 Diversity and Abundance of Ammonia-oxidizing Archaea in Singapore Mangrove Sediments

S. Nagarajan, C. Wu, H. Jing, S. Chou, Z. Zhou; Natl. Univ. of Singapore, Singapore, Singapore

### 2459 Production of Viral Like Particles (VLPs) following *In situ* Stimulation of a Subsurface Microbial Community

D. Pan<sup>1</sup>, K. H. Williams<sup>2</sup>, M. Robbins<sup>2</sup>, K. A. Weber<sup>1</sup>; <sup>1</sup>Univ. of Nebraska Lincoln, Lincoln, NE, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

### 2460 Are Microbial Communities in Agricultural Soils Homogeneous at Different Depths and Spatial Scales?

A. K. Welsh<sup>1</sup>, J. C. Chee-Sanford<sup>2</sup>, L. M. Connor<sup>2</sup>, F. E. Loeffler<sup>3,4</sup>, R. A. Sanford<sup>1</sup>; <sup>1</sup>Univ. of Illinois at Urbana Champaign, Urbana, IL, <sup>2</sup>USDA-ARS, Urbana, IL, <sup>3</sup>Univ. of Tennessee, Knoxville, TN, <sup>4</sup>Oak Ridge Natl. Lab., Oak Ridge, TN

### 2461 Microbial Communities in Subsurface Coal Seams of the Powder River Basin, Wyoming

B. Unal, D. Hughes, K. Nüsslein; Univ. of Massachusetts, Amherst, Amherst, MA

### 2462 Geobacter-associated Bacteriophages that Are Active During *In situ* Bioremediation of a Uranium-contaminated Aquifer

D. E. Holmes<sup>1,2</sup>, L. Giloteaux<sup>1</sup>, A. Chaurasia<sup>1</sup>, C. C. Thompson<sup>1</sup>, K. H. Williams<sup>3</sup>, B. Luef<sup>4</sup>, L. R. Comolli<sup>3</sup>, J. F. Banfield<sup>4</sup>, D. R. Lovley<sup>1</sup>; <sup>1</sup>Univ. of Massachusetts, Amherst, MA, <sup>2</sup>Western New England Univ., Springfield, MA, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>4</sup>Dept. of Earth and Planetary Sci., Univ. of California Berkeley, Berkeley, CA

### 2463 Connectivity Gradient Revealed from Functional Ecological Networks Across Grassland Ecosystems

J. Deng, Y. Deng, J. Zhou; Univ. of Oklahoma, Norman, OK

**207 Biofuels - II (Division O)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2464 Comparison of Fungal Pullulan Production on Dilute Acid-Treated Cordgrass Hydrolysates**  
T. P. West, J. L. Peterson; South Dakota State Univ., Brookings, SD

- 2465 Building Better Cellulases: Exploring the Reaction Mechanism of Cel6A from *Cellulomonas fimi***  
R. C. Whitney, A. Clarke; Univ. of Guelph, Guelph, ON, Canada

- 2466 Beneficial Effect of Biological Inhibitor Abatement on Cellulase Activity**  
N. N. Nichols<sup>1</sup>, G. Cao<sup>2</sup>, E. Ximenes<sup>3</sup>, M. Ladisch<sup>3</sup>;  
<sup>1</sup>NCAUR,ARS,USDA, Peoria, IL, <sup>2</sup>Harbin Inst. of Technology, Harbin, China, <sup>3</sup>Purdue Univ., West Lafayette, IN

- 2467 Bioconversion of Hemicellulose to Xylose**  
Y. Lam, J. He; Natl. Univ. of Singapore, Singapore

- 2468 New Developments in Engineering *Escherichia coli* to Produce Methyl ketones**  
E. Goh, H. Burd, T. Lee, H. R. Beller; Joint BioEnergy Inst., Emeryville, CA

- 2469 Differences in Gene Expression and the Proteome of *Fibrobacter Succinogenes* S85 Cultured on Cellulose or Glucose as Sole Sources of Carbon**  
A. Neumann<sup>1</sup>, M. Christopherson<sup>1</sup>, D. Stevenson<sup>2</sup>, M. Wilkins<sup>3</sup>, P. Weimer<sup>2,1</sup>, G. Suen<sup>1</sup>; <sup>1</sup>Dept. of Bacteriology, Univ. of Wisconsin - Madison, Madison, WI, <sup>2</sup>U.S. Dairy Forage Res. Ctr., Agricultural Res. Service, United States Dept. of Agriculture, Madison, WI, <sup>3</sup>DOE Pacific Northwest Natl. Lab., Richland, WA

- 2470 Analysis of Alcohol Cross-Tolerance in Ethanol Resistant *E. coli***  
K. A. Romano, M. J. Simons, J. A. Senerchia, G. Cruz, M. Niro, G. A. Caputo, G. B. Hecht; Rowan Univ., NJ

- 2471 Continuous Culture as Tool to Select Xylose/cellobiose Fermenting Yeasts From Brazil's Biodiversity**  
C. R. S. Bragança, V. C. d. Santos, T. A. Rigamonte, L. T. Colombo, F. M. L. Passos; UFV, Viçosa, Brazil

- 2472 Combined Biological and Chemical Pretreatment Method for Lignocellulosic Ethanol Production from Energy Cane**  
R. Boopathy; Nicholls State Univ., Thibodaux, LA

- 2473 Engineering of Protein Complexes Based on *Clostridium* Cellulosome Systems for Biological Pretreatment and Synergistic Hydrolysis of Lignocellulose**  
J. Hyeon, D. Kang, S. You, S. Han; Korea Univ., Seoul, Republic of Korea

- 2474 Ethanol Production by *Lactobacillus casei* by Utilization of Plant Biomass**  
J. M. Heidenreich<sup>1</sup>, E. Phrommao<sup>1</sup>, E. Vinay-Lara<sup>1</sup>, J. R. Broadbent<sup>2</sup>, J. L. Steele<sup>1</sup>; <sup>1</sup>Univ. of WI-Madison, Madison, WI, <sup>2</sup>Utah State Univ., Logan, UT

- 2475 Biological Pretreatment of Corn Stover by *Phlebia brevispora* for Enhanced Enzymatic Hydrolysis and Efficient Ethanol Production**  
B. C. Saha, M. A. Cotta; Bioenergy Res. Unit, Natl. Ctr. for Agricultural Utilization Res., USDA-ARS, Peoria, IL

- 2476 Switchgrass (*Panicum virgatum*) Fermentation by Sequential Culture of *Clostridium thermocellum* and *Clostridium beijerinckii*: Effect of Particle Size on Gas Production**  
N. M. Elia<sup>1</sup>, M. D. Flythe<sup>2</sup>, M. B. Schmal<sup>2</sup>, S. E. Nokes<sup>1</sup>; <sup>1</sup>Univ. of Kentucky, Lexington, KY, <sup>2</sup>USDA-ARS, Lexington, KY

- 2477 Effects of Lactic Acid Bacteria Contamination on Lignocellulosic Ethanol Fermentation**  
K. M. Bischoff, P. A. Khatibi, J. O. Rich; USDA-ARS Natl. Ctr. for Agricultural Utilization Res., Peoria, IL

- 2478 Simultaneous Saccharification and Fermentation (SSF) of Sugarcane Bagasse for Ethanol Production using *Saccharomyces cerevisiae***

M.-J. Granados-Baeza<sup>1</sup>, A. Alvarez-Castillo<sup>1</sup>, H. Alonso-Jiménez<sup>1</sup>, M.-M. Domínguez-Domínguez<sup>1</sup>, L.-W. Granados-Baeza<sup>2</sup>, A.-B. Pérez-Zapata<sup>2</sup>, M. Gutiérrez-Almanza<sup>1</sup>, Z.-M. Rodríguez-Aragón<sup>1</sup>, K. Sánchez-Zúñiga<sup>1</sup>, U. Santana-Hernández<sup>1</sup>; <sup>1</sup>Inst. Tecnológico de Zacatepec, Cuernavaca Morelos, Mexico, <sup>2</sup>Univ. Autónoma de Campeche, Campeche, Mexico

- 2479 An Overview of the Plant Polymer Degrading Capabilities of the Anaerobic Fungus *Orpinomyces* Strain C1A and their Potential Role in Biofuel Applications**  
C. G. Struchtemeyer, A. S. Liggensstoffer, M. S. Elshahed; Oklahoma State Univ., Stillwater, OK

- 2480 Potential of Thermophilic Bioprocessing of Lignocellulosic Biomass for Generation of Biofuels**  
A. Kainth, A. Bhalla, R. Bhardwaj, M. Bibra, S. Kumar, R. Sani; SDSMT, Rapid City, SD

- 2481 Multiple-Functional Thermo-Tolerant Lipolytic Microbes and Biofertilizer Production**  
S.-S. Yang<sup>1,2</sup>, C.-H. Chang<sup>1</sup>, C.-F. Chang<sup>1</sup>, C.-Y. Lee<sup>1</sup>, Y.-R. Tsai<sup>3</sup>, Y.-Y. Liu<sup>3</sup>; <sup>1</sup>Dept. of Food Sci., China Univ. of Sci. and Technology, Taipei, Taiwan, <sup>2</sup>Dept. of Biochemical Sci. and Technology, Natl. Taiwan Univ., Taipei, Taiwan, <sup>3</sup>Taiwan Microbiol. Sci. and Technology Company, Taipei, Taiwan

- 2482 Isolation of Lactic Acid Producers Strains from Maize Plant**  
G. Cruz-Nicolás, M. César-Bárceñas; Ctr. de Investigación en Biotecnología Aplicada, Tlaxcala, Mexico

**208 General Food Microbiology II (Division P)**  
1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2483 Evaluation of the Microbiological Safety of Kati: A Cereal Based Nigerian Fermented Food**  
B. J. Akinyele; The Federal Univ. of Technology, Akure, Ondo State, Nigeria

- 2484 Effects of the Use of Starter Culture and Different Concentrations of 'Kuuru' on Nutritional Quality of Fermented African Locust Bean (*Parkia biglobosa*) Seeds**  
T. R. Omodara, E. Y. Aderibigbe; Ekiti State Univ., Ado Ekiti, Ekiti State, Nigeria

- 2485 Effects of Use of Starter Culture and Different Components of 'Kuuru' on the Nutritional Quality of Fermented *Parkia biglobosa***  
T. R. Omodara, E. Y. Aderibigbe; Ekiti State Univ., Ado Ekiti, Ekiti State, Nigeria

- 2486 Synergistic Effect of *Lactobacillus paracasei* 441 and Inulin to Improve the Viability of Bifidobacteria in Fermented Milk**  
A. Ayad, D. El-Rab, R. Gyawali, S. A. Ibrahim; North Carolina A&T State Univ., Greensboro, NC

- 2487 The Effect of Lactic Acid Bacteria-fermented Soy Milk on Fat Accumulation**  
M.-C. Chung<sup>1</sup>, T.-M. Pan<sup>2</sup>, T.-Y. Tsai<sup>1</sup>; <sup>1</sup>Dept. of Food Sci., Fu Jen Catholic Univ., Taipei, Taiwan, <sup>2</sup>Dept. of Biochemical Sci. and Technology, Natl. Taiwan Univ., Taipei, Taiwan

- 2488 Plasmid Analysis of *Salmonella enterica* serovar Bovismorbificans Isolates from Hummus-associated Outbreak**  
J. Jean-Gilles Beaubrun<sup>1</sup>, M. Blaylock<sup>2</sup>, R. Blackwell<sup>2</sup>, S. Merid<sup>2</sup>, S. Jackson<sup>1</sup>, M. Kotewicz<sup>1</sup>, G. Gopinath<sup>1</sup>, S. Ayers<sup>3</sup>, J. Abbott<sup>3</sup>, J. Sabo<sup>3</sup>, L. Ewing<sup>1</sup>, J. Gangiredla<sup>1</sup>, S. Gebru<sup>1</sup>, I. Patel<sup>1</sup>, B. Jones<sup>1</sup>, M. Mammel<sup>1</sup>, K. Dudley<sup>1</sup>, K. Jarvis<sup>1</sup>, C. A. Elkins<sup>1</sup>, A. Diallo<sup>2</sup>, D. Hanes<sup>1</sup>; <sup>1</sup>FDA, Laurel, MD, <sup>2</sup>District of Columbia Publ. Hlth. Lab., Washington, DC, <sup>3</sup>Ctr. for Vet. Med., Laurel, MD

- 2489 Use of a Low-Cost Multi-Color Fluorescence Capillary Electrophoresis Unit for the Differentiation of *Salmonella* Species**  
A. Oppedahl, P. Varineau, H-M. Pang, W. Wei; Advanced Analytical Technologies, Inc., Ames, IA
- 2490 Screening Method Comparison of the USDA MLG 5B.03 and BAX Big Six Detection Kit**  
M. L. Ishida, J. Crowe, A. Bryant, C. Franconi, Jr.; Florida Dept. of Agriculture and Consumer Services, Tallahassee, FL
- 2491 Differentiating *Shigella* spp. and Enteroinvasive *Escherichia coli* by Sequencing a Polymorphic Marker and Multiplex qPCR**  
K-S. Chen<sup>1</sup>, C-M. Cheng<sup>1</sup>, W. Lin<sup>2</sup>; <sup>1</sup>FDA, Irvine, CA, <sup>2</sup>FDA, Rockville, MD
- 2492 Prevalence of *Clostridium difficile* in Retail Meats in Minnesota and Comparison of Animal and Human Isolates**  
R. Sepulveda<sup>1</sup>, M. Shaughnessy<sup>2</sup>, T. Snider<sup>1</sup>, D. Boxrud<sup>3</sup>, E. Cebelinski<sup>3</sup>, K. Smith<sup>3</sup>, J. Bender<sup>1</sup>, J. Johnson<sup>2,4</sup>, S. Holzbauer<sup>3,5</sup>, K. Venkitanarayanan<sup>6</sup>, F. Diez-Gonzalez<sup>1</sup>; <sup>1</sup>Univ. of Minnesota, Saint Paul, MN, <sup>2</sup>Univ. of Minnesota, Minneapolis, MN, <sup>3</sup>Minnesota Dept. of Hlth., Saint Paul, MN, <sup>4</sup>VA Med. Ctr., Minneapolis, MN, <sup>5</sup>CDC, Minneapolis, MN, <sup>6</sup>Univ. of Connecticut, Storrs, CT
- 2493 A C-di-GMP-dependent Cellulosic Exopolysaccharide Produced by *Listeria monocytogenes* Enhances Resistance to Disinfectants and Desiccation**  
V. K. Köseoğlu<sup>1</sup>, L-H. Chen<sup>2</sup>, K. W. Miller<sup>1</sup>, M. Gomelsky<sup>1</sup>; <sup>1</sup>Univ. of Wyoming, Laramie, WY, <sup>2</sup>Inner Mongolia Agricultural Univ., Hohhot, China
- 2494 Identification and Characterization of New Amino Acid Germinants for Spores of the Enterotoxigenic *Clostridium perfringens* Type A Isolates**  
P. Udombijitkul<sup>1</sup>, M. Alnoman<sup>1</sup>, S. Banawas<sup>1</sup>, D. Paredes-Sabja<sup>2</sup>, M. R. Sarker<sup>1</sup>; <sup>1</sup>Oregon State Univ., Corvallis, OR, <sup>2</sup>Univ. Andres Bello, Santiago, Chile
- 2495 Evaluation of an 8 Hour Test for Detecting and Enumerating Fecal Coliforms in Fresh Produce**  
F-C. Hsu, C-I. Wong; Scientific Methods Inc., Granger, IN
- 2496 Rapid Strain Typing of *Salmonella* in Food in the Presence of Competing Microflora by Genome Sequence Scanning**  
S. V. Ramaswamy, E. Protozanova, M. Manoj Kumar, M. M. Safranovitch, G. Malkin, M. Faggart, S. P. Vyas, K. Crissy, J. Symonds, R. Gilmanshin; Pathogenetix, Woburn, MA
- 2497 Screening of LPS Binding Peptides for *Salmonella* Whole Cell Detection**  
I-H. Chen, K. Vaglenov, J. M. Barbaree; Auburn Univ., Auburn, AL
- 2498 RpoS Contributes to the Distinct Survival Fitness among "*Escherichia coli*" O157:H7 Curli Variants of the 2006 Spinach-Associated Outbreak Strains**  
M. Q. Carter, J. W. Louie, S. Huynh, C. Parker; Agricultural Res. Service, Albany, CA
- 2499 *E. coli*, *Salmonella*, and Norovirus Prevalence on Seattle Farmers Markets Produce**  
A. Leang, A. Kossik, M. Katsuyama, N. K. Beck, J. S. Meschke; Univ. of Washington, Seattle, WA
- 2500 Development of a Liquid Mid-density Micro Array Assay for the Detection of Food-borne Enteric Viruses Using Luminex® XMAP Technology**  
S. N. Rout, G. L. Hartman; Food & Drug Admin., Alameda, CA
- 2501 Microbiological Profile During Fermentation and Quality Assessment of Flour From Different Cultivars of Sweet Potato**  
C. F. Ezeama<sup>1</sup>, J. U. Amajor<sup>2</sup>; <sup>1</sup>Michael Okpara Univ. of Agriculture, Umudike, Abia State Nigeria, Umuahia, Nigeria, <sup>2</sup>Natl. Root Crop Res. Inst., Umudike, Umuahia, Nigeria

- 2502 The Impact of Using Natural Food Additives on the Induction of Virulence and Acid Tolerance Genes of Multi Resistant *Salmonella* Typhimurium**  
H. N. Al-Khanaq, Male, J. Beal, Female; Plymouth Univ., Plymouth, United Kingdom

## 209 Biofuels and Bioelectricity (Division Q)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2503 Strategic Development of Exoelectrogenic Consortia for Efficient Converting Organics in Wastewater into Electricity**  
Y. Park, T. Lee; Pusan Natl. Univ., Busan, Republic of Korea
- 2504 Aromatic Amino Acids Required for Pili Conductivity and Long-Range Extracellular Electron Transport in *Geobacter sulfurreducens***  
M. Vargas<sup>1</sup>, N. S. Malvankar<sup>2</sup>, P-L. Tremblay<sup>2</sup>, C. Leang<sup>2</sup>, P. Patel<sup>2</sup>, J. Smith<sup>2</sup>, O. Synoeyenbos-West<sup>2</sup>, K. P. Nevin<sup>2</sup>, D. R. Lovley<sup>2</sup>; <sup>1</sup>Coll. of the Holy Cross, Worcester, MA, <sup>2</sup>Univ. of Massachusetts, Amherst, MA
- 2505 WITHDRAWN**
- 2506 Controlled Cocultures Reveal Mechanisms of Light-responsive Electricity Generation in Photosynthetic Microbial Electrochemical Cells Fed with Sulfide**  
J. P. Badalamenti, C. I. Torres, R. Krajmalnik-Brown; Arizona State Univ., Tempe, AZ
- 2507 Efficient Conversion of Sucrose to Electric Current in a Microbial Electrolysis Cell (MEC) Anode through Homoacetogen – Anode Respiring Bacteria (ARB) Partnership**  
P. Parameswaran, S. C. Popat, A. G. Delgado, R. Krajmalnik-Brown, C. I. Torres; Arizona State Univ., Tempe, AZ
- 2508 Characterizing Electron Transfer at the Biocathode of a Microbial Solar Cell**  
S. Strycharz-Glaven, N. Lebedev, J. Roy, L. Tender; Naval Res. Lab, Washington, DC
- 2509 Bioelectrochemical Catalytic Characterization and Functional Genes Associated with Nitrobenzene-Reducing Biocathode Switched from Heterotrophic to Autotrophic Cultivation**  
B. Liang<sup>1,2</sup>, H-Y. Cheng<sup>1</sup>, H. Yu<sup>1</sup>, J. D. Van Nostrand<sup>2</sup>, D-J. Lee<sup>1,3</sup>, A-J. Wang<sup>1</sup>, J. Zhou<sup>2</sup>; <sup>1</sup>Harbin Inst. of Technology, Harbin, China, <sup>2</sup>Inst. for Environmental Genomics and Dept. of Botany and Microbiol., Univ. of Oklahoma, Norman, OK, <sup>3</sup>Dept. of Chemical Engineering, Natl. Taiwan Univ., Taipei, Taiwan
- 2510 Microbial Consortium Enriched at the Cathode of a Solar Microbial Fuel Cell**  
S. M. Glaven, A. P. Malanoski, Z. Wang, W. Hervey, IV, B. Lin; U.S. Naval Res. Lab., Washington, DC
- 2511 Microbe-derived Production of Fuel Components from Defined Renewable Waste**  
L. A. Fitzgerald<sup>1</sup>, E. Petersen<sup>2</sup>, K. Myers<sup>3</sup>, J. Cramer<sup>1</sup>, R. Morris<sup>1</sup>, S. Childress<sup>4</sup>, T. Atherly<sup>5</sup>, C. Ziemer<sup>2</sup>, J. Biffinger<sup>1</sup>; <sup>1</sup>Naval Res. Lab., Alexandria, VA, <sup>2</sup>Nova Res. Inc., Alexandria, VA, <sup>3</sup>Nova Res. Inc., Alexandria, VA, <sup>4</sup>Bowie State Univ., Bowie, MD, <sup>5</sup>Natl. Lab. for Agriculture and the Environment, Ames, IA
- 2512 pH Dependent Fatty Acid Profiles from Ten *Shewanella* spp.**  
E. R. Petersen<sup>1</sup>, L. A. Fitzgerald<sup>2</sup>, K. M. Myers<sup>1</sup>, J. A. Cramer<sup>2</sup>, R. E. Morris<sup>2</sup>, A. P. Malanoski<sup>2</sup>, J. C. Biffinger<sup>2</sup>; <sup>1</sup>Nova Res., Inc., Alexandria, VA, <sup>2</sup>Naval Res. Lab., Washington, DC
- 2513 Production of Biodiesel-like Components by the Type I Methanotroph *Methylobacterium methanica***  
M. D. Burdette, J. M. Henson; Clemson Univ., Clemson, SC
- 2514 Tobermorite as a Selective Bed Material for Methanotrophs in Methane Biofiltration**  
T. Kim<sup>1</sup>, S-Y. Jeong<sup>1</sup>, H. Ryu<sup>2</sup>, K-S. Cho<sup>1</sup>; <sup>1</sup>Ewha Womans Univ., Seoul, Republic of Korea, <sup>2</sup>Soongsil Univ., Seoul, Republic of Korea

- 2515 Comparison of Perlite, Tobermolite and Polyurethane as Filter Bed Materials for Methane Removal**  
S.-Y. Jeong, T. Kim, K.-S. Cho; EWA Womans Univ., Seoul, Republic of Korea
- 2516 Characterization of a Methane-generating Microbial Community Degrading Different Organic Substrates by Comparative RNA-DNA Based Amplicon Pyrosequencing**  
X. Y. Lu, Z. Y. Shen, P. K. H. Lee; City Univ. of Hong Kong, Hong Kong
- 2517 Functional Resilience Following Hydraulic Loading Pulse Disturbances in Replicate Methanogenic Bioreactors**  
J. E. Chavarria<sup>1,2</sup>, D. H. Huber<sup>1,2</sup>, T. Espinosa-Solares<sup>3</sup>, N. Balagurusamy<sup>4</sup>; <sup>1</sup>Gus R. Douglass Inst., Institute, WV, <sup>2</sup>West Virginia State Univ., Institute, WV, <sup>3</sup>Univ. Autónoma Chapingo, Mexico, <sup>4</sup>Univ. Autónoma de Coahuila, Mexico
- 2518 The Impact of a Glucose Pulse Disturbance on the Resilience of Thermophilic Methanogenic Bioreactors**  
N. A. Montenegro-García<sup>1</sup>, D. H. Huber<sup>1</sup>, R. Domínguez-Puerto<sup>2</sup>, T. Espinosa-Solares<sup>3</sup>, N. Balagurusamy<sup>4</sup>; <sup>1</sup>Gus R. Douglass Inst. West Virginia State Univ., Institute, WV, <sup>2</sup>Unidad Profesional Interdisciplinaria de Biología, Inst. Politécnico Natl., Mexico, <sup>3</sup>Univ. Autónoma Chapingo, Mexico, <sup>4</sup>Univ. Autónoma de Coahuila, Mexico
- 2519 Dominance of Methanosaeta Populations at High Acetate Concentrations During Unstable Anaerobic Digestion**  
S. Chen, Q. He; Univ. of Tennessee, Knoxville, TN
- 2520 Enhancing Autotrophic Conversions in *Clostridium ljungdahlii*: Insights from Adaptive Evolution, Transcriptomics, and Old-Fashioned Medium Manipulation**  
K. P. Nevin, P. Shrestha, M. Aklujkar, T. L. Woodard, D. R. Lovley; Univ. of Massachusetts, Amherst, MA
- 2521 Enhanced Production of Gammalinolenic Acid by *Cunninghamella blakesleeana* JSK-2 Using Simple Physiological Culture Strategies**  
S. Janakiraman, S. S.K.; Bangalore Univ., Karnataka, India
- 2522 Effect of Substrate Types and Inoculation Sources on Methanogenic Enrichment Communities**  
T. Narihiro<sup>1,2</sup>, M. Nobu<sup>1</sup>, L. Ye<sup>1</sup>, N.-K. Kim<sup>1</sup>, Y. Kamagata<sup>2</sup>, W.-T. Liu<sup>1</sup>; <sup>1</sup>Dept. of Civil and Environmental Engineering, Univ. of Illinois at Urbana-Champaign, Urbana, IL, <sup>2</sup>Bioproduction Res. Inst., Natl. Inst. of Advanced Industrial Sci. and Technology (AIST), Tsukuba, Japan
- 2523 Impact of Viral Infectivity on Algal Yield in Production Ponds**  
K. Kraft, A. Alum, M. Abbaszadegan; Arizona State Univ., Tempe, AZ
- 2524 WITHDRAWN**
- 2525 Cultivation of Microalgae Having High Concentration of Carbon Dioxide Tolerance Coupled with Utilization of Wastewater on Municipal WWTP for Biodiesel Production**  
S. Park, J. Kim, T. Lee; Pusan Natl. Univ., Busan, Republic of Korea
- 2526 Multispecies Cultures for Enhancing the Productivity of Algal Cultivation Under Thermal Fluctuations**  
F. Almada, K. A. Kinney, L. E. Katz, H. Berberoglu; The Univ. of Texas at Austin, Austin, TX
- 2527 Algal Oils as 'Drop-in' Replacements for Petroleum-derived Transportation Fuels**  
R. R. Killens-Cade, W. L. Roberts, J. M. Burkholder, H. Lamb, H. Sederoff, L. F. Stikeleather, A. M. Grunden; North Carolina State Univ., Raleigh, NC
- 2528 Bio-oil Accumulation in *Phaeodactylum tricornutum* is Reversed by Supplementation with Nitrate and Phosphate During Photobioreactor Growth**  
J. Valenzuela, M. Fields; Montana State Univ., Bozeman, MT
- 2529 Bioprospecting for Oleaginous Microalgae and/or Cyanobacteria Native to Secondary Treated Wastewater Holding Tanks from Tallahassee, FL**  
D. Alvarez, L. Collins, D. Wafula, A. Chauhan; Florida A&M Univ., Tallahassee, FL

- 2530 Cultivation of Microalgae (neochloris Oleoabundans Y *Chlorella* Sp.) in Wastewater for Biomass Production and Lipid Extraction**  
Y. Martinez Cruz, G. Hernández Eugenio, T. Espinosa Solares; Univ. Autónoma Chapingo, Estado de México, Mexico

## 210 Disinfection and Control of Microorganisms (Division Q)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

- 2531 Toxic Effects of Zinc in Leachate from Crumb Rubber Used in Green Roof Media**  
M. Crampton<sup>1</sup>, A. Ryan<sup>2</sup>, C. Eckert<sup>2</sup>, K. Baker<sup>2</sup>, D. Herson<sup>1</sup>; <sup>1</sup>Univ. of Delaware, Newark, DE, <sup>2</sup>Penn State Harrisburg, Harrisburg, PA
- 2532 Bacterial Survival on Fabric after Machine Washing and Tumble Drying**  
A. T. Cilia, R. K. L. Kang; Takasago Int'l Corp, Rockleigh, NJ
- 2533 Bacterial Response to Different Ballast Water Treatments and Protocol for Optimal Microbial Enumeration**  
S. Yahyai<sup>1</sup>, D. Ceccarelli<sup>1</sup>, M. Tamburri<sup>2</sup>, A. Huq<sup>1</sup>, R. R. Colwell<sup>1,3</sup>; <sup>1</sup>Maryland Pathogen Res. Inst., Univ. of Maryland, Coll. Park, College Park, MD, <sup>2</sup>Maritime Environmental Resource Ctr., UMCES, Solomons, MD, <sup>3</sup>Ctr. for Bioinformatics and Computational Biol., Univ. of Maryland, Coll. Park, College Park, MD
- 2534 Investigation of Pathogen Disinfection and Regrowth in a Graywater Reuse Treatment System for Toilet Flushing**  
K. M. Wiles, S. E. Sharville, S. K. De Long; Colorado State Univ., Fort Collins, CO
- 2535 Pepper Mild Mottle Virus and Human Enteric Virus Reduction at the Nogales International Wastewater Treatment Center and the Subsequent Concentrations in the Upper Santa Cruz River**  
K. Tuttle, M. Kitajima, K. Bright, C. Gerba, B. Iker; The Univ. of Arizona, Tucson, AZ
- 2536 Evaluation of Three Disinfectants for Inactivating Poliovirus in Beach Sand Contaminated with Sewage**  
J. L. Jackson; Sanitation Districts of Los Angeles County, Whittier, CA
- 2537 Evaluation of Ethylene Oxide for the Inactivation of *Bacillus anthracis***  
M. Q. S. Wendling<sup>1</sup>, W. R. Richter<sup>1</sup>, A. T. Lastivka<sup>1</sup>, J. V. Rogers<sup>1</sup>, S. Serre<sup>2</sup>; <sup>1</sup>Battelle Mem. Inst., Columbus, OH, <sup>2</sup>US EPA, Research Triangle Park, NC
- 2538 The Cysticidal Activity of Bromine on *Cryptosporidium parvum* Oocysts**  
J. J. Kim<sup>1</sup>, O. D. Simmons, III<sup>2</sup>, M. D. Sobsey<sup>1</sup>; <sup>1</sup>The Univ. of North Carolina, Chapel Hill, NC, <sup>2</sup>North Carolina State Univ., Raleigh, NC
- 2539 Disinfection of Norovirus Using Silver Nanoparticles on Magnetic Hybrid Colloid**  
S. Park<sup>1</sup>, H. Park<sup>2</sup>, S. Lee<sup>1</sup>, K. Woo<sup>2</sup>, G. Ko<sup>1</sup>; <sup>1</sup>Dept. of Environmental Hlth., Graduate Sch. of Publ. Hlth., Seoul Natl. Univ., Seoul, Republic of Korea, <sup>2</sup>Molecular Recognition Res. Ctr., Korea Inst. of Sci. and Technology, Seoul, Republic of Korea
- 2540 Aggregate Size and Exposure Time Influence Toxicity of Palladium Nanomaterials to Microorganisms**  
K. A. Walker, C. P. Adams, S. O. Obare, K. M. Docherty; Western Michigan Univ., Kalamazoo, MI
- 2541 Sensitivity of Long-term Stationary Cultures of *Cupriavidus necator* JMP134 to Nanoparticles**  
S. Mueller-Spitz, S. Rose; UW Oshkosh, Oshkosh, WI
- 2542 Inactivation of Norovirus on Dry Copper Surfaces**  
S. L. Warnes, C. W. Keevil; Univ. of Southampton, Southampton, United Kingdom



**2543 Quantitative Proteomic Analyses of the Molecular Responses of *Escherichia coli* to Different Disinfectants and Nutrient Conditions**  
Z. Du; Univ. of Nebraska-Lincoln, Lincoln, NE

**2544 Development of a Green Roof Medium Using Recycled Materials: Microbiological and Nutrient Leaching Characteristics**  
A. S. Mickey, L. K. Mehalik, J. M. Felker, D. I. Harrow, B. A. Leedy, C. L. Eckert, K. H. Baker; Penn State Harrisburg, Middletown, PA

**2545 Inactivation of Dairy Manure-Borne Pathogens by Anaerobic Digestion**  
M. A. Borchardt<sup>1</sup>, S. K. Spencer<sup>1</sup>, S. S. Borchardt<sup>2</sup>, R. A. Larson<sup>3</sup>, A. Alkan-Ozkaynak<sup>3</sup>; <sup>1</sup>USDA-Agricultural Res. Service, Marshfield, WI, <sup>2</sup>USGS Wisconsin Water Sci. Ctr., Marshfield, WI, <sup>3</sup>Univ. of Wisconsin - Madison, Madison, WI

**2546 Chitosan an Alternative Coagulant for Producing Safe Drinking Water at Homes**  
A. Soros<sup>1</sup>, L. M. Casanova<sup>2</sup>, M. D. Sobsey<sup>1</sup>; <sup>1</sup>Univ. of North Carolina-Chapel Hill, Chapel Hill, NC, <sup>2</sup>Georgia State Univ., Atlanta, GA

**2547 Removal of Bacteria from Contaminated Water Using Inexpensive Clay Filters**  
C. R. Dennis, L. Tuhela, K. Bogdanov; Ohio Wesleyan Univ., Delaware, OH

**2548 Impact of Ozone Pre-treatment on Reverse Osmosis (RO) Membrane Biofoulant Community Structure and Properties**  
T. L. Kirschling, J. P. Killgore; Natl. Inst. of Standards & Technology, Boulder, CO

**2549 UV Inactivation of Bacteriophages and Their Potential Reactivation Using the Host Bacterial UV Repair Mechanisms**  
R. A. Rodriguez<sup>1</sup>, S. Bounty<sup>2</sup>, S. Beck<sup>2</sup>, C. Chan<sup>2</sup>, C. McGuire<sup>2</sup>, K. Linden<sup>2</sup>; <sup>1</sup>UT-Hlth. Sch. of Publ. Hlth., El Paso, TX, <sup>2</sup>Univ. of Colorado-Boulder Dept. of Civil, Environmental and Architectural Engineering, Boulder, CO

**2550 The Influence of Nutrient Levels and Natural Microbiota on the Survival of *Escherichia coli* in Aquatic Environments**  
P. W. Wanjugi, G. A. Fox, V. J. Harwood; Univ. of South Florida, Tampa, FL

**2551 Bactericidal Activity of Ozonized Olive (*Olea europaea* L.) and Venadillo (*Swietenia humilis* Zucc.) Oils against *Escherichia coli* and *Staphylococcus aureus***  
C. Chadez<sup>1</sup>, M. Soto Beltran<sup>2</sup>, M. Jimenez Edeza<sup>3</sup>, T. Martinez Bastidas<sup>1</sup>, M. Angulo Escalante<sup>1</sup>, E. Salazar Villa<sup>1</sup>, C. Martinez Rodriguez<sup>1</sup>; <sup>1</sup>Ctr. de Investigacion en Alimentacion y Desarrollo, Culiacán, Mexico, <sup>2</sup>The Univ. of Arizona, Tucson, AZ, <sup>3</sup>Univ. Autonoma de Sinaloa, Culiacán, Mexico

**2552 A Composition that Delivers Immediate Broad-spectrum Disinfection and Residual Bacterial Sanitization**  
R. Vongsa, D. Koenig, C. Cunningham, S. Mundscha, I. Weart, J. Paulsen; Kimberly Clark Corp., Neenah, WI

**2553 Effectiveness of a Do-It-Yourself Recipe for Cleaning and Disinfection**  
N. Goodyear, N. Brouillette, K. Tenaglia, J. Marshall, M. Quinn; Univ. of Massachusetts Lowell, Lowell, MA

## 211 Microbial Degradation of Organics (Division Q)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2554 Emerging Contaminants from the Microscopic Perspective: The Effects of Perfluoroalkyl Substances on a Common Soil Microbe**  
T. S. Weathers, C. P. Higgins, J. O. Sharp; Colorado Sch. of Mines, Golden, CO

**2555 Anaerobic Biotransformation of 6:2 Fluorotelomer Thioamidosulfonate in Aqueous Film-Forming Foams**  
S. Yi<sup>1</sup>, E. F. Houtz<sup>1</sup>, K. C. Harding<sup>1</sup>, J. A. Field<sup>2</sup>, D. L. Sedlak<sup>1</sup>, L. Alvarez-Cohen<sup>1</sup>; <sup>1</sup>Univ. of California, Berkeley, CA, <sup>2</sup>Oregon State Univ., Corvallis, OR

**2556 Estrogenic Potential of Transformation Metabolites and End-products of 6:2 Fluorotelomer Alcohol Biodegradation**  
L. Wu<sup>1</sup>, K-H. Chu<sup>1</sup>, S. Safe<sup>1</sup>, N. Wang<sup>2</sup>; <sup>1</sup>Texas A&M Univ., College Station, TX, <sup>2</sup>E.I. du Pont De Nemours & Company, Inc., Wilmington, DE

**2557 Cometabolic Degradation of Carbazole, Dibenzofuran and Dibenzothiophene by a Phenol-Degrading *Arthrobacter* sp. W1**  
S. Shi<sup>1</sup>, F. Ma<sup>1</sup>, Y. Qu<sup>2</sup>; <sup>1</sup>Harbin Inst. of Technology, Harbin, China, <sup>2</sup>Dalian Univ. of Technology, Dalian, China

**2558 Carbazole Biodegradation Potential of Bacteria Isolated from Tropical Hydrocarbon-Contaminated Soils**  
L. B. Salam<sup>1</sup>, M. O. Ilori<sup>1</sup>, O. O. Amund<sup>1</sup>, H. Nojiri<sup>2</sup>; <sup>1</sup>Univ. of Lagos, Akoka, Nigeria, <sup>2</sup>Univ. of Tokyo, Tokyo, Japan

**2559 Energy Taxis to Phenylacetic Acid in *Pseudomonas putida* F1**  
R. A. Luu<sup>1</sup>, B. J. Schneider<sup>2</sup>, C. C. Ho<sup>1</sup>, V. Nesteryuk<sup>1</sup>, S. E. Ngwesse<sup>2</sup>, X. Liu<sup>1</sup>, J. V. Parales<sup>1</sup>, J. L. Ditty<sup>2</sup>, R. E. Parales<sup>1</sup>; <sup>1</sup>Univ. of California, Davis, CA, <sup>2</sup>Univ. of St. Thomas, St. Paul, MN

**2560 Anaerobic Degradation Of Aromatic Amino Acids By The Hyperthermophilic Archaeon, *Ferroglobus placidus***  
D. Beaulieu<sup>1</sup>, R. Dubay<sup>1</sup>, J. Rocheleau<sup>1</sup>, L. Giloteaux<sup>2</sup>, J. Smith<sup>2</sup>, C. Rizzo<sup>2</sup>, D. E. Holmes<sup>1</sup>; <sup>1</sup>Western New England Univ., Springfield, MA, <sup>2</sup>Univ. of Massachusetts, Amherst, MA

**2561 The Role of the Rare Biosphere in Degrading 2,4 – Dichlorophenoxyacetic Acid and 3-Nitrotyrosine in Lake Lanier**  
R. Krishnan, R. S. Poretsky, J. C. Spain, K. T. Konstantinidis; Georgia Inst. of Technology, Atlanta, GA

**2562 Cloning and Heterologous Functional Expression of Tetrahydrofuran Monooxygenases from *Pseudonocardia* strains in *Rhodococcus jostii* RHA1**  
A. Grostern<sup>1</sup>, C. M. Sales<sup>1,2</sup>, L. Alvarez-Cohen<sup>1,3</sup>; <sup>1</sup>Univ. of California, Berkeley, Berkeley, CA, <sup>2</sup>Drexel Univ., Philadelphia, PA, <sup>3</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**2563 Reductive Dechlorination of Aroclor 1260 by *Dehalococcoides***  
S. Wang, J. He; Natl. Univ. of Singapore, Singapore, Singapore

**2564 The Effect of Trace Element on the Biodegradation of Benzene, Toluene, Ethylbenzene, *o*-, *m*-, and *p*-Xylenes by Photosynthetic Bacterial Mixture Under Aerobic Condition**  
D. Kim<sup>1</sup>, S-S. Lee<sup>2</sup>; <sup>1</sup>Dept. of Biological Engineering, Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Life Sci., Coll. of Natural Sci., Kyonggi Univ., Suwon, Republic of Korea

**2565 Biodegradation of Trichloroethylene (TCE) by Benzene Using Mixture in Aerobic Condition**  
H. Kim<sup>1</sup>, M. Kim<sup>2</sup>, B. Jigden<sup>3</sup>, S-S. Lee<sup>4</sup>; <sup>1</sup>Dept. of Biological Engineering, Kyonggi Univ., Suwon, Republic of Korea, <sup>2</sup>Dept. of Bio & Environmental Technology, Coll. of Natural Sci. Seoul Women's Univ., Suwon, Republic of Korea, <sup>3</sup>Dept. of BioMed. Engineering, Sch. of Med., Kyung Hee Univ., Suwon, Republic of Korea, <sup>4</sup>Dept. of Life Sci., Coll. of Natural Sci., Kyonggi Univ., Suwon, Republic of Korea

**2566 Utilization of Chlorobenzenes, Tetrachloroethene, and Dichlorotoluenes by Three Strains of *Dehalobacter***  
J. L. Nelson, S. H. Zinder; Cornell Univ., Ithaca, NY

**2567 Two-Dimensional Compound Specific Isotope Analysis for Validating 1,4-Dioxane Biodegradation**  
P. Pornwongthong<sup>1</sup>, M. Bill<sup>2</sup>, M. Conrad<sup>2</sup>, S. Mahendra<sup>1</sup>; <sup>1</sup>Univ. of California Los Angeles, Los Angeles, CA, <sup>2</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA

**2568 Genomic Analysis of Hydrocarbon Degradation Potential of Halophilic *Arhodomonas* sp. Strain Seminole**  
S. Dalvi<sup>1</sup>, B. Fathepure<sup>1</sup>, F. Z. Najar<sup>2</sup>, B. Roe<sup>2</sup>; <sup>1</sup>Oklahoma State Univ., Stillwater, OK, <sup>2</sup>Univ. of Oklahoma, Norman, OK

**2569 Isolation of NDAB-Degrading Bacteria and Characterization of NDAB-Degradative Genes In *Methylobacterium* sp. JS178**  
F. H. Crocker<sup>1</sup>, H. L. Eaton<sup>2</sup>, C. M. Jung<sup>1</sup>; <sup>1</sup>Engineer Res. and Dev. Ctr., Vicksburg, MS, <sup>2</sup>Badger Technical Services, Vicksburg, MS

**2570 Differential Nitrosamine Biotransformation by a Bacterial Propane Monooxygenase**  
C. L. Homme, J. O. Sharp; Colorado Sch. of Mines, Golden, CO

**2571 Isolation and Genetic Engineering of Bacterial Species for Improved Removal of Sulfur from Petroleum**  
J. Wang; Illinois Inst. of Technology, Chicago, IL

**2572 Identification of Anthraquinone-Degrading Bacteria in a Bioreactor Treating PAH-Contaminated Soil**  
E. A. Rodgers-Vieira, D. R. Singleton, Z. Zhang, A. Gold, A. Adrien, L. M. Ball, M. D. Aitken; Univ. of North Carolina at Chapel Hill, Chapel Hill, NC

**2573 Evidence for the Presence of Aerobic Microbial Communities in Deep Oil Sands**  
D-S. An, M-L. Wong, A. Agrawal, G. Voordouw; Univ. of Calgary, Calgary, AB, Canada

**2574 Isolation and Identification of Oil Degrading Bacteria from Oil-contaminated Soil at Al-Rwuyashid area**  
E. I. Hussein, G. Kana'n, M. Edwan, H. Malkawi; Yarmouk Univ., Irbid, Jordan

**2575 Phenanthrene Degradation Potential of *Bacillus subtilis* Strains Showing Dual Resistance to Heavy Metals and Antibiotics**  
G. O. Oyetibo<sup>1,2</sup>, M-F. Chien<sup>2</sup>, O. S. Obayori<sup>3</sup>, M. O. Ilori<sup>1</sup>, O. O. Amund<sup>1</sup>, G. Endo<sup>2</sup>; <sup>1</sup>Univ. of Lagos, Akoka, Lagos, Nigeria, <sup>2</sup>Tohoku Gakuin Univ., Tagajo, Miyagi, Japan, <sup>3</sup>Lagos State Univ., Ojoo, Lagos, Nigeria

**2575a The Role of Phytoplankton – Hydrocarbon-utilizing Microbial Symbiosis in Biodegradation of Deepwater Horizon Oil in Gulf of Mexico Surface Waters**  
S. M. Duncan, P. Noble, C. Mitchell; Alabama State Univ., Montgomery, AL

## 212 Computational Genomics, Bioinformatics, & Databases (Division R)

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2576 MetAMOS: A Modular and Open Source Metagenomic Assembly and Analysis Pipeline**  
T. J. Treangen<sup>1</sup>, S. Koren<sup>1</sup>, D. D. Sommer<sup>2</sup>, B. Liu<sup>2,3</sup>, I. Astrovskaya<sup>2</sup>, B. Ondov<sup>1</sup>, A. E. Darling<sup>4</sup>, A. M. Phillippy<sup>1</sup>, M. Pop<sup>2,3</sup>; <sup>1</sup>Natl. Biodefense Analysis and Countermeasures Ctr., Frederick, MD, <sup>2</sup>Ctr. for Bioinformatics and Computational Biol., Univ. of Maryland, College Park, MD, <sup>3</sup>Dept. of Computer Sci., Univ. of Maryland, College Park, MD, <sup>4</sup>Genome Ctr., Univ. of California – Davis, Davis, CA

**2577 Metagenome Analysis with MG-RAST**  
F. Meyer, D. Braithwaite, J. Bischof, N. Desai, M. D'Souza, E. Glass, K. Handley, T. Harrison, A. Howe, K. Keegan, H. Matthews, T. Paczian, W. Tang, W. Trimble, J. Wilkening, A. Wilke; Argonne Natl. Lab., Argonne, IL

**2578 Optimal Algorithms and Parameters for Metagenomic Functional Annotation**  
S. Nayfach<sup>1</sup>, T. J. Sharpton<sup>2</sup>, K. S. Pollard<sup>2</sup>; <sup>1</sup>UCSF, San Francisco, CA, <sup>2</sup>The J. David Gladstone Inst., San Francisco, CA

**2579 EzEcol: A Database Resources for Ecological Microbiome Analysis using Next-Generation Sequencing Data**  
S-H. Yoon<sup>1</sup>, H. Yi<sup>2</sup>, Y-J. Cho<sup>3</sup>, J. Chun<sup>1,3</sup>; <sup>1</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>2</sup>Korea University, Seoul, Republic of Korea, <sup>3</sup>Chunlab Inc., Seoul, Republic of Korea

**2580 EzRNAEditor: An Integrated Environment for Molecular Phylogeny of Ribosomal RNA Sequences**  
Y. Jeon<sup>1,2</sup>, Y. Cho<sup>1</sup>, B. Kim<sup>1</sup>, J. Chun<sup>3</sup>; <sup>1</sup>Chunlab, Seoul, Republic of Korea, <sup>2</sup>Interdisciplinary Programs of Bioinformatics, Seoul Natl. Univ., Republic of Korea, <sup>3</sup>Sch. of Biological Sci., Seoul Natl. Univ., Seoul, Republic of Korea

**2581 Ezgenome: Taxonomic Reassignment of Prokaryotic Ongoing Genome Projects**  
S. Park<sup>1</sup>, S-H. Yoon<sup>1</sup>, J. Chun<sup>1,2</sup>; <sup>1</sup>Seoul Natl. Univ., Seoul, Republic of Korea, <sup>2</sup>Chunlab Inc., Seoul, Republic of Korea

**2582 A Phylum-level Bacterial Phylogenetic Marker Database**  
Z. Wang, M. Wu; Univ. of Virginia, Charlottesville, VA

**2583 Average-Nucleotide Identity Protein-coding (ANIpc): Novel Genomic-Based Method to Differentiate Bacterial Species**  
J. E. Krebs, A. N. Gale, T. C. Sontag, J. Newman; Lycoming Coll., Williamsport, PA

**2584 The Ribosomal Database Project: Data and Tools for Microbial Ecology**  
B. Chai, Q. Wang, J. A. Fish, D. M. McGarrell, J. M. Tiedje, J. R. Cole; Michigan State Univ., East Lansing, MI

**2585 KBase: An Integrated Knowledgebase for Predictive Biology and Environmental Research**  
A. P. Arkin<sup>1</sup>, R. Cottingham<sup>2</sup>, S. Maslov<sup>3</sup>, R. Stevens<sup>4</sup>, D. Chivian<sup>1</sup>, P. Dehal<sup>1</sup>, C. Henry<sup>4</sup>, F. Meyer<sup>4</sup>, J. Salazar<sup>4</sup>, D. Ware<sup>5</sup>, D. Weston<sup>2</sup>, B. Davison<sup>2</sup>, E. M. Glass<sup>4</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>2</sup>Oak Ridge Natl. Lab., Oak Ridge, TN, <sup>3</sup>Brookhaven Natl. Lab., Upton, NY, <sup>4</sup>Argonne Natl. Lab., Argonne, IL, <sup>5</sup>Cold Spring Harbor Lab., Cold Spring Harbor, NY

**2586 Clovr-Comparative: Automated Cloud-enabled Comparative Sequence Analysis**  
D. R. Riley, K. Galens, C. M. Fraser, O. White, S. V. Angiuoli, W. F. Fricke; Inst. for Genome Sci., Univ. of Maryland, Baltimore, MD

**2587 The BioCyc Collection of Pathway/Genome Databases**  
R. Caspi<sup>1</sup>, T. Altman<sup>1</sup>, D. Brito<sup>1</sup>, K. Dreher<sup>2</sup>, H. Foerster<sup>3</sup>, C. A. Fulcher<sup>1</sup>, T. Holland<sup>1</sup>, A. Kothari<sup>1</sup>, M. Krummenacker<sup>1</sup>, M. Latendresse<sup>1</sup>, L. A. Mueller<sup>2</sup>, Q. Ong<sup>1</sup>, S. Paley<sup>1</sup>, P. Subhraveti<sup>1</sup>, P. Zhang<sup>2</sup>, P. D. Karp<sup>1</sup>; <sup>1</sup>SRI Intl., Menlo Park, CA, <sup>2</sup>Carnegie Inst., Dept. of Plant Biol., Stanford, CA, <sup>3</sup>Boyce Thompson Inst. for Plant Research, Ithaca, NY

**2588 Automated Prokaryote Genome Wide Analysis of Full Spectra DNA Repeats**  
G-L. Chen<sup>1</sup>, Y-j. Chang<sup>2</sup>, C-H. Hsueh<sup>1</sup>; <sup>1</sup>Natl. Taiwan Univ., Taipei, Taiwan, <sup>2</sup>Univ. of Illinois, Champaign, IL

**2589 A Near Real-time Platform for Integrated Genomic Analyses Useful in Epidemiology, Population Genomics and Clinical Medicine**  
C. R. Laing<sup>1</sup>, J. Thomas<sup>2</sup>, V. P. J. Gannon<sup>1</sup>; <sup>1</sup>Publ. Hlth. Agency of Canada, Lethbridge, AB, Canada, <sup>2</sup>Univ. of Lethbridge, Lethbridge, AB, Canada

**2590 A Galaxy-based Pipeline for Analysis of Next Generation Amplicons**  
Y. Qin, Y. Deng, Z. Shi, L. Wu, Z. He, J. Zhou; Univ. of Oklahoma, Norman, OK

**2591 Automated Bacterial Genome Closure in Lasergene Genomics Suite**  
V. Balakrishnan; DNASTAR, Inc., Madison, WI

**2592 Results of an International Interlaboratory Study to Develop Consensus Sequences and Metrics for Microbial Identification**  
N. D. Olson, J. D. Morrow; Natl. Inst. of Standards & Technology, Gaithersburg, MD

**2593 Prediction and Validation of Putative Ketosteroid Isomerase Proteins by POOL**

N. A. DeLateur<sup>1</sup>, S. Somarowthu, C. Shea, M. Naniong, M. J. Ondrechen, P. J. Beuning; Northeastern Univ., Boston, MA

**2594 Development of a Supervised Learning Algorithm to Distinguish Vancomycin-Intermediate *Staphylococcus aureus* from Vancomycin-Susceptible *S. aureus* in Clinical Samples**

C. S. Kraft<sup>1</sup>, L. Rishishwar<sup>2</sup>, I. K. Jordan, III<sup>2</sup>; <sup>1</sup>Emory Univ., Atlanta, GA, <sup>2</sup>Georgia Inst. of Technology, Atlanta, GA

**213 Genomics, Comparative Genomics, and Phylogenetics of Non-pathogens (Division R)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2595 Comparative Genomic and Transcriptomic Analyses of *Alishewanella* Species to Delineate Habitat-Driven Evolution**

J. Jung, W. Park; Korea Univ., Seoul, Republic of Korea

**2596 Predictable Ecological Niches of Origin Revealed by Comparative Genomics of Six *Novosphingobium* Species**

H. M. Gan<sup>1</sup>, A. Y. A. Rahman<sup>2</sup>, K. G. Chan<sup>3</sup>, M. A. Savka<sup>4</sup>; <sup>1</sup>Sci. Vision SB, Shah Alam, Selangor, Malaysia, <sup>2</sup>BioEasy SB, Shah Alam, Selangor, Malaysia, <sup>3</sup>Univ. of Malaysia, Kuala Lumpur, Malaysia, <sup>4</sup>Rochester Inst. of Technology, Rochester, NY

**2597 Comparative Genomics of *Nitrosomonas*, Ammonia-Oxidizing Bacteria with Distinct Ecophysiological Niches**

J. M. Norton<sup>1</sup>, A. Bollmann<sup>2</sup>, Y. Suwa<sup>3</sup>, L. Y. Stein<sup>4</sup>, M. G. Klotz<sup>5</sup>, H. Laanbroek<sup>6</sup>, L. SayavedraSoto<sup>7</sup>, L. Goodwin<sup>8</sup>; <sup>1</sup>Utah State Univ., Logan, UT, <sup>2</sup>Miami Univ., Oxford, OH, <sup>3</sup>Chuo Univ., Tokyo, Japan, <sup>4</sup>Univ. of Alberta, Edmonton, AB, Canada, <sup>5</sup>Univ. of North Carolina, Charlotte, NC, <sup>6</sup>Netherlands Inst. of Ecology, Wageningen, Netherlands, <sup>7</sup>Oregon State Univ., Corvallis, OR, <sup>8</sup>DOE Joint Genome Inst., Walnut Creek, CA

**2598 Insights into Evolution and Environmental Adaptation of Epsilonproteobacteria through Comparative Genomics**

Y. Zhang, S. M. Sievert; Woods Hole Oceanographic Inst., Woods Hole, MA

**2599 *Streptomyces* Population Structure at an Intra-continental Scale Reveals Patterns Biogeographical Diversification**

M. J. Choudoir<sup>1</sup>, A. N. Campbell<sup>1</sup>, P. J. Kelly<sup>2</sup>, D. H. Buckley<sup>1</sup>; <sup>1</sup>Cornell Univ., Ithaca, NY, <sup>2</sup>Joint BioEnergy Inst., Emeryville, CA

**2600 Genome Sequences for *Bacteriovorax* spp. of Four Phylogenetic Clusters Revealed the Unprecedented Diversity of the Obligate Bacterial Predators**

H. Chen<sup>1,2</sup>, L. M. Brinkac<sup>3</sup>, P. Mishra<sup>3</sup>, T. Dickerson<sup>2</sup>, N. Gordon-Bradley<sup>2</sup>, D. Lympieropoulou<sup>2</sup>, H. N. Williams<sup>2</sup>, J. H. Badger<sup>3</sup>; <sup>1</sup>Natl. High Magnetic Field Lab., Tallahassee, FL, <sup>2</sup>Florida A&M Univ., Tallahassee, FL, <sup>3</sup>J Craig Venter Inst., San Diego, CA

**2601 Comparison of Core Housekeeping Genes Reveal Typing Opportunities in Industrial Bacteria**

W. Morovic<sup>1</sup>, A. H. Smith<sup>2</sup>, B. Stahl<sup>1</sup>; <sup>1</sup>DuPont, Madison, WI, <sup>2</sup>DuPont, Waukesha, WI

**2602 Comparative Genomics of *Pseudoalteromonas* Reveals a Genetic Lineage Including Proficient Producers of Natural Products**

R. Gavilan<sup>1,2</sup>, J. Sanchez<sup>1</sup>, L. Atencio<sup>1</sup>, P. Charusanti<sup>3</sup>, P. C. Dorrestein<sup>4</sup>, M. Gutierrez<sup>2</sup>; <sup>1</sup>Ctr. for Drug Discovery and Biodiversity, Inst. for Scientific Res. and Technology Services (INDICASAT), City of Panama, Panama, <sup>2</sup>Smithsonian Tropical Res. Inst., Balboa, Ancon, Panama, <sup>3</sup>Dept. of Bioengineering, Univ. of California, San Diego, La Jolla, CA, <sup>4</sup>Skaggs Sch. of Pharmacy and Pharmaceutical Sci., Univ. of California, San Diego, La Jolla, CA

**2603 Comparative Genomics of *Weissella koreensis* Isolated from Kimchi**

J. Lee<sup>1</sup>, J.-W. Bae<sup>2</sup>, J. Chun<sup>1,3</sup>; <sup>1</sup>Chunlab, Seoul, Republic of Korea, <sup>2</sup>Dept. of Life and Nanopharmaceutical Sci., Kyung Hee Univ., Seoul, Republic of Korea, <sup>3</sup>Sch. of Biological Sci., Seoul Natl. Univ., Seoul, Republic of Korea

**2604 Phylogeography of *Thermotoga* Isolates**

C. L. Nesbo<sup>1</sup>, K. Swithers<sup>2</sup>, T. Haverkamp<sup>1</sup>, O. Zhaxybayeva<sup>3</sup>; <sup>1</sup>Univ. of Oslo and Univ. of Alberta, Edmonton, AB, Canada, <sup>2</sup>Smith Coll., Northampton, MA, <sup>3</sup>Dartmouth Coll., Hanover, NH

**2605 A New Family of Tungsten-Sensing Transcriptional Regulators in Sulfate-Reducing Bacteria**

A. E. Kazakov<sup>1</sup>, L. Rajeev<sup>1</sup>, E. G. Luning<sup>1</sup>, G. M. Zane<sup>2</sup>, I. Dubchak<sup>1</sup>, A. P. Arkin<sup>1</sup>, J. D. Wall<sup>2</sup>, A. Mukhopadhyay<sup>1</sup>, P. S. Novichkov<sup>1</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab., Berkeley, CA, <sup>2</sup>Univ. of Missouri, Columbia, MO

**2606 Comparative Genomic Analysis of Vancomycin-producing Strains of *Amycolatopsis orientalis***

H. Kim<sup>1,2</sup>, D.-W. Lee<sup>3</sup>, S.-K. Lim<sup>4</sup>, S. Lee<sup>1,2</sup>, H. Jeong<sup>1,2</sup>; <sup>1</sup>Korea Res. Inst. of BioSci. and Biotechnology, Daejeon, Republic of Korea, <sup>2</sup>Biosystems and Bioengineering Program, Univ. of Sci. and Technology, Daejeon, Republic of Korea, <sup>3</sup>Kyungpook Natl. Univ., Daegu, Republic of Korea, <sup>4</sup>GenoTech Corp., Daejeon, Republic of Korea

**2607 Comparative Analysis of 26 Genome Scale Metabolic Models of the Genus *Shewanella***

A. L. Valesano, M. Eguiluz, A. A. Best; Hope Coll., Holland, MI

**2608 A Novel *Pedobacter* Species Isolated from a Freshwater Creek**

D. M. Snyder, J. D. Newman; Lycoming Coll., Williamsport, PA

**214 Viral Evolution, Adaptation, and Pathogenesis (Division T)**

1:00 p.m. – 2:45 p.m.; Exhibit Hall A

**2609 Haemagglutinin Gene Phylogeny of Human H3N2 Influenza A Virus in Thailand, 2007-2009**

N. Khemnu<sup>1</sup>, S. Tangphatsornruang<sup>2</sup>, N. Sirisopana<sup>1</sup>, J. Gaywee<sup>1</sup>, D. Islam<sup>1</sup>, M. C. Melendrez<sup>3</sup>, S. Fernandez<sup>1</sup>, C. J. Mason<sup>1</sup>; <sup>1</sup>Armed Forces Res. Inst. of Med. Sci., Bangkok, Thailand, <sup>2</sup>Natl. Ctr. for Genetic Engineering and Biotechnology, Bangkok, Thailand, <sup>3</sup>Walter Reed Army Inst. of Res. Silver Spring, MD

**2610 Genotyping of Astrovirus and Adenovirus from Infant of Chihuahua City**

R. Infante-Ramirez<sup>1</sup>, M. Medina-Soltero<sup>1</sup>, F. Zavala-Díaz de la Serna<sup>1</sup>, M. González-Horta<sup>1</sup>, B. Sánchez-Ramírez<sup>1</sup>, A. Torres-Reyes<sup>1</sup>, J. González-Duarte<sup>1</sup>, M. Garfio<sup>1</sup>, J. Contreras-Cordero<sup>2</sup>, G. Erosa-De la Vega<sup>1</sup>; <sup>1</sup>Univ. Autónoma de Chihuahua, Chihuahua, Mexico, <sup>2</sup>Univ. Autónoma de Nuevo León, Nuevo León, Mexico

**2611 Molecular Epidemiological Characteristics of Hepatitis C Virus Infection in China**

X.-L. Guo<sup>1,2</sup>, Y. Chang<sup>1</sup>, Z.-Y. Zeng<sup>1</sup>, P.-Q. Xu<sup>1,2</sup>, T.-T. Cai<sup>1,2</sup>, S. Wu<sup>1,3</sup>; <sup>1</sup>Kingmed Ctr. for Clinical Lab. Co., Ltd, Guangzhou, China, <sup>2</sup>Tianjin Med. Univ., China, <sup>3</sup>Tianjin Med. Univ., Tianjin, China

**2612 Viral Coinfection in Infants with Severe Acute Diarrhea**

M. Medina-Soltero<sup>1</sup>, J. Moreno-Gonzalez<sup>1</sup>, G. Erosa-de la Vega<sup>1</sup>, F. Zavala-Díaz de la Serna<sup>1</sup>, T. Siqueiros-Cendon<sup>1</sup>, M. Gonzalez-Horta<sup>1</sup>, B. Sanchez-Ramirez<sup>1</sup>, J. Gutierrez-Almuina<sup>1</sup>, J. Contreras-Cordero<sup>2</sup>, R. Infante-Ramirez<sup>1</sup>; <sup>1</sup>UACh, Chihuahua, Mexico, <sup>2</sup>UANL, Monterrey, NL., Mexico

**2613 Rhesus macaque Developed a Guillain Barré-like Syndrome after Infection with Dengue Virus**

Y. I. Anglero<sup>1</sup>, O. Gonzalez<sup>2</sup>, I. V. Rodriguez<sup>2</sup>, M. I. Martinez<sup>2</sup>, P. Pantoja<sup>2</sup>, T. Arana<sup>1</sup>, C. A. Sariol<sup>3</sup>; <sup>1</sup>Univ. of Puerto Rico Med. Sci. Campus, San Juan, PR, <sup>2</sup>Caribbean Primate Res. Ctr., Unit of Comparative Med., San Juan, PR, <sup>3</sup>Caribbean Primate Res. Ctr., Unit of Comparative Med., Univ. of Puerto Rico Med. Sci. Campus, San Juan, PR

**2614 Gene Expression of Retrovirus-Induced Malignancy in Pups of Infected BALB/c Mice**  
**J. Duggan**<sup>1</sup>, H. Okonta<sup>1</sup>, R. Z. Nickolov<sup>2</sup>, S. K. Khoo<sup>2</sup>, J. Chakraborty<sup>1</sup>;  
<sup>1</sup>Univ. of Toledo Coll. of Med., Toledo, OH, <sup>2</sup>Van Andel, Grand Rapids, MI

**2615 The Role of Indoleamine 2,3-Dioxygenase in LP-BM5 Murine Retroviral Disease Progression**  
**M. O'Connor**, W. Green; Geisel Sch. of Med. at Dartmouth, Lebanon, NH

**2616 Characterization of Key Amino Acid Mutations In Dengue Virus Strains D2S10 And D2S20 That Induce Plasma Leakage In Mice**  
**H. A. Makhluf**<sup>1</sup>, K. King<sup>2</sup>, S. Shresta<sup>2</sup>; <sup>1</sup>Natl. Univ., La Jolla, CA, <sup>2</sup>La Jolla Inst. for Allergy and Immunology, La Jolla, CA

**2617 Bioinformatic Study of Mutations in HIV GAG Peptides and their Effect on Cellular Immune Response in Pakistani Patients**  
**S. Khan**; Dow Univ. of Hlth. Sci., Karachi, Pakistan

**2618 Use of Reverse Genetics Virus, RGV14 (F104, F115) to Test Effects of F1-R F Gene Mutations on Enhanced Cleavability of Sendai Virus**  
**D. S. Johnson**, N. L. McQueen; California State Univ., Los Angeles, Los Angeles, CA

**2619 Characterization of Bovine Neutrophils Exposed to Bovine Viral Diarrhea Virus**  
**K. E. Kondratuk**, C. Chase, H. Phillips; South Dakota State Univ., Brookings, SD

**2620 Variability of Nairoviruses' vOTUs' Specificity for Ub and ISG15**  
**G. Capodagli**, M. Deaton, E. Baker, R. Lumpkin, S. Pegan; Univ. of Denver, Denver, CO

**2621 Comparative Analysis of Antiviral Responses in *Brachypodium distachyon***  
**J. D. Pyle**, K. K. Mandadi, K-B. G. Scholthof; Texas A&M Univ., College Station, TX





Author	Session Number	Poster Board	Author	Session Number	Poster Board	Author	Session Number	Poster Board
<b>A</b>			Adhikari, Shailaja	061	834	Aklujkar, Muktak	209	2520
Aaronson, Lawrence	202	2389	Adkins, Joshua	077		Aklujkar, Muktak	072	
Aaronson, Lawrence	022	225	Adnani, Navid	069		Akujobi, Comfort	122	1454
Aaronson, Lawrence	172	1926	Adrian, P.V.	231	LB-05	Akula Suresh Babu, Ramya	164	1763
Abbaszadegan, Morteza	107	1222	Adrion, Alden	211	2572	Akut, Simon	180	2066
Abbaszadegan, Morteza	209	2523	Adukwu, Emmanuel	201	2372	Al Jawasim, Mohammed	106	1210
Abbaszadegan, Morteza	107	1243	Adukwu, Emmanuel	011	10	Al Roomi, Ebtehal	168	1842
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Abbott, April	WS-13		Aedo, Sandra	039	451	Alam, M.	126	1505
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Abbott, Katelynn	012	51	Africa, Charlene	199	2335	Alam, Mohammad	107	1229
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Ballesteros, Gabriella	043	538	Barney, Trenda	166	1812	Bayles, Kenneth	123	1467
Ballhorn, Daniel	180	2054	Barney, Trenda	117	1361	Bayles, Kenneth	073	
Ballinas-Casarrubias, Lourdes	054	723	Barney, Trenda	196	2280	Bayles, Kenneth	096	1033
Ballinas-Casarrubias, Maria	050	654	Barney, Trenda	166	1822	Bayles, Kenneth	023	242
Ballinas-Casarrubias, Maria de Lourdes	029	342	Barnhart, R.	123	1459	Bayles, Kenneth	013	56
Balmaseda, Angel	043	538	Barns, Caryn	170	1903	Bayles, Kenneth	193	2207
Baltrus, David	135	1693	Barnwell, John	084		Bayman, Paul	031	369
Baltrus, David	128	1543	Baron, Ellen	006		Bayman, Paul	047	608
Baltrusaitis, David	174	1945	Baroud, Maysa	118	1373	Bayman Gupta, Paul	049	636
Banaei, Niaz	217		Baroud, Maysa	114	1318	Bayman-Gupta, Paul	120	1416
Banarjee, Anirban	120	1405	Barr, Alexandra	168	1845	Bayraktar, Banu	183	2117
Banawas, Saeed	041	495	Barr, John	104	1144	Bazylinski, Dennis	095	1004
Banawas, Saeed	208	2494	Barr, John	015	98	Bazzi, Wael	114	1318
Band, Jeffery	132	1636	Barr, Tasha	120	1411	Be, Nicholas	168	1849
Bandara, Aloka	168	1854	Barr, Tasha	046	591	Beach, Jacqueline	039	450
Bandara, Aloka	062	837	Barracough, Tim	224		Beach, Justin	115	1329
Bandea, Claudiu	169	1877	Barragan, Jose	181	2067	Beal, Jane	208	2502
Bandoh, Betty	WS-18		Barre, Yasmin	095	1011	Beal, Jenna	195	2261
Bandow, Nathan	023	238	Barrett, Bradley	121	1437	Beal, Jennifer	061	824
Banerjee, Areen	103	1133	Barrett, Stacey	043	532	Beal, Stacy	043	548
Banerjee, Nirupama	109	1269	Barrick, Jeffrey	135	1687	Beal, Stacy	166	1820
Banfield, Jill	206	2449	Barrick, Jeffrey	068		Beal, Stacy	016	113
Banfield, Jillian	206	2462	Barrick, Jeffrey	135	1690	Beall, Bernard	039	436
Banfield, Jillian	174	1953	Barrionuevo, Matias	028	330	Bean, Amanda	062	839
Banfield, Jillian	031	376	Barrowman, Nicholas	231	LB-07	Beare, Paul	092	974
Banfield, Jillian	135	1702	Bart, Aldert	111	1306	Bearson, Bradley	100	1103
Bang, John J.	029	348	Barta, Michael	088	883	Bearson, Shawn	186	2164
Bang, Miseon	027	306	Bartek, Iona	109	1265	Beatson, Scott	040	467
Bang, Seon	107	1221	Bartlett, Douglas	031	379	Beattie, Gwyn	096	1025
Bang, Seung Hyuck	225		Bartling, Craig	057	776	Beatty, J. Thomas	223	
Bang, Ye-Ji	125	1480	Barton, David	108	1254	Beatty, Wendy	089	903
Banjara, Megha	061	834	Bartz, Faith	104	1159	Beaubien, Ron	182	2089
Bankert, D. A.	196	2274	Basaraba, Randall	109	1278	Beauchamp, Jessica	076	
Bankowski, Matthew	091	946	Basaraba, Randall	109	1270	Beaudry, Remi	017	140
Bankowski, Matthew	166	1809	Basaraba, Randall	109	1265	Beaulaurier, John	228	
Bannantine, John	109	1275	Basco, Maria	014	93	Beaulieu, Daniel	043	545
Bansal, Geetha	121	1433	Baselski, Vickie	190		Beaulieu, Daniel	168	1848
Bansal, Reema	134	1670	Baselski, Vickie	190		Beaulieu, Daniel	168	1852
Bansil, Rama	172	1924	Bash, Margaret	170	1894	Beaulieu, Derek	211	2560
Bao, Jian	183	2112	Bashar, Tanvir	200	2362	Bebout, Brad	175	1967
Baral, Bipin	023	238	Bashir, Ali	228		Becher, D.	051	676
Baran, Richard	096	1031	Bashir, Ali	197	2301	Beck, Eric	196	2275
Barate, Abhijit	170	1898	Bashor, Blake	197	2315	Beck, James	173	1943
Barbaree, James	208	2497	Basing, Anthony	111	1309	Beck, John	047	619
Barbaree, James	132	1624	Bass, Andy	059	805	Beck, Nicola	179	2050
Barbero, David	172	1920	Bass, Deborah	061	825	Beck, Nicola	181	2079
Barbier, Mariette	088	885	Bass, Jason	030	359	Beck, Nicola	208	2499
Barbier, Mariette	042	524	Bassiss, Christine	197	2314	Beck, Nicola	181	2068
Barbieri, Alejandro	092	972	Bassler, Bonnie	202	2386	Beck, Sara	210	2549
Barbieri, Joseph	089	917	Bassler, Bonnie	202	2385	Becker, Annie	183	2113
Barbieri, Joseph	170	1901	Bassler, Bonnie	019	202	Becker, Erin	020	213
Barbosa, André	130	1587	Bassler, Bonnie	202	2382	Becker, Jeffrey	047	616
Barbosa, André	186	2173	Bassler, Bonnie	202	2383	Becker, Matthew	128	1545
Barbosa, Graziela	193	2213	Basta, Nick	030	353	Becker, Matthew	204	2410
Barbosa, Maysa	120	1419	Batcha, Tamilselvam	230		Bediako, Sandra	204	2411
Barbosa, Maysa	122	1452	Bates, Anna	130	1579	Beers, Karen	131	1610
Barbour, Alan	045	584	Bates, J.	104	1153	Begemann, Matthew	103	1135
Barbour, Elie	192	2195	Batista, Bruna	118	1382	Begemann, Matthew	103	1134
Barbour, Elie	191	2185	Batista, Jacimaria	028	327	Begum, Sharmin	043	541
Barbu, Elena	045	580	Batoon, Kristine	166	1802	Behar, Samuel	149	
Bardy, Sonia	098	1065	Battaglioli, Eric	014	90	Behbehani, Ahmed	166	1804
Bareta, Joseph	039	436	Battah, Sinan	219		Behbehani, Ahmed	168	1843
Barguil Colares, Georgia	066		Bättig, Patrick	200	2361	Behr, Marcel	025	274
			Bauer, Brandon	193	2204	Behr, Marcel	016	123

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Bej, Asim	087	865	Bernardini, James	132	1627	Binh, Chu	206	2456
Belanche-Muñoz, Lluís	106	1211	Bernardo, Stella	199	2340	Binnebose, Andrea	130	1570
Belardo, J.	183	2112	Bernardy, Eryn	135	1697	Binnicker, Matthew	090	929
Belardo, M.A.	183	2112	Bernhard, Anne	053	700	Binnicker, Matthew	WS-23	
Belay, Testfaye	096	1037	Bernhardt, Thomas	143		Binnicker, Matthew	043	544
Belden, Lisa	128	1545	Bernier-Casillas, Yomarie	034	434	Birch, James	052	692
Belden, Lisa	204	2410	Bernier-Casillas, Yomarie	057	771	Bird, Lina	134	1665
Beleno, Joan	197	2307	Berns, Kenneth	LBS001		Birkeland, Nils	107	1234
Belisle, John	018	178	Bernstein, Hans	051	674	Birlew, Jasmine	043	543
Belisle, John	109	1273	Bernstein, Kyle	060	823	Birren, Bruce	182	2084
Belisle, John	058	795	Bernstein, Susan	146		Bischof, Jared	212	2577
Belisle, John	115	1327	Berrios-Cruz, Max	181	2070	Bischoff, Kenneth	026	293
Bell, Alois	040	472	Berthelot, Philippe	166	1826	Bischoff, Kenneth	207	2477
Bell, Courtney	011	11	Berthet, Julia	136	1718	Bisesi, Michael	029	351
Bell, Jordana	135	1702	Berthrong, Sean	053	710	Bisesi, Michael	185	2147
Bell, Julia	012	33	Bertram, Ralph	171	1907	Bisha, Bledar	179	2039
Bell, Rebecca	130	1571	Beske, Timo	098	1070	Bishop, Anne	095	1021
Bell, Rebecca	131	1609	Besser, Thomas	186	2162	Bishop-Lilly, Kimberly	WS-03	
Bell, Stephanie	146		Besser, Thomas	231	LB-18	Bisignano, Benedetta	060	821
Bell, Stephen	227		Best, Aaron	213	2607	Bisignano, Benedetta	087	867
Bell, Stephen	227		Best, Aaron	050	659	Bisignano, Carlo	087	867
Beller, Harry	024	263	Best, Erin	041	492	Bitzer, Adam	128	1542
Beller, Harry	207	2468	Bethel, Chris	039	440	Biza, Tekil	163	1746
Belnap, David	097	1052	Betts, Michael	187		Bjarnsholt, Thomas	092	953
Belogortseva, Natalya	165	1782	Betts-Ng, Charlene	069		Björkroth, K.	178	2020
Beloor, Jagadish	033	413	Beuning, Penny	212	2593	Black, Carolyn	169	1877
Benahmed, Faiza	104	1150	Beyda, Nicholas	090	925	Black, Carolyn	046	593
Benardini, James	097	1050	Beyenal, Haluk	221		Black, Carolyn	018	173
Benardini, James	179	2030	Beyersdorf, Andreas	221		Black, Chad	192	2192
Benardini, James	105	1189	Bezair, Collette	195	2251	Black, Miles	111	1298
Benardini, James	105	1187	Bezdan, Daniela	019	195	Blackburn, Jason	134	1678
Benavides, M.A.	186	2164	Bhaduri, Prianca	197	2310	Blackwell, Helen	005	
Bender, Jeff	208	2492	Bhaduri, Prianca	105	1186	Blackwell, Reginald	208	2488
Bendtsen, Jannick Dyrlov	094	991	Bhalara, Hiral	022	228	Blair, Donald	119	1399
Benedik, Michael	011	13	Bhalla, Aditya	207	2480	Blair, Donald	119	1398
Benedik, Michael	099	1093	Bhamidi, Suresh	109	1273	Blair, Jimmy	141	
Benet, Reuel	029	341	Bhardwaj, Rushang	207	2480	Blair, Josie	109	1266
Benitez, Alvaro	016	133	Bhargava, Kanika	178	2023	Blais, S.	191	2177
Benjamino, Jacquelyn	049	634	Bharti, Balambal	197	2317	Blake, Kimbria	051	670
Bennett, Alan	049	637	Bhaskar, Ujjwal	026	301	Blakely, Garry	077	
Bennett, Christine	091	947	Bhatnagar, Julu	166	1800	Blakesley, Robert	118	1385
Bennett, Jennifer	132	1639	Bhatnagar, Rakesh	109	1269	Blanch, Anicet	106	1211
Bennett, Jennifer	172	1916	Bhatnagar, Srijak	049	637	Blanchard, Thomas	116	1351
Bennett, Jennifer	172	1919	Bhatt, Shantanu	023	245	Blanchette, Krystle	164	1763
Bennett, Joan	180	2055	Bhavsar, Jaysheel	147		Blanchette, Vincent	168	1856
Bennett, Joan	205	2424	Bhaya, Devaki	127	1537	Blanchette, Vincent	168	1846
Bennett, Joan	036		Bhowmick, Tusharsuvra	173	1933	Blancquaert, Anne-Marie	189	
Bennett, Reginald	130	1566	Bhowmick, Tusharsuvra	127	1526	Blandino, Giovanna	045	578
Bennett, Toby	060	815	Bhunja, Arun	116	1341	Blanke, Steven	230	
Benson, Andrew	147		Bhunja, Arun	104	1161	Blanke, Steven	089	907
Benson, Meredith	099	1080	Bhutani, Natasha	132	1636	Blankenship, Lindsey	033	408
Bentancor, Leticia	100	1096	Bianchini, Andreia	178	2021	Blasche, Sonja	127	1530
Bentancor, Leticia	012	46	Bibra, Mohit	207	2480	Blaschke, Anne	166	1812
Bentson, Lisa	087	869	Bicknese, Amelia	163	1755	Blaser, Martin	049	641
Berberoglu, Halil	209	2526	Bidle, Kay	051	681	Blaser, Martin	197	2311
Berdy, Brittany	095	1010	Bidle, Kelly	051	681	Blauwkamp, Timothy	174	1953
Berestecky, John	169	1857	Bieganski, Teresa	043	535	Blaylock, Morris	208	2488
Berg, Gabriele	054	718	Bielecki, Piotr	088	885	Blazaskie, Richard	163	1737
Berg Miller, Margret	197	2294	Bienstock, Solomon	197	2301	Blecker-Shelly, Deborah	166	1817
Berger, Anja	185	2145	Bierne, Hélène	230		Blecker-Shelly, Deborah	016	120
Bergeron, Michel	166	1823	Bierne, Hélène	230		Bledsoe, Benjamin	180	2065
Bergeron, Natalie	025	278	Biffinger, Justin	209	2512	Bleem, Alissa	051	674
Bergholz, Teresa	131	1614	Biffinger, Justin	209	2511	Blevins, Kali	101	1113
Bergin, Michael	221		Bigila, Daniel	180	2066	Bliska, James	120	1404
Bergman, Brandt	023	238	Bik, Elisabeth	197	2293	Bliznyuk, Nikolay	WS-03	
Bergman, Molly	169	1873	Bik, Holly	175	1968	Blodgett, Beth	015	105
Berkley, Jack	024	253	Bik, Holly	228		Blokesch, Melanie	156	
Bermudez, Luiz	109	1263	Bill, Markus	211	2567	Blondel, Carlos	089	905
Bermudez, Luiz	109	1261	Bill, Markus	056	752	Bloss, Heather	034	423
Bermudez, Luiz	109	1275	Billig, Mariya	231	LB-08	Blotska, Oksana	136	1719
Bermudez, Luiz	164	1777	Billings, Nicole	218		Blount, Zachary	068	
Bernal, Manuela Maria	196	2280	Bilij, Tanya	195	2250	Blum, Faith	089	917
Bernal, Margarita	171	1906	Bina, James	012	34	Blum, Jessamina	169	1878
Bernard, Kathryn	145		Bina, Xiaowen	012	34	Blum, Paul	024	257

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Blum, Paul	022	224	Boothe, Dawn	186	2169	Bradley, James	099	1083
Blum, Paul	024	264	Bopda Waffo, Alain	033	405	Bradley, James	047	613
Blum, Paul	171	1905	Bopp, Dianna	137	1721	Bradley, Kenneth	230	
Blum, Paul	125	1493	Borchardt, Mark	179	2037	Bradshaw, Catherine	047	614
Blundell, Jamie	068		Borchardt, Mark	210	2545	Bradshaw, David	197	2306
Boardman, Dan	179	2035	Borchardt, Spencer	210	2545	Brady, Allison	165	1791
Bobenchik, April	044	564	Borenstein, Elhanan	224		Brady, L. Jeannine	098	1069
Bobenchik, April	044	562	Borenstein, Elhanan	225		Brady, Nancy	124	1473
Bobenchik, April	017	144	Borges, Amanda	087	873	Brady, Nancy	095	1007
Bobritchi, Chris	016	117	Borlee, Brad	045	585	Bragança, Caio	207	2471
Bobseine, Kathy	180	2059	Borneman, James	205	2434	Braithwaite, Daniel	212	2577
Bochner, Barry	WS-03		Bornstein-Forst, Susan	106	1196	Branch, Oralee	049	641
Boczek, Laura	107	1223	Borst, L.	186	2168	Branda, John	167	1835
Boden, William	061	824	Borys, Moria	126	1508	Branda, John	167	1838
Bodhidatta, Ladaporn	185	2151	Boschert, Verena	185	2145	Branda, John	016	122
Bodhidatta, Ladaporn	163	1756	Bose, Indrani	047	612	Branda, John	015	101
Bodhidatta, Ladaporn	231	LB-16	Bose, Jeffrey	014	91	Branda, John	090	927
Bodhidatta, Laddaporn	117	1363	Bose, Jeffrey	123	1467	Branda, John	167	1836
Bodi, Kip	197	2297	Bose, Jeffrey	096	1033	Branda, John	016	121
Body, Barbara	091	950	Bose, Jeffrey	013	56	Brandenburg, Jule	195	2260
Body, Barbara	091	938	Bosilevac, Joseph	131	1596	Brandhorst, T.	199	2355
Boehm, Alexandria	137	1727	Bosman, G.	044	555	Brandl, Maria	130	1579
Boehm, Tobias	078		Bosonea, Ana-Maria	040	485	Brandt, Kevin	120	1423
Boehm, Tobias	025	280	Bothner, Brian	078		Brantley, Susan	134	1670
Boeren, Sijf	105	1177	Botrugno, Romolo	195	2265	Brantner, Justin	029	345
Bogdanov, Kristina	210	2547	Bottomley, Peter	134	1664	Branton, Scott	122	1447
Bogdanov, Mikhail	099	1086	Bottomley, Peter	051	679	Brashears, Mindy	131	1597
Bogges, May	136	1717	Boucaud, Dwayne	027	319	Brashears, Mindy	104	1158
Bogomolnaya, Lydia	040	463	Boucaud, Dwayne	187		Brassill, Natalie	178	2012
Bohnert, Jürgen	032	394	Boucher, Yan	228		Bratcher, Holly	182	2095
Boire, Nicholas	096	1036	Bouchy, Peggy	126	1511	Brauer, Aimee	013	71
Boire, Nicholas	132	1638	Boulianne-Larsen, Carla	044	561	Brauer, Aimee	170	1892
Boisen, Nadia	117	1364	Boulouis, Henri-Jean	062	843	Braun, M.	117	1355
Boissinot, Maurice	166	1823	Bouma-Gregson, Keith	069		Braunstein, Miriam	143	
Boitano, Matthew	095	1008	Bounty, Sarah	210	2549	Braye, Lance	107	1244
Bojarski, Lilly	069		Bourgault, Anne-Marie	016	123	Breakwell, Donald	127	1534
Bojilova, Lora	197	2309	Bourgault, Anne-Marie	163	1740	Breccia, Carla	027	319
Bolam, David	150		Bourque, Isabelle	168	1846	Brecher, Stephen	158	
Boland, Shaun	107	1220	Bourque, Isabelle	168	1848	Bredehoft, Amy	042	527
Boles, Blaise	164	1772	Bourque, Isabelle	168	1856	Breiman, Robert	117	1364
Bollmann, Annette	213	2597	Bourret, Travis	169	1881	Breitbach, Melanie	062	850
Bolo Jr., Benjamin	011	23	Bourzac, Kevin	231	LB-03	Brenner, Evan	023	245
Bolotin, Vitalii	110	1294	Bourzac, Kevin	196	2280	Breshears, Laura	116	1352
Bolotin, Vitalii	062	851	Boussina, Aaron	057	764	Breshears, Laura	018	171
Bomar, Lindsey	049	635	Bouthiette, Emily	179	2039	Brett, Paul	042	515
Bonaccorso, Claudia	087	867	Boutin, Maxime	166	1805	Brickman, Timothy	013	65
Bonaccorso, Claudia	060	821	Boutin, Maxime	166	1806	Brigati, Jennifer	059	803
Bonas, Ulla	230		Bouza, Emilio	199	2346	Bright, Kelly	178	2012
Boncy, Jacques	228		Bowen De Leon, Kara	054	714	Bright, Kelly	210	2535
Bond, Craig	169	1876	Bowers, Albert	074		Briles, David	120	1417
Bond, Daniel	024	256	Bowman, Brett	174	1951	Briley, Kenneth	048	628
Bond, Daniel	024	267	Bowman, Brett	031	390	Brimmage, Mary	039	436
Bond, Daniel	125	1497	Bowman, Charles	127	1532	Brinkac, Lauren	213	2600
Bond, Vincent	115	1321	Bowman, James	WS-10		Brinkhuis, Henk	129	1560
Bondy-Denomy, Joe	076		Bowman, Jeffrey	195	2243	Brinkman, Cassandra	022	235
Bonilla, J.	061	831	Box, Elle	126	1514	Brinsmade, Shaun	051	683
Bonis, Benjamin	050	660	Boxrud, Dave	208	2492	Briones Vera, José	062	849
Bonito, Gregory	205	2429	Boyanton, Bobby	015	104	Brisette, Catherine	045	572
Bono, James	136	1707	Boyd, Chelsea	193	2215	Brisson, Dustin	154	
Bono, James	040	484	Boyd, E. Fidelma	014	92	Brito, Deepika	212	2587
Bonomo, Robert	039	440	Boyd, Eric	220		Brito, Ilana	224	
Bonten, Marc	045	574	Boyd, Ethna	023	240	Britt, David	205	2423
Bonten, Marc	185	2152	Boyd, Halsey	017	149	Britt, David	205	2428
Bonten, Marc	182	2092	Boyd, Halsey	017	148	Brittingham, Andrew	111	1301
Booker, Squire	065		Boyd, Halsey	017	147	Brittnacher, Mitchell	141	
Boomhower, Lorina	093	976	Boyd, Halsey	017	155	Britton, Robert	130	1576
Boone, James	126	1515	Boyd, Kathleen	119	1389	Broadbent, Jeff	207	2474
Boone, James	167	1840	Boyd, Vivian	117	1362	Broadbent, Jeffery	178	2015
Boone, Jeremy	136	1708	Boyle, David	179	2050	Broady, Ashley	131	1607
Boonlayangoor, Sue	195	2248	Boyle, David	181	2079	Brochu, Vicky	168	1846
Boopathy, Raj	054	734	Boywid, Sarah	126	1522	Brochu, Vicky	126	1511
Boopathy, Raj	207	2472	Braaten, Bruce	068		Brochu, Vicky	168	1856
Boor, Kathryn	131	1614	Bradford, Connie	015	109	Brockmann, Elke	027	310
Boor, Kathryn	178	2008	Bradish, Joshua	119	1390	Brockmeier, Susan	062	844
Booth, Veronica	197	2306	Bradley, Evan	040	483	Brodie, Eoin	056	752

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Brodie, Eoin	024	263	Buchan, B.	196	2276	Burris, W.	011	21
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Broe, Jonathan	033	400	Buchan, Blake	195	2264	Burrows, Lori	039	446
Brohawn, Kathy	180	2058	Buchan, Blake	195	2254	Burrows, Lori	146	
Brolaski, Mark	179	2045	Buchan, Blake	090	931	Burrus, Vincent	200	2362
Bromely, Robin	135	1694	Buchan, Blake	196	2286	Burtnier, Kathy	044	558
Brondani, Juliana	041	494	Buchan, Blake	016	135	Burtnick, Mary	042	515
Bronner, Denise	149		Buchan, Blake	196	2287	Burton, Aisha	123	1461
Brookins, Ryan	165	1797	Buchan, Blake	196	2275	Burton, Elizabeth	179	2050
Brooks, J.	131	1597	Buchko, Garry	040	469	Burton, Elizabeth	181	2079
Brooks, John	139		Buchmeier, Michael	078		Burton, Rory	104	1172
Brooks, Shelise	118	1385	Buckalew, David	106	1202	Bush, Karen	039	461
Brooks, Teresa	116	1342	Buckles, Thomas	120	1428	Buss, Sarah	119	1392
Broome, Jacqueline	120	1424	Buckley, Andrew	051	675	Butler-Wu, Susan	194	2226
Brouillette, Natalie	210	2553	Buckley, Daniel	135	1695	Butler-Wu, Susan	217	
Broukhanski, George	118	1377	Buckley, Daniel	053	703	Butler-Wu, Susan	016	127
Broussard, Gregory	173	1929	Buckley, Daniel	213	2599	Butler-Wu, Susan	231	LB-08
Broussard, Gregory	173	1938	Buckley, Daniel	176	1980	Butler-Wu, Susan	015	111
Broussard, Gregory	173	1935	Buckley, Daniel	053	710	Butler-Wu, Susan	217	
Brouwer, Ellen	012	27	Buckley, Daniel	024	268	Butler-Wu, Susan	WS-13	
Brown, Alexandra	136	1717	Buckley, Nancy	198	2328	Butt, Mohammed	219	
Brown, Armand	018	175	Buckley, Patricia	225		Buttaro, Bettina	040	466
Brown, C. Titus	031	373	Buckner, Rebecca	196	2288	Buynak, John	039	440
Brown, Daniel	122	1442	Buckwalter, Seanne	194	2237	Buzatu, Dan	061	825
Brown, Daniel	122	1455	Buckwalter, Seanne	194	2224	Bykowski, Tomasz	088	879
Brown, Elizabeth	199	2347	Buddhathoki, Bimal	044	567a	Byrne, Adam	057	773
Brown, Eric	099	1092	Buecher, Debbie	204	2407	Byrne, Lisa	137	1720
Brown, Eric	203	2398	Buehler, Barbara	057	784	Byrnes, Samantha	043	547
Brown, Eric	104	1157	Buehler, Barbara	133	1663	Bythrow, Glennon	106	1216
Brown, Eric	182	2087	Buehler, Deborah	106	1209	Bythrow, Maureen	167	1835
Brown, Eric	222		Buerger, Sandra	095	1010	Bythrow, Maureen	090	927
Brown, Eric	130	1581	Buften, Kimberly	091	952	Bythrow, Maureen	016	122
Brown, Eric	137	1721	Bugni, Tim	069		Bythrow, Maureen	015	101
Brown, Eric	130	1571	Bulir, David	033	416	Bythrow, Maureen	167	1836
Brown, Eric	130	1584	Bulir, David	116	1348	Bythrow, Maureen	016	121
Brown, Eric	012	49	Bullitt, Esther	146		Bzik, David	071	
Brown, Eric	131	1609	Bulut, Ece	104	1151			
Brown, Jamel	107	1244	Bulut, Emin	183	2117			
Brown, Justin	062	838	Bunk, Boyke	012	50			
Brown, Michelle	121	1439	Bunt, Richard	141				
Brown, Nicholas	088	879	Burali, Laurel	104	1153			
Brown, Samantha	039	452	Burbank, Lindsey	014	82			
Brown, Shirley	016	114	Burbank, Malcolm	099	1081			
Brown, Stacie	176	1979	Burch, Cynthia	017	150			
Brown, Steven	054	721	Burch, Cynthia	017	141			
Brown, Steven	103	1143	Burch, Tucker	151				
Brown, Steven	024	266	Burd, Helcio	207	2468			
Brown, Steven	030	355	Burdett, Kelly	110	1295			
Brown, Tanya	121	1436	Burdette, Megan	209	2513			
Brown, Titus	174	1948	Burgos, Jonathan	171	1904			
Brown, Trevor	168	1849	Burkart, Michael	103	1142			
Browne, MacKenzie	191	2175	Burke, John	196	2284			
Brown-Elliott, Barbara	183	2125	Burken, Joel	028	337			
Brown-Elliott, Barbara	007		Burkepile, Deron	102	1128			
Brown-Elliott, Barbara	007		Burkholder, JoAnn	209	2527			
Brubaker, Linda	070		Burkholder, Nathaniel	116	1337			
Bruce, Terri	172	1917	Burlakoti, Pragyan	205	2432			
Brumbaugh, Ariel	170	1885	Burleson, Mark	034	428			
Brun, Yves	080		Burne, Robert	202	2384			
Brunelle, Brian	100	1103	Burnett, Sandra	127	1534			
Brunke, Sascha	093	987	Burnham, Carey-Ann	117	1358			
Bruno, Vincent	093	980	Burnham, Carey-Ann	015	103			
Bruno-Barcena, Jose	204	2406	Burnham, Carey-Ann	016	122			
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Bruno-Bárcena, José	177	2000	Burnham, Carey-Ann	090	927			
Brutinel, Evan	024	256	Burnham, Carey-Ann	167	1835			
Bryan, Nathan	197	2302	Burnham, Carey-Ann	017	153			
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Bryant, Amy	208	2490	Burnham, Carey-Ann	016	121			
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Chagolla-Gaona, Miguel-Angel	026	295
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Chaidez, Cristobal	127	1531
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Champney, W.S.	115	1329
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Chan, John	071		Chaurasia, Akhilesh	072		Cheng, Jan-Fang	176	1981
Chan, Kok	213	2596	Chaurasia, Akilesh	206	2462	Cheng, Jiujuan	031	387
Chan, Patricia	140		Chavarria, Charybeth	183	2115	Cheng, Lei	129	1551
Chan, Wilson	090	936	Chavarria, Jesus	209	2517	Cheng, Linling	046	588
Chance, Deborah	065		Chavez-Bueno, Susana	041	504	Cheng, Nan	093	986
Chance, Deborah	087	868	Chavez-Dozal, Alba	199	2340	Cheng, Pui	182	2088
Chander, Anil	163	1747	Checinska, Aleksandra	099	1081	Cheng, Qiuxiang	095	1008
Chander, Yogesh	196	2282	Chee Sanford, Joanne	206	2446	Cheng, Wen Chao	011	6
Chandler, Jeffrey	179	2039	Chee-Sanford, Joanne	030	352	Cheng, Wen Chao	011	7
Chandra, Harish	109	1269	Chee-Sanford, Joanne	206	2460	Cheng, Wen Chao	011	20
Chandra, Harish	109	1280	Cheeseman, Andrew	033	415	Cheng, Xiaosong	057	786
Chandramohan, Lakshmi	117	1357	Cheikh, E.	167	1840	Cheng, Xingqun	040	473
Chang, Cheng	115	1325	Chella Krishnan, Karthickeyan	014	81	Cheng, Zhihui	092	958
Chang, Cheng-Hsiung	207	2481	Chen, Arlene	180	2058	Cheng, Zhihui	092	963
Chang, Chih Shuen	042	528	Chen, Casey	197	2307	Chern, Eunice	179	2025
Chang, Chin-Feng	027	307	Chen, Chang-Shi	110	1282	Chernesky, Max	091	939
Chang, Chin-Feng	207	2481	Chen, Chien-Hsien	043	549	Cherry, James	120	1403
Chang, Hsim	032	393	Chen, Chihua	186	2155	Cheung, Donna	124	1471
Chang, Hwan You	042	528	Chen, Chin-Yi	147		Cheung, Joanie	195	2252
Chang, In Seop	133	1649	Chen, Chin-Yi	193	2206	Cheung, William	012	28
Chang, In Seop	133	1648	Chen, Chin-Yi	164	1770	Chi, B.	051	676
Chang, I-Wei	100	1095	Chen, Chongyi	019	185	Chi, Feng	169	1870
Chang, Jennifer	032	396	Chen, Chun	012	35	Chiang, Hsing-Mei	131	1612
Chang, Jui-Chuan	095	1023	Chen, Chun-Ti	111	1297	Chiang-Ni, Chuan	118	1381
Chang, Jui-Jen	022	231	Chen, Chun-Yao	102	1129	Chiang-Ni, Chuan	014	79
Chang, Kai-Chih	193	2222	Chen, Chun-Yao	204	2419	Chiao, Ya-Hui	043	530
Chang, Lim-Seok	105	1176	Chen, Chun-Yao	134	1667	Chiariello, Nona	129	1556
Chang, Lin-Li	039	459	Chen, Derrick	166	1824	Chien, Mei-Fang	211	2575
Chang, Mee Soo	132	1629	Chen, Fei	097	1053	Chien, Wei-Chuan	164	1764
Chang, Roger	148		Chen, Grace	025	282	Chignell, Jeremy	176	1976
Chang, Yan	214	2611	Chen, Gwo-Liang	212	2588	Chigor, Vincent	106	1217
Chang, Yun	047	613	Chen, Huan	213	2600	Chihara, Shingo	163	1761
Chang, Yung-Chi	045	570	Chen, Huizhong	099	1094	Chikere, Chioma	054	720
Chang, Yung-Hsin	204	2419	Chen, Huizhong	163	1744	Childers, Noel	087	865
Chang, Yun-juan	212	2588	Chen, Hung-Mo	039	445	Childers, Susan	097	1050
Chang, Yunyong	088	882	Chen, Hwajun	134	1667	Childers, Susan	105	1189
Changayil, Shankar	012	37	Chen, I-Hsuan	208	2497	Childers, Susan	132	1627
Chanthachum, Suphitchaya	027	321	Chen, I-Hsuan Chen	132	1624	Childers, Susan	179	2030
Chanton, Jeff	129	1550	Chen, Janet	196	2285	Childress, Johnathon	126	1507
Chanton, Jeff	206	2455	Chen, JingRong	099	1076	Childress, Shameka	209	2511
Chanton, Patrick	206	2455	Chen, Jin-Qiang	104	1162	Childs, Tawanna	170	1900
Chao, Chih-Ping	131	1612	Chen, Jung-Ren	100	1095	Chiller, Tom	009	
Chao, Shih-hui	181	2078	Chen, Kai-Shun	061	826	Chin, Chen-Shan	012	49
Chao, Y.-Q.	028	332	Chen, Kai-Shun	208	2491	Chin, Erica	175	1966
Chapin, Kimberle	196	2269	Chen, Kai-Shun	104	1172	Chin, Kuk-Jeong	221	
Chapin, Kimberle	153		Chen, Lei	102	1118	Chin, Kuk-Jeong	057	775
Chapin, Kimberle	153		Chen, Liang	137	1732	Chinn, Mari	177	1992
Chapleau, Richard	104	1155	Chen, Liang	044	551	Chionh, Yok	058	790
Chapman, Mary	182	2090	Chen, Li-Hong	208	2493	Chionh, Yok	109	1264
Chapman, Rebekah	093	988	Chen, Mengyao	076		Chipman, Annie	017	147
Chapman, Sinéad	182	2084	Chen, Pei-Chen	186	2165	Chisholm, Sallie	176	1978
Chaput, John	225		Chen, Rong	163	1745	Chitsaz, Hamidreza	179	2033
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Charon, Nyles	146		Chen, Tzu-Yin	102	1129	Cho, Kun-Ching	057	769
Charusanti, Pep	213	2602	Chen, Xiaotong	116	1350	Cho, Kun-Ching	056	751
Chase, Christopher	214	2619	Chen, Xiaotong	170	1895	Cho, Kyu Hong	088	881
Chase-Topping, Margo	136	1707	Chen, Yi	130	1581	Cho, Kyung-Suk	209	2515
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Chatterjee, Delphi	109	1273	Chênevert, R.	191	2177	Cho, Yong-Joon	212	2579
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Chaudhary, Hassan	205	2438	Cheng, Chong-Ming	208	2491	Choi, Bong-Kyu	046	589
Chaudhry, Rama	119	1394	Cheng, Hao-Yi	209	2509	Choi, Bong-Kyu	018	170

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Choi, Jong Soon	033	419	Chuang, Woei-Jer	118	1381	Cliff, Matthew	072	
Choi, Jong-Soon	104	1164	Chuang, Woei-Jer	014	79	Clifton, Dawn	120	1423
Choi, Kam Wing	016	114	Chuenchitra, Thippawan	184	2137	Clifton, Sandra	182	2088
Choi, Ki Young	200	2366	Chukwuanukwu, Rebecca	199	2348	Close, Andrew	186	2158
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Choi, Lisa	184	2130	Chukwuka, Chiamaka	122	1454	Clotilde, Laurie	136	1706
Choi, Sang Ho	120	1420	Chun, Jongsik	212	2579	Cloutier, Danielle	106	1195
Choi, Sang Ho	125	1480	Chun, Jongsik	213	2603	Cloutier, Yves	107	1224
Choi, Sang Ho	013	55	Chun, Jongsik	031	390	Coan, Patricia	046	596
Choi, Sang-Ho	132	1629	Chun, Jongsik	212	2581	Coates, John	125	1488
Choi, Seon	012	36	Chun, Jongsik	030	357	Coates, John	050	652
Choi, Sungjong	134	1666	Chun, Jongsik	212	2580	Coates, John	057	764
Choi, Sunju	133	1648	Chun, Jongsik	012	36	Coates, John	050	651
Choi, Woo	059	809	Chun, Jongsik	030	361	Coates, John	050	647
Choi, Young	132	1630	Chun, Jongsik	105	1185	Coates, John	134	1675
Choi, Young	183	2116	Chun, Jongsik	148		Coates, John	028	336
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Chorover, Jon	028	331	Chung, Wen-Ting	193	2222	Coder, Brandon	231	LB-14
Chou, Chin Cheng	163	1759	Chupreta, Sergey	182	2089	Cody, William	088	888
Chou, Chung-Hsi	186	2163	Church, Brad	033	408	Coelho, Carolina	092	956
Chou, Katherine	177	2005	Church, Deirdre	090	936	Coelho, Débora	163	1751
Chou, Kyson	061	826	Church, Deirdre	090	933	Coelho, Idelta	163	1741
Chou, Lee Yung	205	2431	Church, Deirdre	196	2278	Coenye, Tom	164	1762
Chou, Siaw Kiang	177	2003	Churchill, Mair	088	889	Coffey, John	197	2296
Chou, Siaw Kiang	206	2458	Churey, John	123	1458	Coffman, Jonathan	107	1220
Chou, Yu-Ching	043	549	Cianciotto, Nicholas	089	916	Cohan, Frederick	205	2425
Choudhari, Shyamal	116	1351	Cianciotto, Nicholas	116	1332	Cohan, Frederick	030	360
Choudhari, Shyamal	116	1350	Cianciotto, Nicholas	040	470	Cohen, Alejandro	107	1225
Choudhari, Shyamal	013	63	Cianciotto, Nicholas	116	1336	Cohen, Ilana	068	
Choudhari, Shyamal	170	1895	Cicco, A.	131	1593	Coil, David	066	
Choudhary, Madhusudan	135	1699	Cikanek, Shawna	128	1545	Coker, Joanna	100	1105
Choudhary, Madhusudan	200	2367	Cilia, Alba	210	2532	Cole, Garry	093	978
Choudhary, S.K.	119	1394	Cillóniz Campos, Catia	090	921	Cole, James	212	2584
Choudhury, J.	199	2353	Cirillo, Jeffrey	058	793	Cole, James	031	373
Choudoir, Mallory	213	2599	Citron, Diane	215		Cole, James	174	1948
Chourey, Karuna	134	1671	Ciurca, Jane	166	1820	Coleman, Maureen	134	1665
Chourey, Karuna	134	1672	Ciurca, Jane	016	113	Coleman, Shannon	179	2039
Chourey, Karuna	129	1553	Clarizia, Lisa-J	168	1845	Colglazier, E. William	038	
Chow, Barbara	090	933	Clark, Benton	097	1053	Colglazier, E. William	038	
Chow, Cheryl	175	1962	Clark, Edward	110	1289	Collender, Philip	104	1159
Chow, Cheryl-Emelyane	052	691	Clark, Iain	050	647	Colery, Mark	219	
Chow, Cheryl-Emiliane	224		Clark, Iain	050	649	Collier, Stephanie	122	1447
Chowdhury, Nityananda	023	240	Clark, Lars	197	2305	Collignon, Anne	219	
Chowdhury, U.K.	119	1394	Clark, Richard	194	2229	Collingwood, Charlotte	062	845
Christen, Matthias	098	1071	Clark, Shirley	194	2224	Collins, Curtis	015	100
Christen, Matthias	172	1925	Clark, Tyson	182	2095	Collins, Linda	015	112
Christensen, Geoff	048	622	Clark, Tyson	040	477	Collins, Lowell	209	2529
Christensen, Quin	065		Clark, Tyson	095	1008	Collins, Margaret	087	857
Christian, Nicole	121	1439	Clark, R.B.	183	2112	Collins, Margaret	093	984
Christianson, Rebecca	133	1652	Clarke, Anthony	023	246	Collins, Rachel	117	1358
Christman, Jessica	061	825	Clarke, Anthony	207	2465	Colmer-Hamood, Jane	088	890
Christner, Martin	216		Clarke, Anthony	023	249	Colombo, Livia	207	2471
Christodoulides, Myron	165	1793	Clarke, Aryel	108	1249	Colon, Michael	173	1932
Christophersen, Lars	092	953	Clarke, Charles	205	2431	Colón, Frances	038	
Christopherson, Melissa	099	1074	Clarridge, Jill	117	1360	Colón, Wilfredo	132	1635
Christopherson, Melissa	207	2469	Clavell, Joel	020	205	Colon-Maldonado, Dashari	055	742
Chromy, Brett	168	1849	Clavell, Joel	020	208	Colon-Reveles, Judith	017	141
Chu, Binh	054	724	Clawson, Michael	040	484	Colón-Reveles, Judith	167	1834
Chu, Kung-Hui	056	751	Clément, Jean-François	078		Coltella, Luana	194	2227
Chu, Kung-Hui	057	769	Clemente, Jose	031	382	Colton, Deanna	095	1000
Chu, Kung-Hui	211	2556	Clemente, Jose	049	641	Colwell, Rita	011	1
Chu, May	038		Clemente, Jose	WS-20		Colwell, Rita	210	2533
Chu, Tzu-Ming	103	1143	Clemente, Jose	031	391	Colwell, Rita	012	36
Chu, Vivien	095	1024	Clemente, Thomas	022	224	Colwell, Rita	180	2058

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Comiskey, Jacob	165	1784	Cormier, Jessica	168	1848	Crick, Dean	058	789
Comolli, Luis	206	2462	Cormier, Jessica	043	545	Cridde, C.S.	028	332
Comolli, Luis	146		Cormier, Jessica	168	1852	Crill, Patrick	129	1550
Comparative Sequencing Program	NISC031	383	Corn Minor, Radiah	027	320	Crisler, James	097	1053
Compton, David	104	1155	Cornejo-Warner, Elias	021	219	Crisp, Rob	117	1361
Concienne, Barbara-Lynn	129	1557	Cornelis, Pierre	019	188	Crisp, Robert	196	2280
Condon, Susan	044	559	Cornelissen, Cynthia	014	83	Crispell, Emily	166	1815
Cong, Jing	206	2443	Cornish, Nancy	WS-04		Criss, Alison	149	
Conkle, Trevor	048	627	Corona, Arianna	049	642	Crissy, Katarzyna	208	2496
Conlan, Sean	031	383	Coronado, Christina	040	474	Crissy, Katarzyna	104	1166
Connacher, Brian	097	1056	Corsaro, Maria	201	2378	Crist Jr, A.E.	196	2274
Connell, Laurie	055	737	Cossentine, H.	043	537	Crnich, Christopher	126	1514
Connolly, Brian	194	2237	Costa, Gina	168	1855	Crocker, Fiona	211	2569
Connolly, Brian	194	2224	Costello, Elizabeth	197	2293	Croley, Tim	104	1157
Connolly, Mary Robin	194	2231	Costello, Elizabeth	081		Crona, Kristina	011	4
Connolly, Patricia	199	2355	Cotner, James	030	356	Cronan, John	077	
Connolly, Patricia	017	139	Cotta, Michael	207	2475	Cronan, John	051	671
Connor, Lynn	206	2460	Cotter, Peggy	089	918	Cronan, John	023	243
Connor, Lynn	206	2446	Cotter, Peggy	193	2208	Cronin, David	139	
Connors, Kristy	167	1839	Cottingham, Robert	205	2436	Cross, Benjamin	099	1089
Connors, Kristy	017	145	Cottingham, Robert	212	2585	Crosson, Sean	223	
Connors, Lynn	115	1322	Cottrell, Bryan	193	2206	Crowe, Jason	208	2490
Conover, Matt	063		Cottrell, Bryan	164	1770	Crowe, Susanne	060	816
Conrad, Douglas	012	51	Couger, Brian	056	758	Crowley, David	178	2017
Conrad, Maria	193	2205	Coulombe, Caty	166	1805	Crowley, Erin	104	1165
Conrad, Mark	211	2567	Coulombe, Caty	166	1806	Crozier, Brooks	106	1205
Conrad, Mark	050	649	Coulter, Chris	183	2122	Crudu, Valeriu	183	2118
Conrad, Markus	056	752	Courcol, René	016	130	Cruz, Ghislaine	207	2470
Conrad, Rachel	110	1292	Couturier, Brianne	016	128	Cruz, Kristian	015	102
Conrad, Rick	104	1165	Couturier, Marc	016	128	Cruz, Lorna	170	1896
Considine, Kelly	017	145	Covey, Christopher	088	888	Cruz Morales, Michelle	049	636
Constantin, Wissam	199	2337	Cowan, Brianna	170	1887	Cruz-Córdova, Ariadna	012	48
Conter, Laura	195	2265	Cowan, Brianna	092	961	Cruz-Nicolás, Guillermo	207	2482
Contezac, Joan	195	2240	Cowley, Lauren	137	1720	Cuajungco, Math	141	
Contreras, Francisca	089	905	Cowley, Lauren	100	1101	Cuartas, Jaison	102	1119
Contreras, Inés	089	905	Cox, Christopher	231	LB-11	Cuchara, Lisa	131	1598
Contreras, Juan	047	609	Cox, Eric	100	1102	Cuebas, Mara	132	1643
Contreras, Juan	033	414	Cox, Jeffery	023	252	Cuebas-Irizarry, Mara	107	1239
Contreras, Juan	017	156	Cox, Laura	197	2311	Cuenca Verde, Cesar	062	849
Contreras, Juan	033	406	Cox, Michael	150		Cuenca Verde, César	131	1601
Contreras-Cordero, Juan	026	287	Cox, Mike	204	2405	Cuenca Verde, César	186	2171
Contreras-Cordero, Juan Francisco	214	2612	Cox, Stephen	197	2313	Cui, Di	133	1660
Contreras-Cordero, Juan Francisco	214	2610	Cox, Stephen	039	441	Cui, Fuyi	057	785
Contreras-Esquivel, Juan	131	1602	Coy, Johannes	092	969	Cui, Henglin	107	1240
Conway, Claire	030	360	Crabb, Donna	122	1457	Cui, L.	166	1816
Conway, Tyrrell	072		Craft, David	138		Cui, Longzhu	167	1829
Cook, James	089	909	Craft, David	138		Cui, Zelin	186	2155
Cook, Peggy	131	1610	Craft, David	196	2291	Culbreath, Karissa	195	2256
Cookson, Brad	231	LB-08	Craig, Nancy	200	2366	Culbreath, Karissa	168	1845
Cookson, Brad	168	1855	Cram, Jacob	052	691	Culbreath, Karissa	229	
Cooley, Michael	104	1147	Cram, Jacob	224		Cullen, Wayne	044	553
Cooney, Meagan	110	1283	Cramer, Jeffrey	209	2512	Cullin, Cassandra	186	2156
Cooper, Daphne	108	1254	Cramer, Jeffrey	209	2511	Culpepper, Tyler	197	2292
Cooper, Kerry	040	477	Crampton, Mollee	210	2531	Culumber, Michele	097	1052
Cooper, Rebecca	134	1681	Crane, John	120	1424	Culumber, Michele	178	2015
Cooper, Tony	012	49	Crans, Debbie	143		Cummins, Carol	091	943
Cooper, V.	186	2172	Craviato, Alejandro	184	2140	Cummins, Carol	017	141
Cooper, Vaughn	182	2097	Crawford, Madelyn	047	616	Cunanan, Soledad	194	2224
Cooper, Vaughn	101	1112	Crawford, Timothy	023	252a	Cunningham, Corey	210	2552
Cooper, Vivian	042	527	Crawley, Amy	116	1338	Cunningham, Scott	044	566
Cooper, William	206	2455	Creager, Stephen	177	1998	Curiel, Joel	048	620
Cooper, Willie	061	825	Creedy, James	019	187	Curioso, Claudine	054	730
Cope, Julia	055	738	Creedon, Douglas	197	2294	Currie, Bart	182	2096
Coradin, Mariel	055	742	Creely, David	039	455	Currie, Bart	184	2132
Coradin, Mariel	132	1641	Creggers, Melissa	197	2294	Curtis, Daniel	057	768
Coradin, Mariel	135	1701	Creissen, Elizabeth	109	1278	Curtis, Darren	024	271
Coral, Julie	106	1200	Cresawn, Steve	127	1529	Cushion, Melanie	093	984
Corbau, Romu	087	871	Cresawn, Steven	127	1539	Cushion, Melanie	087	857
Corbeil, Jacques	117	1366	Cresawn, Steven	127	1538	Cuttrera, Jason	040	466
Corbin, Angela	106	1213	Crespo, Edwin	025	275	Cvitkovitch, Dennis	114	1312
Cordero, Carmen	136	1716	Crespo, Rocio	062	853	Cynamon, Michael	060	819
Cordero, Radames	092	956	Crick, Dean	109	1273	Czarnecka, Jolanta	043	536
Cordero, Radames	093	981	Crick, Dean	022	229	Czekanski, Jesse	101	1108
Córdova, Calo	017	138	Crick, Dean	143		Czuprynski, Charles	198	2321



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Da Silva Filho, Luiz Vicente	016	124
Dabney, Alan	197	2316
DaCosta, Marsha	124	1471
Dadachova, Ekaterina	047	615
Dadunashvili, M.	184	2133
Dafforn, Tim	191	2183
Dagher, Sue	204	2406
Dagit, Rosi	107	1246
Daher, Rana	166	1823
Dahlgren, Margaret	182	2083
Dai, Lei	039	439
Dai, Shuo	050	655
Dai, Yali	197	2299
Daines, Dayle	092	955
Daines, Dayle	013	57
Dakul, Dana'an	180	2066
Daley, Brian	046	596
Dalgic, Nazan	183	2117
Dallas, Steven	229	
Dallas, Steven	075	
Dallman, Tim	137	1720
Dallman, Tim	100	1101
Dalpkpe, Alexander	090	934
Dalpkpe, Alexander	196	2272
Dalsing, Beth	088	884
Dalton, Justin	231	LB-09
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Dalvi, Sonal	211	2568
Daly, Judy	166	1812
Daly, Judy	117	1361
Daly, Judy	166	1812
Daly, Judy	166	1822
Daly, Judy	196	2280
Daly, Thomas	184	2134
Damanhour, Ghazi	191	2185
Damdinsuren, Narantuya	057	767
Damron, Frederick	088	891
Damron, Fredrick	088	885
Damron, Fredrick	042	524
Dan, Nguyen	024	255
Dandinpel, Kiran	177	1984
Dandro, Amy	136	1708
Danelishvili, Lia	109	1261
Dang, Thanh-Uyen	039	437
Daniel, Steven	177	2007
Danielsen, Morten	027	310
Danka, Elizabeth	169	1883
Danner, G.R.	123	1459
Danuor, Sampson	111	1309
Dao, My Lien	164	1778
Dao, Nguyet	192	2200
Darcy, John	129	1557
Darcy, John	206	2448
Darling, Aaron	175	1968
Darling, Aaron	176	1981
Darling, Aaron	212	2576
Darnell, Elizabeth	015	104
Darveau, Richard	198	2325
Das, Kishore	058	791
Das, Kishore	122	1446
Das, Mayukh	173	1933
Das, Mayukh	127	1526
Das, Seema	019	186
Dasch, Gregory	204	2420
Dasch, Gregory	012	47
Datta, Atin	104	1153
Datta, Atin	104	1169
Daub, Margaret	047	601
Dauenhauer, Steven	163	1753
Daugaliev, A.	134	1678
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Dave, Prekruti	033	410
Davenhill, Pamela	104	1171
Davenport, Russell	057	782
David, Emeraghi	179	2040
David, Michael	137	1729
David, Oluwole	011	24
David, Oluwole	130	1569
David, Rosemary	015	97
David, David	032	397
Davidson, Alan	076	
Davidson, Amelia	093	976
Davidson, Darrell	043	539
Davidson, John	034	432
Davidson, Maureen	104	1150
Davie, James	136	1710
Davies, Jennifer	110	1289
Davies, Julian	074	
Davila, Maria	047	608
Davila, Michael	168	1845
Dávila, Leticia	012	48
Davila-Vazquez, Gustavo	107	1226
Davila-Vazquez, Yarely	034	427
Davis, Barbara	034	426
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Davis, Margaret	186	2162
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Davis, Mark	034	421
Davis, Michael	093	988
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Davis, Richard	055	737
Davis, Robert	051	676
Davis, Stephanie	198	2324
Davis, Thomas	090	919
Davis, Thomas	090	932
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Davis, Thomas	043	539
Davis, Thomas	195	2262
Davison, Brian	212	2585
Davison, Michelle	127	1537
Dawid, Suzanne	040	488
Dawid, Suzanne	088	896
Dawoud, Turki	130	1580
Dawson, Erica	033	417
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D'Azevedo, Pedro	118	1382
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De Anda-Trujillo, Lilia	107	1226
De Boer, Piet	082	
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De Groote, Valerie	165	1781
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De Lay, Nicholas	048	626
De Leon, Julius	136	1712
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De Leon-Rodriguez, Natasha	221	
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De Long, Susan	210	2534
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De Oliveira, Alejandro Macedo	199	2355
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DeAtley, Kimberly	040	463
Deaton, Michelle	214	2620
DeBruyn, Jennifer	174	1951
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Dedeles, Gina	029	341
Dediste, Anne	111	1306
Dedon, Peter	109	1264
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Dedon, Peter	095	1008
Dedon, Peter	109	1274
Dedrick, Rebekah	173	1940
Dedrick, Rebekah	173	1941
Dee, Christine	206	2440
DeFine, Linda	039	450
Defourmy, Lydwine	015	106
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Dehal, Parmavir	212	2585
Dehon, Patricia	122	1443
Dehon, Patricia	122	1449
Dékány, Imre	132	1628
Del Re, Deanna	114	1312
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del Valle-Pérez, Laura	031	377
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DeLateur, Nicholas	212	2593
DeLeo, Frank	018	160
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DeLeon-Rodriguez, Carlos	093	981
Delgado, Anca	054	733
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Delgado, Carmen	033	406
Delgado, Daniel	028	334
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Delgardio, Jonathan	206	2444
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Delmée, Michel	015	106
DeLong, Ed	069	
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DeMarco, Daniel	104	1167
DeMartino, Mary	060	817
Demir, Elif	052	692
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Deml, Sharon	194	2237
Demmitt, Brittany	031	382
DeMott, Michael	095	1008
Den Bakker, Hendrik	137	1721
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Deng, Jie	206	2463
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Deng, Ye	197	2307	Díaz-Torres, Jesus	107	1226	Dixit, Saurabh	170	1891
Deng, Ye	129	1551	DiBona, Winslow	107	1244	Dixon, Paula	091	945
Deng, Ye	129	1556	DiChristina, Thomas	134	1681	Do, Julie	136	1710
Deng, Ye	101	1116	DiChristina, Thomas	056	748	Do, Linh	046	597
Deng, Yijie	053	711	Dick, Gregory	100	1100	Do Nascimento, Naila	122	1451
Deng, Yun	022	233	Dickenson, Nicholas	013	63	Doane, Michael	102	1127
Deng, Zixin	095	1008	Dickenson, Nicholas	116	1350	Doble, Bradley	078	
Denis, Olivier	090	921	Dickenson, Nicholas	018	179	Dobos, Karen	204	2409
Dennis, Chelsea	210	2547	Dickerson, Jerold	106	1194	Docherty, Kathryn	210	2540
Dennis, Vida	170	1891	Dickerson, Tamar	213	2600	Docherty, Kathryn	057	784
Dennis, Vida	033	404	Dickey, Mandy	166	1812	Docherty, Kathryn	133	1663
Dennis, Vida	192	2198	Dickey, Mandy	166	1822	Docherty, Kathryn	129	1556
Dennis, Vida	087	861	Dickinson, Mary Kathryn	127	1529	Docherty, Neil	197	2296
Dennis, Vida	033	405	Dickinson, Michelle	015	110	Dodson, Karen	165	1785
Denyer, Stephen	011	8	Dickinson, Michelle	168	1850	Dodsworth, Jeremy	176	1981
Denys, Gerald	039	461	Dickinson-Copeland, Carmen	169	1876	Doedt, Thomas	231	LB-12
Deocampo, Daneil	057	775	DiDonato, Tessa	051	664	Doern, Christopher	017	153
Deonarin, Mahendra	219		Diebel, Kevin	032	395	Doern, Christopher	166	1820
Deepak, T.	061	832	Diederich, Ann-Kristin	164	1765	Doern, Christopher	231	LB-01
Depner, Kevin	197	2308	Dief, M.	043	531	Doern, Gary	064	
Depuydt, Pieter	164	1762	Diekema, Daniel	198	2331	Doerr, Kelly	183	2107
Deriabin, Oleg	185	2143	Diekema, Daniel	199	2347	Doerr, Kelly	194	2237
Desai, Amit	124	1475	Diemer, Geoffrey	032	398	Doerr, Kelly	194	2224
Desai, Ankita	090	926	Dien Bard, Jennifer	166	1803	Doherty, Matthew	192	2200
Desai, Gunjan	093	981	Dien Bard, Jennifer	166	1802	Dohnalkova, Alice	221	
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Desai, Narayan	212	2577	Dien Bard, Jennifer	043	533	Dolan, Susan	195	2249
Desai, Prerak	192	2200	Diez-Gonzalez, Francisco	130	1590	Dolloff, Jessica	117	1356
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DeSantis, Todd	067		Diez-Gonzalez, Francisco	131	1613	Dominguez, Samuel	195	2249
Desbiens, François	117	1366	Diffie, Hillary	198	2325	Dominguez, Wilfredo	181	2076
Deshane, Jessy	120	1417	Diggie, Stephen	141		Dominguez-Bello, Maria	095	1003
Desmond, Edward	WS-14		Dijkshoorn, Lenie	067		Dominguez-Bello, Maria	181	2070
DeStefano, Jeffrey	014	74	Dijkshoorn, Lenie	126	1513	Dominguez-Bello, Maria	049	641
Detweiler, Corrie	071		Dikshit, Titiksha	116	1341	Dominguez-Bello, Maria Gloria	205	2421
Deutch, Charles	051	665	Dillard, Joseph	143		Dominguez-Bello, Maria Gloria	031	368
Deutschbauer, Adam	053	694	Dillard-Wayne, Michelle	195	2255	Dominguez-Bello, Maria	204	2405
Deutschbauer, Adam	125	1495	Dill-McFarland, Kimberly	186	2166	Dominguez-Dominguez	207	2478
Deutschbauer, Adam	125	1488	Dilsiz, Nihat	104	1151	Maria-Magdalena		
Deutschbauer, Adam	125	1490	Dimitracopoulos, George	018	180	Dominguez-Puerto, Ricardo	209	2518
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Dhamad, Ahmed	116	1338	Diniz, Cláudio	163	1751	Dong, Yiran	024	258
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Elias-Ogaz, Leslie Rocio	105	1181
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Endo, Ginro	211	2575
Endres, Jennifer	023	242
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Endy, Timothy	119	1399
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Enriquez, Arturo	110	1296
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Erb, Marcella	100	1105
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Esaka, Kohei	103	1136
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Farrow, John	042	523
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Fazili, Tasaduq	119	1400
Fazili, Tasaduq	119	1397
Fazili, Tasaduq	119	1398
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Felker, Jill	210	2544	Findlay, Lorraine	036		Folster, Jason	228	
Fels, Samuel	125	1490	Finegold, Sydney	215		Fontaine, Clinton	130	1576
Femi-Ola, Titilayo	050	658	Fineran, Peter	022	228	Fontana, Carla	195	2267
Feng, Jiaying	032	396	Fink, Marc	046	592	Fontana, John	137	1721
Feng, Li	114	1316	Fink, Ryan	130	1590	Fontes, Cláudia	163	1739
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Feng, Lihui	019	202	Fink, Ryan	131	1613	Ford, Bradley	089	903
Feng, Wengchao	169	1882	Finley, Russ	127	1530	Ford, Matt	105	1189
Feng, Wengchao	042	525	Fiole, Daniel	169	1858	Foreman, Christine	129	1559
Feng, Xiaorong	011	9	Fiorella, Paul	060	816	Forest, Katrina	096	1042
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Feng, Yanling	122	1445	Fischer, Gerald	183	2116	Forshey, Brett	137	1725
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Fennell, Donna	105	1173	Fischer, Kael	062	844	Forst, Steven	019	186
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Fennell, Donna	057	762	Fish, Jordan	212	2584	Fortenberry, J. Dennis	070	
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Ferguson, Andrew	106	1207	Fishbain, Joel	015	102	Fortineau, Nicolas	126	1511
Ferguson, Donald	125	1499	Fisher, Daniel	068		Fortney, Julian	052	689
Ferguson, Donna	106	1219	Fisher, Derek	041	501	Fortney, Julian	024	265
Ferguson, Donna	106	1192	Fisher, Helen	017	146	Fortney, Kate	088	886
Ferguson, Ryan	121	1432	Fisher, Joshua	127	1534	Fortunato, Samuel	163	1739
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Fernandez, Reinaldo	041	501	Fisher, Nathan	123	1462	Fosbrink, Matthew	137	1732
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Ferraro, Mary-Jane	167	1838	Flandin, Jean-Frederic	091	939	Fox, Barbara	071	
Ferraro, Mary-Jane	016	121	Flannery, Mary	034	426	Fox, Ben	062	837
Ferraro, Mary-Jane	167	1836	Fleckenstein, James	182	2085	Fox, Donna	168	1852
Ferreira, Maria	028	330	Fleiszig, Suzanne	005		Fox, Gordon	210	2550
Ferreira-Machado, Alessandra	163	1751	Fleiszig, Suzanne	193	2211	Fox, James	186	2156
Ferreira-Machado, Alessandra	192	2193	Fleiszig, Suzanne	092	971	Fox, James	186	2157
Ferrell, Joshua	099	1083	Fleiszig, Suzanne	169	1874	Fox, James	062	841
Ferrell, Rebecca	134	1664	Fleiszig, Suzi	089	913	Fox, Jonathan	133	1661
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Ferrer González, Edgar	031	374	Fletcher, Darcy	183	2119	Foy, Brian	204	2409
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Fierer, Noah	101	1114	Flynn, Kaitlin	014	94	Frank, Joseph	131	1606
Figueroa, Israel	050	651	Flynn, Kenneth	101	1112	Frank, Karen	195	2248
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Filcek, Kimberly	108	1260	Fodor, Anthony	031	384	Frank, Kristi	088	895
Filip, Jeremy	032	398	Fodor, Eleonora	132	1628	Frankel, Laura	053	700
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Gencer, Hasim	183	2117	Gilbreath, Jeremy	197	2297	Godoy-Vitorino, Filipa	205	2421
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Genovese, Carlo	115	1330	Gilcrease, Eddie	127	1535	Goering, Richard	117	1356
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George, Avrilie	119	1399	Gill, Kiren	015	112	Goh, Ee Been	207	2468
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George, Robert	167	1832	Gillespie, Barbara	039	452	Gold, Avram	211	2572
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Gerardin, Ylaine	175	1965	Gilligan, Peter	195	2259	Goldberg, Joanna	088	885
Gerba, Charles	105	1186	Gilligan, Peter	229		Goldberg, Joanna	042	524
Gerba, Charles	029	350	Gillis, Marcus	204	2413	Goldberg, Marcia	063	
Gerba, Charles	178	2012	Gillis, Thomas	058	796	Golden-Mason, Lucy	046	588
Gerba, Charles	179	2026	Gillman, Aaron	116	1352	Golding, Ido	WS-05	
Gerba, Charles	210	2535	Gilmanshin, R.	137	1731	Golding, Sue	175	1964
Gerdes, Kimberly	046	592	Gilmanshin, Rudolf	208	2496	Goldman, William	144	
Gerhold, Richard	062	848	Gilmanshin, Rudolf	104	1166	Goldstein, Ellie	215	
Gerilovych, Anton	062	851	Gilmore, Robert	120	1423	Goldstein, Ellie	215	
Gerilovych, Anton	110	1294	Gilmore, Sara	230		Goldstein, Jay	044	552
Gerilovych, Anton	186	2160	Gilmore, Sara	092	974	Goldstein, Sarah	053	700
Gerke, Tammie	054	730	Giloteaux, Ludovic	206	2462	Goldston, Amanda	172	1917
Gerner-Smidt, Peter	137	1733	Giloteaux, Ludovic	211	2560	Golembieski, Marisabel	033	412
Gerwien, Franziska	093	987	Gilsdorf, Janet	182	2093	Golembieski, Michelle	033	412
Gestinari, Raquel	122	1453	Gilsdorf, Janet	182	2083	Golkar, Zhabiz	033	410
Getman, Damon	091	947	Giltner, Carmen	146		Golkar, Zhabiz	177	1989
Gettings, Stephen	095	1024	Giltner, Carmen	044	562	Golovko, Anatolii	184	2139
Geunes-Boyer, Scarlett	093	982	Giltner, Carmen	017	144	Golovko, Anatolii	030	367
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Ghimire, Prakash	061	834	Ginocchio, Christine	167	1836	Gomelsky, Mark	208	2493
Ghimire, Sita	147		Ginocchio, Christine	016	121	Gomelsky, Mark	130	1583
Ghiringhelli, Pablo	100	1096	Ginocchio, Christine	160		Gomelsky, Mark	172	1914
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Ghosh, Pallab	109	1271	Giovannoni, Stephen	228		Gomez, Fernando	182	2103
Ghoshal, Uday	090	937	Girosky, Kimberly	125	1499	Gomez, Maria	173	1942
Ghoshal, Ujjala	090	937	Gioux, Lauriane	205	2430	Gómez, Zulema	135	1698
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Giare-Patel, Kamna	126	1503	Glasner, Corinna	012	31	Gomez-Gil, Bruno	040	464
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Gierula, Magdalena	042	520	Glaven, Sarah	209	2510	Gong, Xin	089	906
Gies, Esther	176	1981	Glenn, Danielle	126	1518	Gonnering, Jordan	179	2037
Giesting, Kristen	132	1639	Glenn, Katie	047	612	Gonwong, Siriphan	184	2137
Gifford, Scott	069		Glennen, Anita	039	436	Gonzalez, Alfredo	135	1701
Gifford, Scott	053	708	Glick, Sarah	051	664	Gonzalez, Antonio	099	1092
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Gilbert, Jack	066		Godichaud, Sandrine	043	546	Gonzalez, Karla	043	538
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Gilbert, Jack	049	641	Godo, P.	194	2232	Gonzalez, Rodrigo	120	1413
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Gonzalez Juarbe, Norberto	169	1873	Grainick, Jeffrey	125	1497	Grimes, D.		037
Gonzalez Peña, Antonio	066		Granada, Margarita	105	1178	Grimes, D.		037
González-Burgos, Araceli	057	772	Granados-Baeza, Luis-Wenéfido	207	2478	Grimes, D.	054	729
González-Duarte, Juan Carlos	214	2610	Granados-Baeza, Manuel-Jesús	026	295	Grimes, Darrell	033	401
Gonzalez-Escalona, Narjol	137	1727	Granados-Baeza, Manuel-Jesús	207	2478	Grimont, Patrick	107	1234
Gonzalez-Escalona, Narjol	104	1157	Granato, Paul	196	2275	Grimwade, Julia		227
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Gonzalez-Horta, María del Carmen	214	2612	Granneman, Sander	077		Groisman, Eduardo		150
González-Horta, María del Carmen	214	2610	Grant, Christopher	052	687	Groisman, Eduardo		077
Goo, Eunhye	202	2390	Grass, Julian	163	1755	Groisman, Eduardo		150
Gooch Moore, Janet	106	1194	Grasso, Stephanie	165	1780	Groisman, Eduardo	051	669
Goodloe, Ashlynn	132	1624	Grattard, Florence	166	1826	Gronau, K.	051	676
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Goodman, Danielle	100	1106	Gratz, Jean	043	541	Grondin, Josée	168	1846
Goodman, Jordan	205	2423	Graves, Alexandria	107	1235	Grondin, Josée	168	1856
Goodman, Keri	102	1124	Graves, Eric	090	926	Groot, Joost		073
Goodrich, Julia	135	1702	Graves, Heidi	166	1814	Gros, Olivier	169	1871
Goodridge, Amador	109	1277	Gray, Alicia	047	614	Grose, Julianne	127	1534
Goodridge, Amador	183	2115	Gray, Brian	042	506	Gross, A.	132	1632
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Goodsmith, Nichole	109	1268	Gray, Jeffrey	114	1313	Grossman, Nina	047	606
Goodwin, Lynne	213	2597	Gray, Kimberly	206	2456	Groster, Ariel	211	2562
Goodwyn, Menherit	205	2425	Gray, Kimberly	054	724	Grove, Tyler		065
Goodwyn, Menherit	030	360	Gray, Kimberly	054	727	Grover, Abha	136	1717
Goodyear, Andrew	045	585	Gray, Kimberly	108	1259	Gruber, Christian	089	904
Goodyear, Andrew	115	1327	Gray, Larry	006		Grunden, Amy	209	2527
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Goodykoontz, Mary	167	1840	Gray, Jr., L.	180	2059	Grunden, Amy	056	747
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Gopinath, Gopal	208	2488	Gray-Owen, Scott	120	1418	Grundner, Christoph	077	
Gopinath, Gopal	137	1734	Greco, Jade	093	981	Grunenwald, Caroline	062	848
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Gordon, Angel	091	942	Green, Hyatt	179	2037	Gu, Ganyu	131	1609
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Gore, Jeff	081		Green, Julie	120	1415	Gu, Yihai	039	449
Gorham, Sasha	099	1092	Green, Rachel	199	2342	Gu, Yunfu	129	1551
Gorski, Lisa	104	1147	Green, Romanza	192	2192	Gu, Yunfu	129	1561
Gorski, Lisa	130	1589	Green, Stefan	206	2444	Gu, Yunfu	129	1556
Gose, Severin	060	822	Green, William	214	2615	Guan, Mo	108	1256
Gose, Severin	091	945	Greenberg, E.	205	2436	Guan, Yuanlin	197	2299
Gosrani, Sheetal	127	1537	Greenberg, E. Peter	065		Guastalli, Elisabete	185	2149
Gosset, Guillermo	051	680	Greenberg, Everett	141		Gubbels, Marc-Jan	111	1297
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Gottesman, Susan	048	624	Greenwood-Quaintance, Kerry	168	1844	Guibert, Lilian	057	765
Gottesman, Susan	048	626	Greenwood-Quaintance, Kerry	118	1374	Guilbeault, Adam	028	327
Göttfert, Michael	049	633	Greenwood-Quaintance, Kerry	166	1808	Guilbert-Garcia, Erik	026	295
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Gottschall, Richard	017	145	Gregory, Michael	196	2280	Guinea Ortega, Jesús	009	
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Gould, Trevor	030	356	Gremminger, Roger	117	1362	Gularte, Nicholas	200	2364
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Govoni, Jessica	104	1147	Grieco, Paul	078		Gunsalus, Robert	034	429
Goyal, Kapil	044	567a	Griep, Judy	043	536	Gunsalus, Robert	020	209
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Graf, Joerg	049	634	Griffin, Melanie	202	2394	Guo, Francis	043	538
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Graham, Mandy	047	602	Griffith, John	106	1192	Guo, Qiang	202	2384
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Harrison, La'Chia	194	2233	Hayes, Madeline	183	2121	Heinemann, Joshua	078	
Harrison, Travis	212	2577	Hayes, Madeline	165	1798	Heininger, Alexandra	090	921
Harro, Janette	164	1768	Hayes, Paul	078		Heinrichs, David	116	1331
Harrow, Danielle	210	2544	Haynes, Brittany	023	245	Heinrichs, David	013	68
Hartig, Phillip	180	2059	Haynes, Danielle	096	1037	Heinrichs, Jon	231	LB-13
Hartley, David	028	327	Haynes, Matthew	012	51	Heinrichs, Jon	089	909
Hartman, Gary	208	2500	Hazen, Samuel	056	749	Heisinger, Lauren	172	1913
Hartsock, Angela	057	774	Hazen, Terry	031	378	Heithoff, Abigail	054	726
Hartsock, Angela	151		Hazen, Terry	024	265	Heitkamp, Rae	128	1541
Hartzel, Lynn	166	1814	Hazen, Terry	054	714	Heizer, Esley	057	776
Harvey, Cameron	172	1928	Hazen, Terry	057	768	Helaly, Ghada	163	1752
Harvey, Emily	051	674	Hazen, Terry	052	689	Hellberg, Rosalee	104	1154
Harvey, Hanjeong	146		Hazen, Terry	054	721	Hellenbrand, Katrina	046	598
Harvey, Ronald	053	701	Hazen, Terry	053	694	Helm, Sherry	173	1939
Harvie, Elizabeth	120	1415	Hazen, Terry	024	266	Hemeg, Hassan	118	1384
Harwich, Michael	045	573	Hazen, Terry	031	389	Hemm, Matthew	023	245
Harwood, Caroline	223		Hazen, Terry	101	1116	Hemme, Christopher	056	753
Harwood, Caroline	205	2436	Hazen, Tracy	182	2086	Hemme, Christopher	031	378
Harwood, Caroline	125	1496	Hazen, Tracy	092	954	Hemp, James	220	
Harwood, Valerie	106	1215	He, GuiXin	163	1744	Hempel, Randy	041	496
Harwood, Valerie	210	2550	He, Gui-Xin	099	1094	Hempel, Randy	041	490
Hasan, Nur	012	36	He, Jianzhong	211	2563	Henao-Tamayo, Marcela	109	1278
Hasan, Nur	148		He, Jianzhong	207	2467	Henao-Tamayo, Marcela	121	1430
Hasan, Nur	180	2058	He, J.Z.	025	283	Henderson, Nadine	089	902
Hasçelik, Gülsen	167	1837	He, Qiang	209	2519	Hendrickx, Antoni	045	574
Hasegawa, Miyuki	192	2202	He, Qiang	105	1183	Hendriksen, Rene	137	1728
Hasegawa, Miyuki	044	560	He, Qing	169	1877	Hengge, Neal	026	298
Haseltine, Cynthia	200	2363	He, Qing	046	593	Henkin, Tina	157	
Hasenkrug, Aaron	018	174	He, Qing	018	173	Hennessey, Kristen	199	2349
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Hashimoto, Yoshiteru	095	1020	He, Yongqun	149		Henriques-Normark, Birgitta	200	2361
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Hashsham, Syed	197	2310	He, Zhili	197	2307	Henson, Amanda	166	1818
Hashsham, Syed	179	2048	He, Zhili	129	1554	Henson, J.	209	2513
Haskins, David	059	803	He, Zhili	019	192	Henson, John	177	1998
Hassan, Hani Mutlak	191	2185	He, Zhili	056	753	Henson, John	205	2439
Hassan, Khaled	117	1371	He, Zhili	096	1031	Henson, John	204	2411
Hassan, Osman	027	318	He, Zhili	031	378	Hentchel, Kristy	051	672
Hatch, Andrew	034	425	He, Zhili	096	1028	Her, Ji-Hee	029	349
Hatfull, Graham	100	1099	He, Zhili	125	1487	Herbein, Joel	136	1708
Hatfull, Graham	100	1104	He, Zhili	057	768	Herbold, Nicole	136	1706
Hatfull, Graham	127	1532	He, Zhili	099	1076	Herbst-Kralovetz, Melissa	122	1449
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Hatfull, Graham	173	1941	He, Zhili	101	1115	Heredia, Basilio	094	997
Hatfull, Graham	173	1929	He, Zhili	129	1551	Herlihey, Francesca	023	246
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Hatfull, Graham	173	1938	He, Zhili	135	1692	Herman (Wagner), Jennifer	021	216
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Haugen, Jessica	109	1270	He, Zhili	101	1116	Hernandez, Ismael	206	2450
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Hauser, Loren	103	1143	Heaslip, Darragh	058	795	Hernández, Brian	205	2437
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Hawman, David	032	395	Heckman, Andrea	163	1753	Hernández Castillo, Oscar	131	1601
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Hayashi, Naoki	045	568	Hedreyda, Cynthia	054	735	Hernandez-Flores, Yeimi-Estephany	026	295
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Haydel, Shelley	179	2044	Heflin, James	168	1854	Hernández-Solis, Sandra	199	2334
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Herrera-Rodríguez, Gabriel	095	1022	Hindler, Janet	044	558	Holland, Tim	212	2587
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Hervey, W. Judson	209	2510	Hinojosa, Wilber	055	742	Holmes, Dawn	206	2462
Herzog, Amanda	105	1186	Hintze, David	030	359	Holmes, Dawn	211	2560
Herzog, Norbert	011	14	Hippler, Lauren	120	1410	Holmes, Mark	158	
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Hess, Ann	183	2120	Hiras, Jennifer	056	756	Holt, Brian	016	118
Hess, Ann	183	2121	Hirata, Takahiro	023	250	Holt, Scott	095	1018
Hess, Ann	183	2119	Hirota, Ryuichi	026	288	Holt, Scott	094	990
Hess, Ann	183	2127	Hirota, Ryuichi	027	308	Holtkamp, Bodo	033	400
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Hettich, Robert	134	1672	Hixson, Scarlett	052	686	Homme, Carissa	211	2570
Hettich, Robert	129	1553	Hjelmso, Mathis	174	1952	Hon, Lawrence	040	471
Hettick, Justin	146		Hnatuk, Shane	013	63	Hong, Hee	107	1221
Heu, Chan	120	1411	Ho, Christie	211	2559	Hong, Hyo-lim	132	1629
Heu, Sunggi	116	1353	Ho, Feng-Ju	022	231	Hong, JiHyung Suzy	172	1915
Heu, Sunggi	042	522	Ho, Han-Chen	102	1129	Hong, Seok Hoon	099	1093
Hewlett, Angela	119	1392	Ho, Han-Chen	204	2419	Hong, Seol-hee	012	40
Hewlett, Erik	193	2208	Ho, Mengfei	089	912	Hong, Wenzhou	164	1774
Hewson, Ian	175	1957	Ho, Ying-Ning	131	1612	Hong, Yi-Min	171	1909
Heys, Jeffrey	051	674	Ho, C-H	133	1659	Hong-Geller, Elizabeth	088	892
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Li, Yuebin	095	999	Lin, Ching-Ting	171	1909	Liu, Joanne	023	237
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Li, Yueh-Fen	181	2077	Lin, Hening	024	271	Liu, Jun	082	
Li, Yukun	231	LB-15	Lin, Hui	135	1691	Liu, Jun	109	1276
Li, Yuqing	040	473	Lin, Jingmei	032	393	Liu, Jun	099	1086
Li, Zesong	197	2299	Lin, Jun	110	1288	Liu, Kang	042	513
Li, Zhao Zhang	040	481	Lin, Jun	039	452	Liu, Mengyao	042	525
Li, Zhongwei	089	906	Lin, Jun	012	42	Liu, Mengyao	018	159
Liamthong, Sumalee	124	1477	Lin, Mei-Hui	164	1764	Liu, Mengyao	169	1882
Liang, Anita	130	1589	Lin, Mingqun	092	967	Liu, Mingli	115	1321
Liang, Anita	104	1147	Lin, Mingqun	092	958	Liu, Mingli	169	1876
Liang, Bin	174	1947	Lin, Sabina	013	66	Liu, Peng	088	894
Liang, Bin	209	2509	Lin, Tsun-Mei	108	1255	Liu, Pigang	019	192
Liang, Suisha	197	2299	Lin, Tsun-Mei	043	530	Liu, Qian	150	
Liao, Annette	134	1675	Lin, Wei-Jen	186	2161	Liu, Roland	133	1652
Liao, Min-Ken	132	1617	Lin, Wen	208	2491	Liu, Roland	175	1966
Liao, Reiling	109	1262	Lin, Xueju	206	2455	Liu, Shuai	151	
Liao, Xiao-Ping	040	465	Lin, Xueju	151		Liu, Terry	179	2028
Liao, Xiao-Ping	040	468	Lin, Yan Wei	012	51	Liu, Wenbin	101	1115
Libby, Stephen	167	1833	Lin, Yee-Shin	014	79	Liu, Wenjun	108	1257
Liboriusen, Poul	094	991	Lin, Yee-Shin	118	1381	Liu, Wen-Tso	176	1981
Lichay, Marguerite	090	935	Lin, Yongmei	039	449	Liu, Wen-Tso	209	2522
Lichtenwalner, Anne	062	838	Lin, Yu-Ju	033	403	Liu, Wenzong	174	1947
Lichtiger, Benjamin	195	2246	Lina, Gérard	012	27	Liu, Xiang	039	456
Licio, Daniela	177	1993	Linardopoulou, Elena	231	LB-08	Liu, Xianxian	211	2559
Licon, Delia	184	2140	Lindemann, Stephen	221		Liu, Xiaoling	108	1257
Lidstrom, Mary	081		Linden, Karl	210	2549	Liu, Xiaoxin	134	1671
Liebeke, Manuel	139		Lindsay, Brianna	117	1364	Liu, Xiaoxin	134	1672
Liebens, Veerle	165	1781	Lindsay, Kyle	052	685	Liu, Ya-Hong	040	468
Liebens, Veerle	087	871	Lindsay, M	132	1632	Liu, Ya-Hong	040	465
Lieberman, Jay	184	2136	Lindsey, Merry	018	175	Liu, Yan	196	2281
Lieberman, Ori	014	74	Line, John	130	1567	Liu, Yang	146	
Liermann, Laura	134	1670	Lineback, Patricia	119	1389	Liu, Yaoping	093	980
Liew, Mathew	023	251	Ling, Alison	221		Liu, Ya-Yin	207	2481
Liew, Phui-See	104	1170	Ling, Juan	102	1118	Liu, Ying	199	2347
Liggenstoffer, Audra	207	2479	Ling, Julia	012	28	Liu, Yuanyuan	108	1251
Light, Yooli	031	389	Ling, Lucy	095	1010	Liu, Yunlong	088	886
Liles, Jordan	095	1018	Linhardt, Robert	026	301	Liu, Zhi-Mei	192	2199
Liles, Mark	031	372	Linke, Michael	093	984	Liveris, Dionysios	049	642
Liljeqvist, Maria	228		Linley, Thomas	052	689	Livny, Jonathan	051	683
Lillis, Lorraine	179	2050	Linneman, Jonathan	102	1120	Llanes, Patricia	109	1277
Lilly, Austyn	108	1249	Liopeta, Kassiani	018	180	Llarena, Ann-Katrin	012	38
Lim, Chang	059	808	Lipke, Peter	047	605	Llorente Busquet, Adriana	131	1601
Lim, Chang	059	809	Lipp, Erin	102	1121	Lloyd, Spencer	117	1361
Lim, Chang	059	811	Lipp, Erin	037		Lloyd, Tracie	196	2278
Lim, Chang	059	810	Lipp, Erin	052	690	Lo, Chien Chi	117	1365
Lim, Chang Jin	059	812	Lipp, Erin	102	1124	Lo, Pauline	195	2251
Lim, Daniel	181	2072	Lipp, Erin	151		Lo, Ya Ping	163	1759
Lim, George	163	1741	Lippé, Catherine	168	1848	Loaiza, Verónica	033	414
Lim, HsiaoChien	024	263	Lippé, Catherine	043	545	Lobao, Tassia	122	1453
Lim, HsiaoChien	040	479	Lippé, Catherine	168	1852	Lobao, Tassia	122	1452



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Loc-Carrillo, Catherine	173	1943	Lovell, Charles	107	1233	Lux, Matthew	225	
Locke, Martin	203	2397	Lovell, Roger	196	2289	Luzopone, Catherine	WS-20	
Locke, Randall	024	258	Loviso, Claudia	057	765	Ly, Melissa	025	280
Lockhart, J.	053	702	Lovley, Derek	206	2462	Ly, Melissa	078	
Lockhart, Shawn	047	606	Lovley, Derek	209	2520	Lydy, Shari	015	96
Locklear, Derrick	097	1057	Lovley, Derek	095	1017	Lyerly, David	126	1506
Locklear, Jacqueline	016	116	Lovley, Derek	072		Lymeropoulou, Despoina	213	2600
Lodge, Ken	186	2157	Lovley, Derek	103	1133	Lynch, Keeley	093	984
Loeffelholz, Michael	091	952	Lovley, Derek	209	2504	Lynch, Ryan	129	1557
Loeffelholz, Michael	WS-12		Low, David	080		Lynch, Ryan	206	2448
Loeffler, Frank	206	2446	Low, David	068		Lynch, Susan	197	2300
Loeffler, Frank	053	696	Lowe, Chinn-Woan	016	118	Lynch, Susan	040	479
Loeffler, Frank	206	2460	Lowe, Eric	175	1968	Lynes, Michael	198	2324
Loes, Andrea	179	2044	Lowe, Kenn	028	332	Lynne, Aaron	120	1426
Loesser-Casey, Kathy	127	1538	Lowe, Kenneth	024	265	Lynskey, Nicola	042	520
Lof, Alessandra	051	670	Lowe, Marty	034	426	Lyon, Joseph	043	540
Löffler, Frank	134	1672	Lowe, Tiffany	050	661			
Löffler, Frank	030	352	Lowe, Todd	140				
Löffler, Frank	134	1671	Lowenberger, Daniella	060	822			
Löffler, Jürgen	231	LB-12	Lowen, Brian	095	1004			
Löffler, Jürgen	231	LB-12	Lower, Steven	095	1004			
Loftis, Christopher	087	860	Lozada, Mariana	057	765			
Logan, Bruce	125	1501	Lozada Fernández, Valery	132	1643			
Logan, Bruce	177	1995	Lozano Betancourt, Gabriel	175	1958			
Logan, Tyler	129	1550	Lozupone, Cathy	174	1949			
Logue, Catherine	130	1570	Lu, Donghui	197	2299			
Logue, Catherine	130	1578	Lu, Jang-Jih	118	1375			
Logue, Catherine	062	846	Lu, Kyle	166	1819			
Logue, Catherine	185	2149	Lu, Mingshou	073				
Lolans, Karen	044	566	Lu, Mingshou	177	1990			
Lollar, Ron	016	117	Lu, Mingshou	177	1991			
Lombos, Ernesto	016	114	Lu, Ran	163	1758			
Loneragan, Guy	131	1597	Lu, Roger	170	1893			
Long, Briana	108	1249	Lu, Thea	018	160			
Long, Fred	182	2088	Lu, Xiao	209	2516			
Long, Sharon	096	1029	LU, Xinxin	175	1955			
Loo, Eric	044	554	Lu, Xuedong	016	129			
Loo, Vivian	016	123	Lu, Xuellian	199	2347			
Loo, Vivian	025	274	Lucas, Brian	194	2237			
Loo, Vivian	196	2271	Lucento, Sarah	106	1202			
Looff, Torey	203	2396	Lucero, Rachael	029	343			
Loomer, Peter	197	2304	Luciw, Paul	168	1849			
Lopanik, Nicole	169	1867	Ludington, William	066				
Lopanik, Nicole	102	1120	Lüdke, Gerd	090	921			
Lopansri, Bert	196	2284	Ludwig, Megan	100	1106			
Loparev, Vladimir	012	37	Lue, Y.	034	426			
Lopez, Beatriz	185	2153	Luef, Birgit	206	2462			
Lopez, Maria Renee	185	2153	Lugo-Melchor, Yadira	127	1531			
López, Ydmar	205	2437	Lugo-Melchor, Yadira	107	1226			
Lopez Gonzalez, Diorella	107	1228	Luka, Joy	180	2066			
López Pérez, Jorge	131	1601	Lum, Michelle	049	645			
Lorca, Graciela	197	2309	Lumpkin, Ryan	214	2620			
Lorca, Graciela	094	998	Lun, Clare	106	1198			
Lorca, Graciela	050	653	Luna, Arturo	109	1281			
Lorch, Adam	197	2311	Luna, Ruth Ann	144				
Lord, Dana	099	1093	Luning, Eric	213	2605			
Lorence, Matthew	040	479	Luo, Chengwei	076				
Lorenz, Laura	127	1529	Luo, Chengwei	101	1117			
Lorica, Cherish	089	906	Luo, Jian	028	332			
Loris, Remy	191	2184	Luo, Raymond	178	2010			
Loros, Jennifer	223		Luo, Yan	012	49			
Lorowitz, William	132	1642	Luo, Yanping	163	1745			
Los, Marek	092	969	Luo, Yiqi	129	1554			
Lotlikar, Shalaka	041	491	Luo, Yiqi	129	1551			
Lotlikar, Shalaka	013	63	Luong, Khai	182	2095			
Louca, U.	095	1002	Luong, Khai	012	50			
Loudon, Andrew	204	2408	Luong, Khai	040	477			
Louie, Brian	060	823	Luong, Khai	012	49			
Louie, Jacqueline	208	2498	Luong, Khai	095	1008			
Louis, Ann	119	1389	Luong, Preston	169	1861			
Louis, Samantha	131	1595	Lurain, Kate	043	541			
Louison, Laura	194	2224	Lusk, Tina	222				
Loutet, Slade	013	69	Lussier, Nathalie	016	123			
Lovat, Laurence	219		Luterbach, Courtney	014	85			
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Ma, Fang	133	1660
Ma, Jennifer	183	2123
Ma, Jincal	096	1031
Ma, Jincal	107	1235
Ma, Jincal	134	1668
Ma, Jincal	178	2017
Ma, Jincal	096	1038
Ma, Maria	120	1411
Ma, Qiao	026	296
Ma, Qiao	135	1692
Ma, Yanhe	176	1982
Maaty, Walid	078	
Mababangloob, R.	043	537
Mabayaje-Bali, Olabisi	056	759
MacCannell, Duncan	012	37
MacDonald, Kathryn	090	923
MacDonald, Luke	107	1247
Macgibbon, Mary	167	1840
Machen, Alexandra	194	2231
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MacIntyre, Morgan	165	1797
Mack, E. Erin	WS-01	
Mack Correa, Catherine	197	2313
Mackey, Tami-Lea	195	2254
Mackey, Tami-Lea	195	2264
Mackey, Tami-Lea	016	135
Mackey, Tami-Lea	196	2286
Mackie, Roderick	024	258
MacLean, Jessica	053	698
Macomber, Lee	051	667
MacRae, Jean	151	
Macrae, Jean	057	774
Madanahally Divakar, Kiran	199	2350
Madan-Lala, Ranjna	071	
Madayag, Carmela	060	823
Madden, Andrew	134	1679
Maddocks, Oliver	230	
Madison, Bereneice	187	
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Madsen, Eugene	175	1957
Madson, Matthew	132	1633
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Maeda, Allyn	134	1669
Maeda, Toshinari	125	1494
Maes, Nyree	033	413
Maestre, Juan	105	1179
Magalhães, Paula	130	1577
Magalhães, Paula	087	873
Magerman, Koen	044	557
Magerman, Koen	016	119
Magers, Martin	090	919
Maggiore, Maria	115	1330
Magnette, Amandine	015	106

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Magnusson, Lauren	177	2005	Maloy, Stanley	127	1533	Marcon, Mario	017	141
Mahajan, Rishi	180	2056	Maltz, Michele	049	635	Marcon, Mario	WS-22	
Mahal, Lara	165	1795	Maluta, Renato	116	1339	Marcos-Zambrano, Laura	199	2346
Mahalaxmi, Boopathi	106	1206	Maluta, Renato	185	2149	Marcotte, Edward	077	
Mahale, Dilip	120	1428	Malvankar, Nikhil	209	2504	Marcotte, Harold	170	1889
Mahapatra, Seababrata	143		Mammel, Mark	123	1466	Mares, Chris	169	1873
Mahendra, Shaily	211	2567	Mammel, Mark	208	2488	Mares, Steve	108	1249
Mahlmeister, Margaret	194	2230	Mammel, Mark	137	1722	Marezzo, Anthony	120	1427
Mahlmeister, Margaret	090	923	Mammel, Mark	027	311	Mari, Bernard	169	1866
Mahmoud, Ahmed	193	2208	Manafa, Patrick	060	820	Marin, Roman	052	692
Mahmudi, Mentar	011	4	Mancinelli, Livia	194	2227	Marino Cardenas, Yobana	049	636
Mahnert, Alexander	054	718	Mancini, Jonathan	043	543	Marino-Marmolejo, Erika	107	1226
Mahoney, Chelsea	200	2365	Mandadi, Kranthi	214	2621	Marion, Jon	196	2273
Mahony, James	033	416	Mandel, Mark	139		Markert, Stephanie	050	648
Mahony, James	116	1348	Mandernack, Kevin	129	1560	Markham, N.O.	123	1459
Mai, Tony	097	1053	Mandrekar, Jay	090	929	Markham, Rachelle	167	1838
Mai, Volker	197	2292	Mandrekar, Jay	044	566	Markley, Andrew	103	1134
Maiden, Martin	182	2095	Mandrekar, Jayawant	166	1821	Markovaite, Beatrice	095	1017
Maier, Raina	028	331	Mandrekar, Jayawant	114	1310	Markowitz, Norman	033	412
Maier, Raina	029	347	Mandrekar, Jayawant	022	235	Marks, Ann	131	1603
Maier, Robert	051	677	Mandrekar, Jayawant	201	2379	Marks, Jane	131	1603
Maillard, Ivan	093	988	Mandrell, Robert	130	1589	Marks, Kala	206	2444
Maillard, Jean-Yves	011	8	Mandrell, Robert	104	1147	Marks, Timothy	127	1525
Maillard, Jean-Yves	039	460	Mandrell, Robert	040	484	Marlowe, Elizabeth	WS-12	
Maillard, Renaud	062	843	Mandrell, Robert	130	1579	Marques, Andrea	119	1402
Mailoux, Brian	106	1207	Mandrell, Robert	040	477	Marques, Claudia	096	1039
Mainelis, Gediminas	105	1173	Mandrell, Robert	182	2090	Marques, Claudia	042	512
Mainelis, Gediminas	105	1177	Maness, Alexander	013	57	Marques, João	202	2388
Mair, Richard	114	1312	Maness, Pin-Ching	177	2005	Marques, Lucas	120	1419
Maira-Litrán, Tomás	100	1096	Manges, Amee	025	274	Marques, Lucas	122	1453
Maira-Litrán, Tomás	012	46	Mangold, Kathy	044	552	Marques, Lucas	122	1452
Majerczyk, Charlotte	141		Maniscalco, Michael	051	681	Marques, Nolwenn	033	400
Majors, Michael	016	115	Manji, Ryhana	016	122	Márquez, Edna	102	1119
Majumdar, Manasi	044	567a	Manji, Ryhana	015	101	Marras, Theodore	183	2123
Majumder, Sanjukta	122	1450	Manji, Ryhana	090	927	Marriott, Susan	WS-09	
Mak, Mae-Ling	060	823	Manji, Ryhana	167	1835	Marriott, Susan	WS-09	
Makam Surendraiah, Pavan Kumar	118	1383	Manji, Ryhana	016	121	Marrs, A.	194	2232
Makarov, Vladimir	182	2089	Manji, Ryhana	167	1836	Marsh, Christina	170	1902
Makhluif, Huda	214	2616	Mann, Ethan	023	242	Marshall, Christopher	177	1996
Maki, James	030	365	Mann, Linda	017	139	Marshall, Darrell	073	
Makin, Jacob	015	104	Manning, Shannon	193	2209	Marshall, Douglas	206	2457
Malanoski, Anthony	209	2510	Manning, Shannon	025	277	Marshall, Jason	210	2553
Malanoski, Anthony	209	2512	Manning, Shannon	019	200	Marshall, Pamela	059	804
Maldonado, Kelibeth	132	1635	Manning, Shannon	012	33	Marshall, Sergio	182	2103
Maldonado, Luis	095	1022	Manoil, Colin	125	1496	Marston, Marcie	127	1524
Maldonado, Luis	134	1684	Manoil, Colin	011	22	Martens, Eric	130	1576
Maldonado, Myra	044	564	Manoj Kumar, M.	137	1731	Martin, Anandi	109	1272
Maldonado, Myra	044	562	Manoj Kumar, Mohan	208	2496	Martin, David	122	1449
Maldonado, Yanice	194	2223	Manoj Kumar, Mohan Nair	104	1166	Martin, Ebony	050	650
Malespin-Bendaña, Wendy	185	2154	Mansfield, Elisabeth	181	2073	Martin, Francis	205	2436
Malfatti, Stephanie	176	1981	Mansfield, Linda	198	2327	Martin, Gilles	147	
Malfatti, Stephanie	205	2437	Mansfield, Linda	012	33	Martin, Keely	104	1154
Malfatti, Stephanie	031	368	Manter, Daniel	147		Martin, Mark	034	424
Malfatti, Stephanie	031	373	Mantis, Nicholas	121	1435	Martin, Nicole	178	2008
Malhotra, Savita	061	832	Manzella, Michael	134	1680	Martin, Stanton	103	1143
Malik, Ankit	198	2327	Mar, Jordan	197	2300	Martin Dos Santos, Vitor	088	885
Malik, Huma	089	897	Maragiri, Sheetal	206	2440	Martineau, Nicole	205	2428
Malik, Meenakshi	092	957	Marak, Rungmei	199	2336	Martinez, Alfredo	051	680
Malik, Meenakshi	092	962	Maranas, Costas	073		Martinez, Asuncion	175	1969
Malik, Meenakshi	018	168	Marc, Frederic	033	400	Martinez, Bismarck	178	2021
Malik, Meenakshi	092	975	Marcelino, Isabel	169	1866	Martinez, Charles	019	203
Malkawi, Hanan	211	2574	Marcelino, Isabel	169	1871	Martinez, Dominique	169	1866
Malkin, Gene	137	1731	Marcell, Jarrad	066		Martinez, Fernando	195	2246
Malkin, Gene	208	2496	Marcell, Jarrad	101	1111	Martinez, Keith	099	1085
Malkowski, Michael	165	1779	March, Jordon	016	118	Martinez, Keith	125	1482
Malkowski, Michael	013	71	March, Paul	094	996	Martinez, Laura	172	1924
Malkowski, Michael	041	505	Marchand, Arnaud	087	871	Martinez, Lorene	183	2106
Malla, Nancy	061	832	Marchand, Genevieve	107	1224	Martinez, Luay	013	61
Mallard, Frédéric	168	1853	Marchiori, Ana	204	2416	Martinez, Luis	092	956
Malone, Alyssa	183	2119	Marco, Maria	182	2091	Martinez, Luis	093	981
Malone-Lee, James	018	162	Marcon, Mario	017	150	Martinez, Melween	214	2613
Malone-Lee, James	015	112	Marcon, Mario	016	136	Martinez, Merylin	179	2049
Maloney, Courtney	089	913	Marcon, Mario	160		Martinez, Myrna	127	1533
Maloney, Katherine	205	2434	Marcon, Mario	044	553	Martinez, Noelle	053	695
Maloy, Stanley	127	1528	Marcon, Mario	WS-22		Martinez, Raquel	015	111

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Martinez, Stacy	106	1213	Matsuo, Junji	095	1015	McClelland, Michael	040	463
Martinez, Violet	108	1258	Matsuo, Junji	169	1862	McClelland, Michael	137	1728
Martinez, Celida	040	464	Matsuo, Junji	092	958	McClure, Erin	025	284
Martinez, Celida	040	462	Matsuo, Junji	135	1704	McClure, Jason	016	117
Martinez, Célida	094	997	Matsuo, Junji	111	1307	McClure, Jason	167	1832
Martinez, Leticia	105	1178	Matsushita, Kazunobu	094	994	McClure, Peter	039	460
Martinez Bastidas, Talia	210	2551	Matsuzaki, Kaoru	044	560	Mccluskey, Diana	104	1171
Martinez Becerra, Francisco	170	1895	Matte, Sonia	166	1806	McConnell, Jennifer	131	1600
Martinez Cruz, Yaneli	209	2530	Matte, Sonia	166	1805	McCormick, Joseph	048	625
Martinez de la Peña, Claudia	045	579	Matté, MariaHelena	016	124	McCoy, Adam	179	2046
Martinez Rodriguez, Celida	210	2551	Matthews, Hunter	212	2577	McCoy, Colin	195	2261
Martinez-Becerra, Francisco	116	1350	Matthews, Sarah	053	700	McCoy, Connor	168	1855
Martinez-Morales, Fernando	026	300	Matthias, Kathryn	014	78	McCoy, Felicity	061	831
Martinez-Ramos, Inmaculada	088	885	Matthysse, Ann	130	1564	McCoy, Morgan	090	932
Martinez-Urtaza, Jaime	137	1726	Matulich, Kristin	129	1552	McCoy, Morgan	032	393
Martinez-Urtaza, Jaime	040	464	Matushek, Scott	195	2248	McCoy, Morgan	043	539
Martinez-Urtaza, Jaime	094	997	Matvienko, Marta	094	991	McCrann, Grace	120	1404
Martinez-Vaz, Betsy	049	632	Maul, Andrew	025	278	McCue, Lee Ann	024	271
Martino, Marinês	119	1402	Maurelli, Anthony	041	501	McCulloch, Peter	043	542
Martino, Marinês	015	99	Mauro, Steven	052	685	McCunn, Nicole	016	117
Martin-Platero, Antonio	228		Mawhinney, Thomas	065		McDaniel, Larry	049	639
Martins, Hellen	122	1452	Mawhinney, Thomas	087	868	McDermott, Andrew	198	2320
Martins, Hellen	120	1419	Maxwell, Charles	203	2400	McDonald, Daniel	WS-20	
Martinson, David	040	486	Maxwell, Karen	076		McDonald, Daniel	204	2405
Martiny, Jennifer	129	1552	May, Gregory	019	191	McDonald, Daniel	025	278
Marusenko, Yevgeniy	206	2453	May, Harold	177	1996	McDonald, Daniel	031	391
Maruyama, Fumito	182	2099	May, Meghan	122	1442	McDonald, Daniel	025	284
Maruyama, Fumito	182	2100	May, Meghan	228		McDonald, Jane	016	123
Marvasi, Massimiliano	034	427	May, Meghan	122	1455	McDonald, Kent	146	
Marvin, Rachel	058	798	May, Rhea	181	2080	McDonald, Marian	189	
Masai, Eiji	050	656	May, Rhea	201	2374	McDonald, Roderick	198	2320
Maserati, Alice	130	1590	Mayer, Christen	096	1048	McDonough, EmilyKate	040	478
Masiello, Stephanie	178	2008	Mayer, Leonard	012	37	McDonough, Pauline	061	836
Maskey, Mitu	119	1400	Mayer, Marcia	018	166	McDonough, Virginia	100	1106
Maslov, Sergei	212	2585	Mayhew, John	166	1814	McDonough, Virginia	100	1102
Mason, Carl	184	2137	Maynard, Ernest	040	481	McDuffie, Larin	111	1304
Mason, Carl	185	2151	Mayo, Mark	182	2096	McElmeel, Maria	087	857
Mason, Carl	163	1756	Mayo, Mark	184	2132	McElvania TeKippe, Erin	015	103
Mason, Carl	214	2609	Mayo-Smith, Leslie	182	2097	McEwen, Jordan	073	
Mason, Carl	117	1363	Mazmanian, Sarkis	197	2305	McFall-Ngai, Margaret	113	
Mason, Carl	231	LB-16	Mazmanian, Sarkis	197	2303	McFall-Ngai, Margaret	001	
Masse, Eric	226		Mbacha, Magaret	163	1743	McFarland, Amanda	119	1389
Masseti, Barbara	195	2265	Mbamalu, Chinenye	060	820	McFarland, Melinda	104	1157
Massey, Laura	104	1148	McAdam, Alexander	162		McGarrell, Donna	212	2584
Massey, Rebecca	193	2216	McAlice, Meghan	106	1216	McGarvey, Jeffery	109	1275
Massey, Steven	031	369	McAllister, Jared	111	1304	McGee, Lesley	039	436
Massie-Schuh, Ella	040	466	McAllister, Steven	061	829	McGibbon, Louise	077	
Mast, L.	194	2232	Mcanulty, Jared	021	216	McGill, Brenton	130	1576
Master, R.N.	183	2112	McArthur, Carole	194	2239	McGillivray, Amanda	018	163
Matangkasombut, Oranart	090	928	McArthur, Carole	199	2335	McGlone, Megan	095	1018
Matar, Ghassan	114	1318	McArthur, Carole	183	2128	McGowan, Karin	199	2347
Matar, Ghassan	118	1373	McAvoy, Tom	197	2297	McGowin, Chris	122	1449
Matar, Somer	057	770	McBee, Megan	109	1264	McGowin, Chris	122	1443
Matar, Somer	057	766	McBee, Megan	109	1274	McGrane, Regina	096	1025
Mathai, Prince	030	365	McBride, Jere	018	176	McGuinness, Lora	057	762
Mathan Kumar, R.	024	259	McBride, Mark	110	1292	McGuire, Christian	210	2549
Mather, Cheryl	194	2226	McBride, Mark	098	1068	McInnis, Patrick	131	1598
Mathew, Bindu	118	1372	McBride, Ronita	090	919	McKay, Larry	106	1207
Mathew, Meril	169	1867	McBride, Shonna	219		McKay, Rusty	180	2058
Mathews, Stephanie	056	747	McCabe, Kevin	017	146	McKean, Lauren	047	614
Mathey, Raphaël	168	1853	McCalley, Carmody	129	1550	McKee, Robert	014	75
Mathieu, Jacques	057	787	McCallister, Eric	108	1249	McKeithen, Danielle	046	593
Mathieu, Jacques	169	1858	McCann, Chase	166	1827	McKeithen, Danielle	018	173
Matos, Andrea	039	446	McCarter, Linda	202	2392	McKelvey, Ann	040	481
Matsen, Frederick	228		McCarthy, Mary	011	16	McKelvey, Jessica	040	487
Matsen, Frederick	168	1855	McCarthy, Mary	097	1055	McKenney, Elizabeth	042	524
Matson, Eric	204	2412	McCarthy, Samuel	171	1905	McKenzie, Valerie	204	2408
Matson, Jyl	150		McCarver, Addison	020	207	Mckeown, Kate	093	989
Matsui, H.	166	1816	McCauley, Steve	132	1617	McKinlay, James	125	1485
Matsui, Hidehito	167	1829	McChesney, Daniel	203	2397	McKinney, Julie	027	313
Matsui, Kazuma	139		McChesney, John	122	1441	McKinnon, Leslie	204	2415
Matsui, Kazuma	103	1136	McCleary, William	019	183	McLain, Jeannie	178	2012
Matsukawa, Mariko	045	568	McCleary, William	019	204	McLaughlin, Stephen	031	385
Matsumoto, Eric	193	2205	McClelland, Michael	019	186	McLean, Joan	205	2428
Matsumoto, Narumi	023	250	McClelland, Michael	182	2088	McLean, Joan	205	2423

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McLellan, Lisa	050	659	Men, Yujie	134	1674	Michaels, Dina	122	1442
McLellan, Sandra	106	1195	Mena-Nevarez, Gustavo	178	2016	Michaels, Dina	122	1455
McLellan, Sandra	037		Ménard, Christian	043	545	Michel, Amaury	137	1729
McLoughlin, Kevin	168	1849	Ménard, Christian	168	1848	Micheletto, Ruggero	134	1669
McMahon, Donald	178	2015	Ménard, Christian	168	1852	Micheva-Viteva, Sofiya	088	892
McMahon, Katherine	081		Menchaca, Griselda	033	414	Michiels, Jan	165	1781
McMahon, Stephanie	089	900	Mendes, Edilberto	130	1577	Michiels, Jan	096	1026
McManus, Edward	060	818	Mendez-Perez, Daniel	096	1044	Michiels, Jan	077	
McManus, Steven	048	621	Mendis, Nilmini	117	1366	Michiels, Jan	087	871
McMillan, Ian	045	585	Mendonça, Nuno	126	1513	Mickey, Abigail	210	2544
McMinds, Ryan	102	1128	Mendoza, Guillermo	054	723	Middleton, June	132	1616
McMinn, Brian	179	2025	Mendoza, Jose	181	2067	Mielenz, Jonathan	103	1143
McMinn, Brian	107	1241	Meneses, Juan	054	723	Mielke, Cindy	196	2282
McMullen, P.	018	164	Meng, Jianghong	130	1575	Miezeiewski, Matthew	231	LB-13
McNamara, Sharon	011	2	Meng, Jianghong	182	2087	Miezeiewski, Matthew	089	909
McNealy, Tamaraa	164	1766	Meng, Ting	130	1570	Miick, Ronald	195	2250
McNeil, Michael	109	1273	Meng, Ting	185	2149	Mikelsaar, Marika	170	1889
McNeil, Michael	058	789	Mengistie Simeneh, Zemenu	167	1831	Mikhail, Sandra	132	1636
McNulty, Steven	183	2125	Menichella, Donato	194	2227	Mikkelsen, Steffen	094	991
McQuade, Thomas	065		Menon, Rani	197	2316	Mikoleit, Matthew	137	1728
McQueen, Matt	031	382	Menon, Rani	178	2013	Mikulski, Zbigniew	197	2303
McQueen, Nancy	214	2618	Mentzel, Hans-Joachim	119	1391	Milenkovic, Marina	095	1007
McQueen, Nancy	108	1258	Mera, Paola	125	1491	Milenkovic, Marina	124	1473
McQuilken, Molly	200	2359	Mercado, Benjamin	021	216	Miles, Jessica	169	1878
McUsic, Andrew	182	2089	Mercado, Benjamin	025	286	Millan, Maria	218	
McVaugh, William	126	1507	Mercado, Roberto	017	156	Millar, Angela	182	2103
McVeigh, Lindsay	196	2269	Meredith, M.M.	123	1459	Millar, Jess	180	2054
McWilliams, Carla	044	559	Merid, Sosina	208	2488	Millen, Hana	179	2037
Mead, David	055	740	Merino, Fernando	028	340	Miller, Allyssa	021	216
Mead, David	031	372	Merino, Kristen	121	1433	Miller, Charles	133	1646
Mead, David	196	2282	Merino-Rafael, Fernando	057	777	Miller, Charles	026	298
Mead, Paul	137	1723	Merkel, Tod	144		Miller, Christopher	102	1126
Meadow, James	151		Merkel, Tod	156		Miller, Clarice	088	879
Meadows, Jamie	014	77	Merkel, Tod	156		Miller, Erica	051	677
Meagher, Robert	031	389	Merlin, Toby	159		Miller, Halie	140	
Medic, Velinka	198	2322	Merrell, D.	040	483	Miller, J Michael	137	1733
Medina, Audrie	011	14	Merrell, D.	040	481	Miller, James	165	1786
Medina, Eulalia	115	1328	Merrell, D. S.	165	1794	Miller, James	165	1787
Medina, Raul	136	1717	Merrell, D. Scott	197	2297	Miller, Jarett	057	770
Medina-Mendoza, Fernando René	131	1611	Merriam, David	032	395	Miller, Jarett	057	766
Medina-Rivera, Mariely	120	1406	Merrick, Daniel T.	166	1813	Miller, Jeff	001	
Medina-Soltero, Martha Rocío	214	2612	Merriman, Joseph	018	171	Miller, Jeff	197	2305
Medina-Soltero, Martha Rocío	214	2610	Mesa, Michael	166	1814	Miller, Jeffery	197	2305
Medrano, Enrique	040	472	Meschke, John	181	2068	Miller, Jessa	116	1346
Medrano-Félix, Andrés	094	997	Meschke, John	136	1710	Miller, Kelly	146	
Meece, Jennifer	062	842	Meschke, John	181	2079	Miller, Kenneth	179	2031
Meece, Jennifer	016	125	Meschke, John	208	2499	Miller, Kurt	208	2493
Meganathan, R.	099	1091	Meschke, Scott	179	2050	Miller, Laura	202	2383
Meggersee, Rosemary	039	435	Mesfin, Muluye	016	113	Miller, Laurence	028	326
Mégraud, Francis	185	2154	Meshnick, Steven	061	830	Miller, Mark	016	123
Mehalik, Lauren	210	2544	Messick, Joanne	122	1451	Miller, Melissa	016	126
Mehlhorn, T.	028	332	Messonnier, Nancy	184	2130	Miller, Melissa	WS-19	
Mehlhorn, Tonia	024	265	Metcalfe, Jessica	WS-20		Miller, Melissa	WS-19	
Mehra, Smriti	018	163	Metlagel, Zoltan	050	649	Miller, Melissa	138	
Mehta, Rajesh	196	2284	Metruccio, Matteo	169	1874	Miller, Melissa	WS-19	
Mehta-Kolte, Misha	024	256	Metz, Zachary	130	1590	Miller, Michael	033	404
Meier, Courtney	101	1111	Metz, Zachary	131	1613	Miller, Michael	027	321
Meier, Frederick	195	2266	Metzger, Dennis	041	500	Miller, Michael	192	2198
Melano, Roberto	231	LB-04	Metzger, Steve	117	1358	Miller, Michael	127	1536
Meldrum, Deirdre R.	181	2078	Meyer, Birte	125	1495	Miller, Michael	011	11
Melendez, Dante	168	1844	Meyer, Damien	169	1866	Miller, Michael	146	
Melendrez, Melanie	214	2609	Meyer, Damien	169	1871	Miller, Rachel	178	2008
Melka, David	130	1571	Meyer, Folker	212	2585	Miller, Samuel	098	1071
Melka, David	061	824	Meyer, Folker	212	2577	Miller, Samuel	172	1925
Mell, Joshua	200	2370	Meyer, Philip	131	1608	Miller, Scott	154	
Mellies, Jay	014	84	Meyer, Stephen	183	2124	Miller, Scott	154	
Mello, Roberta	231	LB-10	Meyer, Stephen	183	2119	Miller, Shelley	017	143
Melnyk, Ryan	050	649	Meyerhoff, Mark	114	1314	Miller, Stephen	202	2388
Melnyk, Ryan	050	647	Meyers, Danielle	186	2162	Miller, Steve	040	479
Melnyk, Ryan	134	1675	Meza, Jose Domingo	184	2140	Miller, Virginia	120	1413
Melo-Perez, Flor	180	2052	Mezal, Ezat	089	911	Miller, William	094	995
Melton, Patricia	195	2240	Miao, Edward	149		Miller, William	130	1579
Melton-Celsa, Angela	089	910	Miazga-Rodriguez, Misha	054	731	Miller, William	182	2090
Melton-Celsa, Angela	192	2199	Micallef, Shirley	130	1573	Miller, Zachary	061	824



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Milligan, Peter	062	839	Mobley, Harry	013	72	Moore, Donald	097	1054
Milling, Annett	088	884	Mobley, Harry	013	53	Moore, Frances	062	842
Milling, Annett	050	661	Mobley, Harry	116	1346	Moore, Frank	023	247
Millman, Jack	131	1603	Mobley, Harry	140		Moore, Theodore	125	1491
Miller, Patricia	131	1609	Mobley, Harry	014	85	Moore, Vickie	163	1753
Mills, Chris	129	1560	Mobley, Harry	170	1885	Moormeier, Derek	023	242
Mills, David	222		Mobley, Harry	065		Moormeier, Derek	073	
Mills, David	222		Mobley, Harry	041	499	Moormeier, Derek	193	2207
Mills, Melissa	124	1472	Mobley, Harry	014	95	Mora, Vanessa	092	957
Milne, Debra	194	2224	Mobley, Yuvon	074		Mora, Yannet	141	
Milsted, Amy	029	345	Mocca, Brian	169	1880	Morales, Adelaida	170	1896
Mimms, Larry	016	117	Mochon, A	015	101	Morales, Oneida	185	2153
Mimms, Larry	167	1832	Mochon, A	017	146	Morales, Sergio	206	2442
Min, Jiho	181	2074	Mochon, Brian	016	122	Morales Colon, Emely	107	1228
Min, Ga-Young	042	519	Mochon, Brian	167	1835	Morales-Cabrera, Miguel	107	1226
Min, Ga-Young	042	518	Mochon, Brian	090	927	Morales-Soto, Nydia	014	80
Min, Jiho	150		Mochon, Brian	016	121	Morales-Soto, Nydia	172	1928
Min, Jiho	125	1500	Mochon, Brian	167	1836	Moran, James	221	
Min, Jiho	225		Moeller, John	012	30	Morando, Michael	053	704
Min, Jiho	133	1650	Moens, Catherine	111	1306	Morasas, Sébastien	043	545
Min, Jiho	177	2002	Moerke, Jennifer	011	16	Mordvinov, Yevgeniy	048	620
Min, Jiho	059	799	Moerschel, Barbara	166	1814	Moreaux, Shannon	186	2170
Min, Jiho	134	1685	Mogen, Nichole	028	339	Moreno, Alana	091	942
Min, Kyung Bae	041	497	Mohamed, Abdelrahman	196	2290	Moreno, Soledad	019	184
Mina, Elin	042	512	Mohammadi, Mojtaba	014	82	Moreno Herrera, Claudia	102	1119
Minagawa, Shu	202	2395	Mohammadkhah, Ali	011	3	Moreno-Gonzalez, Janette Guadalupe	214	2612
Minagawa, Shu	045	568	Mohammed, Kawthar	115	1324	Moreno-Gonzalez, Jannette	033	406
Minard-Smith, Angela	057	776	Mohan, Ritika	124	1475	Morgan, Mark	131	1607
Minbiole, Kevin	128	1545	Mohan, Dipu	092	969	Morgan, Richard	182	2095
Mingle, Lisa	015	110	Mohar, Bradley	103	1140	Morgan, Richard	012	50
Mingle, Lisa	060	815	Mohn, William	053	709	Morgan-Linnell, Sonia	WS-09	
Minocha, Udit	131	1608	Moineau, Sylvain	222		Mori, Hirotada	019	197
Minton, Nigel	041	502	Moineau, Sylvain	076		Morii, Daiichi	018	169
Minton, Nigel	219		Moir, Donald	005		Morimoto, Norihito	021	217
Miraglia, Loren	059	805	Moisan, P	186	2168	Morino, Masato	099	1088
Miranda, E	199	2353	Mokadas, Iman	168	1843	Morisaka, Hironobu	103	1136
Miranda, Pilar	110	1296	Mokadas, Iman	166	1804	Morisaka, Hironobu	125	1489
Mirza, Samia	183	2123	Moldovan, Ioana	231	LB-07	Morisaka, Hironobu	139	
Mirza, Shaper	120	1417	Molina, Jorge	049	640	Morlen, Ryan	167	1833
Mishra, Krishna	116	1341	Molina, Marirosa	107	1237	Mormile, Melanie	055	743
Mishra, Pamela	213	2600	Molina-Castro, Silvia	185	2154	Mormile, Melanie	028	337
Mishra, Priyanka	168	1841	Momeni, Stephanie	087	865	Mormile, Melanie	072	
Missiakas, Dominique	165	1799	Moncayo, A	015	96	Morou-Bermudez, Evangelia	095	1003
Mitchell, Aaron	218		Mondav, Rhiannon	129	1550	Morovic, Wesley	213	2601
Mitchell, Andrew	111	1300	Monecke, Stefan	118	1387	Morowitz, Michael	197	2293
Mitchell, Cecile	211	2575a	Moneke, Annie	026	291	Morozov, Aleksey	096	1039
Mitchell, Jim	053	697	Mongiardo, Krystin	120	1424	Morris, Brad	130	1591
Mitchell, Kara	060	815	Monroy, Fernando	165	1780	Morris, J	137	1724
Mitchell, Kendra	053	709	Monson, Rita	022	228	Morris, Justin	048	625
Mitchell, Kristie	088	887	Monson, Kristine	195	2240	Morris, Pam	037	
Mitchell, Ralph	176	1973	Mønsted, Søren	094	991	Morris, Robert	209	2512
Mitchell, Ralph	179	2029	Montalbano, Dana	172	1913	Morris, Robert	209	2511
Mitchell, Thomas	186	2157	Montalvo-Rodriguez, Rafael	020	211	Morris, Vernon	107	1231
Mitra, Raka	050	661	Montalvo-Rodriguez, Rafael	020	205	Morris, Vernon	105	1174
Mitra, Shubhajit	092	968	Montalvo-Rodriguez, Rafael	020	208	Morrison, Donald	076	
Mittal, Balraj	090	937	Montano, Alexandra	033	408	Morrison, Donald	123	1460
Mitui, Midori	017	153	Montaño, Reyna	030	358	Morrison, Hilary	049	635
Miura, Koshiro	092	969	Monte, Christopher	126	1512	Morrison, Jessica	050	655
Miura, Takamasa	204	2417	Monteagudo-Mera, Andrea	204	2406	Morrison, John	168	1847
Miura, Takamasa	094	992	Monteghirfo, Mario	126	1504	Morrow, Jayne	179	2047
Mixson-Hayden, Tonya	204	2420	Monteil, Martine	062	843	Morrow, Jayne	212	2592
Miyake, Hideo	103	1139	Monteiro, Jussimara	231	LB-10	Morrow, Rhoda	153	
Miyake, Hideo	103	1136	Montenegro-Garcia, Natalia	209	2518	Morsi, M	033	402
Miyanaga, Kazuhiko	132	1640	Montes-Gómez, Alfredo	033	406	Mortensen, Eric	018	175
Miyashiro, Tim	WS-05		Montes-Matias, Marie	191	2180	Mortensen, Joel	016	120
Miyashiro, Tim	218		Montgomery, Joel	142		Morton, Daniel	041	504
Miyoshi-Akiyama, Tohru	019	182	Montgomery, Kelsey	102	1121	Morton, Daniel	041	496
Miyoshi-Akiyama, Tohru	182	2082	Montgomery, Sandra	016	120	Morton, Daniel	041	490
Miyoshi-Akiyama, Tohru	016	134	Montinaro, V	117	1359	Mosci, Rebekah	025	277
Mizrahi, Boaz	170	1893	Montoya, Jimmy	194	2224	Mosci, Rebekah	012	33
Mizuuchi, Kiyoshi	227		Montoya, Olga	102	1119	Moser, Claus	092	953
Montadenov, Natalie	175	1960	Montserratt, Javier	028	330	Moser, Michael	196	2282
Moazzez, Rebecca	176	1975	Moon, Jay	192	2192	Mosher, Jennifer	054	721
Moberly, James	024	266	Moon, Jinsan	104	1156	Mosier, Aaron	029	344

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Mosovsky, Kara	115	1327	Muratori, Frederic	096	1026	Nagy, Elizabeth	132	1628
Moss, Nancy	167	1834	Murdoch, Caitlin	050	653	Nahass, Ronald	061	836
Mosse, Charles	219		Muriel, Luis	019	184	Nahass, Ronald	060	818
Mossine, Valeri	065		Murind, Shelton	107	1235	Nahass, Thomas	060	818
Mostowy, Serge	063		Murinda, Shelton	186	2161	Nahm, Moon	164	1773
Mostowy, Serge	063		Murowchick, Pamela	181	2071	Nahm, Moon	165	1791
Motaleb, M.D.	146		Murphy, Cheryl	182	2084	Nahm, Moon	184	2131
Motin, Vladimir	088	892	Murphy, Madigan	133	1661	Nahm, Moon	008	
Motiwalla, Alifiya	040	474	Murphy, Michael	013	68	Nahm, Moon	008	
Motoigi, Taro	019	201	Murphy, Michael	013	69	Naidu, Mayuri	078	
Motomura, Kei	026	288	Murphy, Timothy	013	71	Naidu, Mayuri	025	280
Mott, Brittny	198	2323	Murphy, Timothy	170	1892	Nair, Raj	137	1725
Mott, Joanna	106	1194	Murphy, Timothy	165	1779	Nair, Rajeshwari	185	2144
Mott, Mariana	118	1382	Murphy, Timothy	182	2093	Nair, Rajeshwari	118	1378
Mou, Kathy	088	875	Murphy, Timothy	182	2083	Najar, Fares	211	2568
Mou, Xiaozhen	175	1955	Murphy, Timothy	041	505	Nakae, Taiji	167	1829
Mougeot, Farah	196	2289	Murrah, Kyle	164	1773	Nakagawa, Ichiro	182	2099
Mougeot, Jean-Luc	196	2289	Murrah, Kyle	193	2214	Nakagawa, Ichiro	182	2100
Moulton, Karen	034	425	Murray, Alison	221		Nakai, Katsuya	045	568
Moulton, Kevin	033	417	Murray, Clinton	114	1319	Nakamura, Shinji	095	1015
Moumene, Amal	169	1871	Murray, Patrick	039	442	Nakamura, Shinji	169	1862
Moura, Hercules	015	98	Murray, Sean	141		Nakamura, Shinji	111	1307
Mouser, Paula	057	774	Murray, Thomas	195	2253	Nakano, Chieri	125	1494
Mouser, Paula	151		Murrell, J. Colin	053	699	Nakano, Motoki	011	25
Moussa, Nihal	164	1769	Murugesan, Latha	130	1572	Nakaoka, Karen	180	2057
Moustaid-Moussa, Naima	131	1593	Muruvanda, Tim	130	1571	Nakaoka, Karen	132	1642
Movahedi, Narjes	179	2033	Muruvanda, Tim	012	49	Nakaoka, Karen	030	359
Movassaghi, Miyad	034	425	Musser, Kimberlee	168	1850	Nakata, Masanobu	018	165
Moyer, Craig	024	262	Musser, Kimberlee	015	110	Nakayashiki, Toru	019	197
Moynihan, Patrick	023	249	Musser, Kimberlee	137	1721	Nam, Soo	107	1221
Mozola, Mark	104	1168	Musser, Kimberlee	194	2236	Nambu, Mami	139	
Mozola, Mark	104	1149	Musser, Kimberlee	039	436	Namdari, Hassan	163	1737
Mu, Lili	231	LB-14	Musser, Kimberlee	060	815	Naniong, Mark	212	2593
Mu, Xiaozheng	116	1333	Musser, Steven	104	1157	Nanjundaswamy, Ananda	026	292
Mueller, Andrea	039	447	Musser, Steven	012	49	Napier, Brooke	039	456
Mueller, Lukas	212	2587	Mustachi, Beulah	195	2251	Napierala, Maureen	117	1362
Mueller-Spitz, Sabrina	210	2541	Mustafa, Abu	170	1884	Napierala, Maureen	043	536
Mueller-Spitz, Sabrina	128	1540	Mustafi, Sushmita	092	972	Napierala, Maureen	043	535
Mühler, Norman	119	1391	Mustful, Melanie	050	661	Naqvi, Nuha	052	684
Mukaizawa, Natsuko	012	43	Mutangadura, Tendai	122	1444	Narayanasamy, Prabakaran	022	229
Mukheiber, Romy	118	1373	Muzammil, Hafiz Shahzad	027	314	Nardelli, Dean	198	2322
Mukherjee, Arnab	124	1475	Muzyka, Denys	184	2139	Narganes, Yvonne	025	275
Mukhopadhyay, Aindrila	213	2605	Muzyka, Denys	110	1294	Narihiro, Takashi	209	2522
Mukhopadhyay, Biswarup	126	1507	Mwawasi, Ken	116	1348	Narita, Kaori	200	2357
Mukhopadhyay, Kasturi	039	454	Mwawasi, Ken	033	416	Narra, Hema	169	1868
Mukundan, Santhosh	014	81	Myagmarjav, Bat-Erdene	200	2367	Narrowe, Adrienne	197	2312
Mulet, Xavier	088	885	Myer, Phillip	181	2076	Narrowe, Adrienne	102	1126
Mullan, Mark	125	1488	Myer, Zachary	040	482	Narvaez, Maria	099	1085
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Parampal, Deol	194	2231
Paranavitana, Chrysanthi	011	9
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Paredes-Sabja, Daniel	208	2494
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Parent, Leslie	078	
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Pargett, Douglas	052	692
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Park, Cheon-Seok	020	215
Park, Connie	039	436
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Park, Hee-Deung	054	728
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Park, Hye Hun	210	2539
Park, Jason	017	153
Park, Jong-Dae	201	2380
Park, Joong-Wook	106	1210
Park, Joonhong	105	1176
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Park, Ju Yeon	180	2063
Park, Junho	104	1156
Park, Jun-Ho	130	1568
Park, Ju-Yong	133	1650
Park, Ju-Yong	150	
Park, Kyonam	105	1180
Park, Kyung Hwa	117	1368
Park, M.	031	383
Park, Mahin (May)	194	2231
Park, Mi	013	60
Park, Min	059	811
Park, Mi-Sun	183	2126
Park, Na-Young	042	519
Park, Na-Young	042	518
Park, Sangcheol	212	2581
Park, Sang-Hee	183	2126
Park, sangjung	052	693
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Park, Seong Hwa	033	419
Park, Seonghwan	209	2525
Park, Shinyoung	133	1648
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Park, Si Hong	104	1152
Park, Soohyun	103	1132
Park, So-Yeon	170	1890
Park, Sujeong	029	348
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Park, SungJun	210	2539
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Park, Woojun	213	2595
Park, Woojun	134	1666
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Parker, Albert	201	2374
Parker, Craig	130	1589
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Parks, Amy	131	1597
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Parrish, Nicole	194	2233
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Parrish, Rob	047	604
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Parsons, Michele	185	2153	Pawjai Khampang, Pawjai	164	1774	Perfect, John	161	
Parsons, Michele	117	1367	Pawlak, Joel	056	747	Perfect, John	093	977
Partee, ValaRae	105	1173	Pawluk, April	076		Perfect, John	093	986
Partin, James	169	1877	Paxinos, Ellen	040	471	Perkins-Weazie, Penelope	130	1571
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Parvez, Sarwat	199	2345	Payne, Deborah	091	942	Perrotta, Allison	228	
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Passaretti, Teresa	015	110	Payne, Jeannie	034	426	Perry, Michael	104	1144
Passiment, Elissa	190		Payne, Justin	012	49	Perry, Neil	137	1720
Passos, Flávia	207	2471	Payne, Samuel	077		Perry, V.	057	775
Paster, Bruce	049	638	Peaper, David	195	2253	Peruski, Len	064	
Pasternak, J.	119	1402	Pearce, David	091	949	Pesci, Everett	042	523
Pasternak, Jacyr	015	99	Pearce, Meghan	089	916	Pesci, Everett	014	73
Paszczyński, Andrzej	097	1050	Pearlman, Eugene	126	1522	Petasch, Jan	050	648
Paszczyński, Andrzej	179	2030	Pearson, Melanie	165	1795	Peter, Inga	197	2301
Paszczyński, Andrzej	105	1189	Pearson, Melanie	012	29	Peter, Inga	169	1863
Paszczyński, Andrzej	132	1627	Pearson, Talima	WS-21		Petermann, Shana	130	1578
Paszczyński, Andrzej	099	1081	Pecher, Wolf	106	1191	Peteroy-Kelly, Marcy	109	1266
Patel, Ami	096	1048	Pechter, Kieran	125	1496	Peters, Brian	093	979
Patel, Ami	149		Pedrosa, Maria	060	816	Petersen, Emily	209	2512
Patel, Isha	208	2488	Peed, Lindsay	197	2298	Petersen, Emily	209	2511
Patel, Isha	123	1466	Peer, Wendy	131	1605	Petersen, Iver	032	394
Patel, Jay	057	764	Pegan, Scott	214	2620	Petersen, Jeannine	137	1723
Patel, Jean	158		Pei, Zhiheng	197	2301	Petersen, Jeannine	018	178
Patel, Jean	158		Pekalska, Aneta	106	1197	Petersen, Kyle	126	1513
Patel, Katir	120	1421	Pelc, Rebecca	202	2387	Petersen, Shane	042	513
Patel, Ketan	134	1678	Peled, Yasmin	057	764	Peterson, Christopher	054	727
Patel, Mitesh	166	1800	Pelletier, Dale	205	2436	Peterson, Jessica	207	2464
Patel, Neem	057	775	Pellet, Philip	160		Peterson, Kari	126	1519
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Patel, Parul	126	1519	Pendergraft, Samuel	193	2221	Peterson, Lance	188	
Patel, Pranav	209	2504	Pendleton, Kirk	116	1351	Peterson, Lance	126	1519
Patel, Robin	114	1310	Peng, Dong-Hai	022	233	Peterson, Marnie	116	1352
Patel, Robin	145		Peng, Hwei-Ling	042	510	Peterson, Marnie	018	171
Patel, Robin	166	1821	Peng, Hwei-Ling	042	511	Peterson, Seth	180	2057
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Patel, Robin	118	1374	Pennerman, Kayla	202	2391	Peterson, Tim	016	136
Patel, Robin	166	1808	Pensing, Daniel	041	493	Peti, Wolfgang	099	1093
Patel, Robin	022	235	Pentella, Michael	006		Pettit, Elizabeth	062	843
Patel, Robin	044	566	Pentella, Michael	060	817	Petit, Robert	166	1815
Patel, Robin	WS-19		Pentella, Michael	006		Petkau, Aaron	228	
Patel, Robin	201	2379	Penterman, Jon	200	2368	Petri, Daniel	203	2400
Patel, Robin	195	2240	Pepe-Ranney, Charles	176	1980	Petrik, Dustin	104	1149
Patel, Ruchi	011	9	Pepe-Ranney, Chuck	053	710	Petronio Petronio, Giulio	115	1330
Patel, Samir	231	LB-04	Pépin, Carole	107	1224	Petrosino, Joseph	197	2302
Paterson, Rachel	182	2095	Pepoyan, Astghik	231	LB-17	Petrov, Dmitri	068	
Pathak, Yashwant	096	1048	Pepoyan, Zaven	231	LB-17	Petrovska, Liljana	137	1720
Patrauchan, Marianna	023	247	Peralta-Perez, Rosario	055	745	Petrzelkova, Klara	204	2413
Patrauchan, Marianna	041	491	Peralta-Pérez, Maria del Rosario	029	342	Pettenato, Angelica	069	
Patrauchan, Marianna	013	70	Peramuna, Anantha	177	1988	Pettenato, Angelica	129	1549
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Patrauchan, Marianna	041	492	Perçin, Duygu	167	1837	Pettengill, James	099	1092
Patricio, Ana	135	1701	Peregrina, José	054	723	Pettengill, James	130	1584
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Patterson, John	109	1281	Perez, Cesar	055	742	Pett-Ridge, Jennifer	175	1967
Patterson, Thomas	087	857	Perez, Christina	192	2194	Pett-Ridge, Jennifer	125	1485
Pattison, Amanda	200	2359	Perez, Lizaida	047	603	Petty, Wanda	015	105
Patton, Toni	120	1423	Pérez, Gabriel	184	2140	Petzke, Mary	071	
Paul, Varun	055	743	Pérez, José	134	1664	Peves Rios, W.	117	1359
Paulander, Wilhelm	191	2187	Perez Velez, Mariel	107	1228	Pevzner, Pavel	031	379
Paulin, Sarah	191	2183	Perez-Casal, Jose	110	1289	Pezewski, Michael	196	2286
Paulos, Simon	184	2130	Pérez-Jiménez, Jose	176	1974	Pezoa, David	089	905
Paulsen, Cassie	061	829	Pérez-Jiménez, José	057	771	Pfaller, Stacy	107	1223
Paulsen, Jeremy	210	2552	Pérez-Jiménez, José	034	434	Pfeiler, Erika	027	311
Paulus, Darcy	102	1120	Perez-Mendez, Alma	179	2039	Pfiffner, Susan	129	1553
Pavelka, Martin	143		Perez-Ororio, Ailyn	137	1730	Pfiffner, Susan	134	1672
Pavey, Juang	136	1717	Pérez-Ororio, Ailyn	194	2236	Pfiffner, Susan	134	1671
Pavia, Andrew	117	1361	Pérez-Zapata, América-Beatriz	207	2478	Pfister, Wolfgang	119	1391
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Pfleger, Brian	096	1044	Pinto, Bernardo	089	905	Popko, Jane	196	2291
Pha, Khavong	120	1411	Pinto, Claudio	015	97	Popp, Christina	044	565
Pham, Cau	047	606	Pinzon, Janneth	192	2200	Poramathikul, Kamonporn	163	1756
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Pham, Van-Hau	191	2177	Pirrung, Meg	WS-20		Poretsky, Rachel	211	2561
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Phelps, Tommy	054	721	Piscitelli, A.E.	183	2112	Porter, Michael	196	2281
Philip, Susan	060	822	Pitashny, Milena	144		Portnoy, Vasily	019	195
Philip, Susan	060	823	Pitiphat, Waranuch	090	928	Porwollik, Steffen	182	2088
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Philisaire, Anne	107	1220	Pittan, Don	119	1396	Poselero, B.	183	2112
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Phillips, Carol	011	10	Plano, Gregory	089	906	Potter, Sheridan	127	1536
Phillips, Carol	131	1615	Plante, Pier-Luc	117	1366	Potts, Anastasia	197	2309
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Phillips, Jane	030	356	Plum, Georg	017	152	Poulin-Laprade, Dominic	200	2362
Phillips, Janna	028	332	Plummer, Paul	088	875	Poupard, James	035	
Phinney, Brett	134	1668	Plummer, Paul	186	2172	Poutanen, Susan M.	195	2251
Phipps, Paula	117	1362	Plunkett, Kyle	046	595	Poweleit, Nicole	020	209
Phrommao, Ekkarat	207	2474	Plunkett, Richard	030	358	Powell, Charles	205	2422
Piceno, Yvette	054	713	Plunkett, Richard	028	334	Powell, Eleanor	016	120
Piceno, Yvette	057	764	Plunkett, Richard	029	343	Powell, Evan	182	2098
Pich, Oscar	040	481	Plunkett, Richard	087	869	Powell, Evan	182	2093
Picking, Wendy	013	63	Po, M.	194	2232	Powell, Evan	182	2083
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Picking, Wendy	116	1350	Podar, Mircea	205	2429	Powell, Michael	169	1876
Picking, Wendy	018	179	Podar, Mircea	054	721	Powell, Rhonda	172	1917
Picking, Wendy	089	908	Podar, Mircea	030	355	Power, Mary	069	
Picking, William	089	908	Podell, Brendan	109	1270	Powers, Robert	073	
Picking, William	018	179	Podnecky, Nicole	040	476	Pozzetto, Bruno	166	1826
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Picking, William	170	1895	Podzorski, Raymond	166	1814	Prabhakaran, Madhu	056	758
Picking, William	116	1351	Pogliano, Joe	191	2176	Prada, Catalina	173	1942
Picking, William	146		Pogliano, Joseph	100	1105	Prade, Rolf	056	758
Piddock, Laura	193	2212	Pogliano, Kit	098	1064	Prado-Barragán, Arely	050	654
Pier, Gerald	100	1096	Pogliano, Kit	191	2176	Prahl, Fred	053	698
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Pierro, Anna	043	538	Polanco, Claudia	166	1803	Prater, Daniel	203	2402
Pietrosimone, Kathryn	198	2324	Polataiko, N.	132	1632	Prater, Gary	203	2402
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Pinard-Lachapelle, Julien	168	1852	Polupan, Ivan	185	2146	Price, James	168	1852
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Pincus, Dave	167	1834	Ponnusamy, Loganathan	061	830	Price, Michael	093	977
Pincus, Dave	015	109	Poole, Keith	039	448	Price, Michael	011	18
Pincus, David	168	1851	Poole, Steven	146		Price, Michael	093	986
Pincus, David	016	129	Poon, Chun Kit	099	1080	Price, Morgan	125	1488
Pincus, David	017	141	Pop, Mihai	212	2576	Price, Morgan	125	1490
Pine, Rosie	014	84	Pop, Mihai	127	1537	Price, Sarah	103	1137

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Priester, John	054	713
Prince, Harry	184	2136
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Rayamajhi, Bishnu	185	2151	Repeta, Dan	069		Richter, Sandra	016	122
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Read, Timothy	166	1815	Respicio-Kingry, Laurel	137	1723	Richter, Sandra	015	107
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Redd, Stephen	LBS001		Retchless, Adam	182	2098	Ricke, Steven	104	1152
Reddy, Gopal	196	2290	Reutlinger, Ian	023	247	Ricke, Steven	130	1580
Reddy, Krishna	203	2397	Retchless, Adam	106	1206	Riddell, Geoffrey	098	1065
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Redfield, Rosemary	200	2370	Revetta, Randy	054	730	Rideout, Steve	131	1609
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Reece, Kimberly	102	1123	Revez, Joana	012	38	Riebe, Katherine	195	2264
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Reed, Jennifer	225		Reyes, Efrén	120	1405	Riedel, Stefan	096	1036
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Rehman, Sana	039	458	Rhee, Joon	012	40	Riley, Kelley	179	2042
Reich, Peter	129	1558	Rhee, Kyu	140		Riley, Kelley	178	2012
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Reijden, Tanny	126	1513	Rhoden, Kyle	104	1167	Riley, Lee	183	2115
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Reimche, Jennifer	193	2210	Rhodes, Katherine	040	476	Ringiesn, Jeffery	045	571
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Reitzel, Ruth	045	569	Riccardello, Nichol	017	154	Ríos-Hernández, Luis	107	1239
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Relich, Ryan	090	932	Riccio, George	195	2258	Ríos-Velázquez, Carlos	097	1058
Relich, Ryan	119	1389	Ricci-Tam, Chiara	191	2176	Ríos-Velázquez, Carlos	031	377
Relich, Ryan	119	1390	Rice, Jennifer	104	1168	Ríos-Velázquez, Carlos	031	370
Relich, Ryan	122	1441	Rice, Jennifer	104	1149	Ríos-Velázquez, Carlos	031	374
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Ren, Dabin	092	955	Richards, Ashley	122	1441	Ritprajak, Patcharee	090	928
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Ren, Jie	050	655	Richardson, Kirk	019	204	Ritzmann, Mathias	185	2145
Ren, Nanqi	133	1660	Richardson, Ruth	024	271	Rivera, Berenise	106	1214
Ren, Peter	167	1832	Richardson, Stephen	164	1773	Rivera, Blanca	117	1369
Renault, Pierre	123	1460	Richardson, Susan	199	2347	Rivera, Jessica	055	742
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Roberts, Ian	087	870	Rodriguez-Lanetty, Mauricio	121	1436	Rosas, Irma	105	1178
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Sanchez, Lorenzo.....	059	804
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Sander, Melissa	183	2109	Saunders, Lauren	125	1498	Schmitt, Michael	171	1904
Sanderson, Michael	057	775	Sautter, Robert	086		Schmitz, John	138	
Sandhia, S.	026	294	Sautter, Robert	196	2289	Schnappinger, Dirk	109	1267
Sandmann, Henrik	094	991	Sautter, Robert	086		Schneegurt, Mark	097	1054
Sandoval, Walter	177	1992	Sautter, Robert	117	1356	Schneegurt, Mark	097	1053
Sandrin, Todd	216		Sava, E.	132	1632	Schneegurt, Mark	177	1984
Sandrin, Todd	216		Savage, Paul	046	586	Schneewind, Olaf	165	1799
Sandy, Ashley	093	988	Savarino, Stephen	146		Schneider, Benjamin	211	2559
Sanford, Robert	024	258	Savidge, Tor	219		Schneider, Uwe	119	1391
Sanford, Robert	053	696	Savka, Michael	213	2596	Schoberle, Taylor	019	191
Sanford, Robert	030	352	Sawyer, Erin	062	841	Schoenfeld, Thomas	055	740
Sanford, Robert	206	2460	Sawyer, Karen	229		Schoenfeld, Thomas	196	2282
Sanford, Robert	206	2446	Saxton, Matthew	052	684	Scholes, Delia	231	LB-08
Sani, Rajesh	026	303	SayavedraSoto, Luis	213	2597	Scholin, Christopher	052	692
Sani, Rajesh	207	2480	Sayavedra-Soto, Luis	051	679	Scholthof, Karen-Beth	214	2621
Sanjar, Fatemeh	182	2086	Sayavedra-Soto, Luis	134	1664	Scholz, Matthew	117	1365
Sannino, Filomena	201	2378	Sayed, Ahmed	031	380	Scholz, Matthew	031	392
Sano, Daisuke	106	1201	Sayler, Gary	103	1137	Schoonmaker, Michele	195	2250
Sanpitakseree, Chotitath	124	1475	Sayler, Gary	106	1207	Schora, Donna	118	1379
Santa Cruz, Michael	229		Scalarone, Gene	047	607	Schora, Donna	126	1519
Santana-Hernández, Uriel	207	2478	Scalarone, Gene	199	2352	Schott, Thomas	012	38
Santiago, Eugenio	205	2437	Scanlan, Julie	053	699	Schotthoefer, Anna	062	842
Santiago, I.	117	1370	Scanlon, Karen	230		Schrader, Jared	226	
Santiago, Kely	119	1402	Schaap, Pauline	141		Schrader, Michael	105	1189
Santiago, Mario	121	1437	Schaap, Peter	105	1177	Schrader, Sarah	173	1939
Santiago Rodriguez, Tasha	025	275	Schaar, Viveka	039	457	Schrag, Stephanie	039	436
Santiago-Correa, Jose	020	211	Schadt, Christopher	206	2455	Schranz, Karen	054	725
Santiago-Rodriguez, Tasha	055	742	Schadt, Christopher	205	2436	Schreck, Steven	177	1983
Santiago-Rodriguez, Tasha	132	1641	Schadt, Christopher	030	353	Schreckenberger, Paul	044	558
Santiago-Rodriguez, Tasha	135	1701	Schadt, Christopher	205	2429	Schreckenberger, Paul	017	148
Santillana Farakos, Sofia	131	1606	Schaechter, Moselio	152		Schreckenberger, Paul	017	149
Santiviago, Carlos	089	905	Schaechter, Moselio	152		Schreckenberger, Paul	070	
Santo Domingo, Jorge	106	1193	Schaefer, Amy	205	2436	Schreckenberger, Paul	017	155
Santo Domingo, Jorge	106	1209	Schaffer, Jessica	165	1795	Schreckenberger, Paul	017	147
Santo Domingo, Jorge	054	730	Schaffner, Donald	131	1600	Schreckenberger, Paul	070	
Santo Domingo, Jorge	179	2032	Schaffner, Donald	131	1606	Schriefer, Martin	137	1723
Santo Domingo, Jorge	052	687	Scham, Caitlyn	126	1521	Schrier, Jeremy	051	681
Santoro, Marcelo	087	873	Schesser, Kurt	089	906	Schrodi, Steven	016	125
Santoro, Marcelo	130	1577	Schesser Bartra, Sara	014	86	Schroeder, Casey	169	1868
Santos, A.	015	99	Schesser Bartra, Sara	089	906	Schroeder, Charles	124	1475
Santos, Andrea	122	1451	Scheuerman, Phillip	106	1204	Schroeder, Elizabeth	043	535
Santos, Jennifer	092	964	Scheurwater, Edie	039	446	Schroeder, Imke	034	429
Santos, Marilu	097	1057	Schicklberger, Marcus	053	694	Schroeder, Morgan	176	1977
Santos, Marilu	132	1622	Schicklberger, Marcus	129	1549	Schroll, Monica	022	234
Santos, Valdilene	207	2471	Schifano, Jason	058	792	Schu, Daniel	048	624
Saraiva, Cássia	016	124	Schiff, Leslie	108	1253	Schubert, Alyxandria	219	
Sarango, Sandra	057	765	Schiffenbauer, Milton	132	1632	Schubert, Soren	044	565
Sardi, Armando	197	2297	Schijffelen, Maarten	012	27	Schubert, Wayne	097	1050
Sargentini, Neil	200	2364	Schmidt, Steve	129	1557	Schubert, Wayne	105	1189
Sargentini, Neil	034	433	Schipper, Marguerite	182	2092	Schubert, Wayne	105	1187
Sarina*, M.	195	2242	Schlatter, Daniel	074		Schubert, Wayne	179	2030
Sariol, Carlos	214	2613	Schlembach, Dietmar	119	1391	Schubert, Wayne	132	1627
Sarker, Mahfuzur	041	495	Schleußner, Ekkehard	119	1391	Schubot, Florian	202	2391
Sarker, Mahfuzur	208	2494	Schlievert, Patrick	116	1352	Schubotz, Florence	129	1560
Sarkes, Deborah	123	1465	Schlievert, Patrick	198	2331	Schuetz, A.	199	2353
Sarkisova, Svetlana	041	491	Schlievert, Patrick	018	171	Schuetz, Audrey	044	551
Sarmago, A. Mittsu	054	735	Schloss, Patrick	025	282	Schuh, Jane	121	1434
Sarna, Matthew	193	2220	Schloss, Patrick	219		Schuknecht, Mary Kay	117	1362
Sarna, Matthew	014	80	Schlosser, Melissa	166	1814	Schulte, Berit	090	921
Sarnovsky, Robert	200	2366	Schmal, Micah	207	2476	Schulte, Danielle	192	2201
Sarreal, Siob Bouy	047	619	Schmaltz, Stephen	043	532	Schultz, Matthew	182	2083
Sasaki, Minoru	012	41	Schmid, Amy	221		Schultz, Melissa	133	1661
Sasaki, Naomi	019	194	Schmid, George	064		Schultz-Cherry, Stacey	144	
Sassoubre, Lauren	137	1727	Schmidt, Helen	055	740	Schulz, Frederik	230	
Satchell, Karla	012	39	Schmidt, John	011	15	Schulz, Wade	108	1253
Sathiananthamoorthy, Sanchutha	015	112	Schmidt, John	136	1707	Schumacher, Maria	227	
Sato, Shun	177	1986	Schmidt, Steven	175	1960	Schupp, James	012	32
Satola, Sarah	166	1815	Schmidt, Steven	206	2448	Schurr, Michael	088	888
Saubolle, Michael	017	146	Schmidt, Suzannah	201	2379	Schurr, Michael	042	524
Sauer, John-Demian	140		Schmidt, Thomas	101	1109	Schurr, Michael	088	889
Sauer, John-Demian	041	493	Schmidt, Thomas	101	1110	Schuster, Christopher	171	1907
Sauer, John-Demian	014	90	Schmieder, Robert	012	51	Schuur, Edward	129	1554
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Schwalm, Nathan	051	669	Sempowski, Gregory	093	982	Shams, Saima	195	2252
Schwartz, Alison	087	868	Semrau, Jeremy	023	238	Shamsheeva, Alena	117	1358
Schwartz, Drew	218		Semrau, Jeremy	028	326	Shanahan, Fergus	197	2296
Schwartz, Ira	071		Semrau, Jeremy	053	699	Shank, Elizabeth	074	
Schwartz, Ira	049	642	Sen, Joyashree	032	393	Shanks, Brent	003	
Schwartz, Jennifer	093	980	Sen, Suranjana	023	244	Shanks, Orin	179	2037
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Schwartz, Rebecca	044	559	Senerchia, Justin	207	2470	Shannon, Jeffrey	018	174
Schwartzman, Julia	102	1125	Seneviratne, C.J.	192	2197	Shao, Katie	020	213
Schwarzberg, Karen	197	2317	Sengamalai, Naomi	092	958	Shao, Yi	022	2382
Schwebke, Jane	091	950	Sengupta, Dhruva	168	1855	Shaohua, Zhao	163	1758
Schwebke, Jane	091	938	Senko, John	029	345	Shapiro, Lucy	226	
Schweder, Thomas	050	648	Senn, Stefan	051	681	Sharaf, Mariam	109	1264
Schweizer, Herbert	040	476	Sennakayala, Neelima	198	2321	Sharma, Anita	044	567a
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Schweizer, Herbert	045	585	Seo, Dong-Ho	020	215	Sharma, Monica	185	2150
Schwentek, Patrick	176	1981	Seo, Ho Seong	165	1790	Sharma, Rakesh	056	754
Scissum-Gunn, Karyn	170	1903	Seo, Kunho	104	1156	Sharma-Kuinkel, Batu	096	1033
Scorugh, Gian Luca	201	2373	Seo, Kun-Ho	130	1568	Sharngoe, Calden	119	1400
Scobey, Martin	196	2289	Seo, Young-su	202	2390	Sharngoe, Tenzing	119	1397
Scotfield, Jessica	201	2381	Seoanes, Rose	169	1873	Sharon, Itai	206	2449
Scotfield, Melanie	053	709	Sepulveda, Rocio	208	2492	Sharon, Itai	174	1953
Scotfield, Virginia	122	1446	Sequeira, Christopher	121	1432	Sharon, Itai	135	1702
Scott, Amanda	047	614	Serapio-Palacios, Antonio	116	1334	Sharp, Jared	058	792
Scott, Ken	165	1782	Sercia, Linda	167	1835	Sharp, Jonathan	206	2441
Scott-Anne, Kathy	165	1787	Sercia, Linda	015	101	Sharp, Jonathan	211	2570
Scott-Croshaw, Crystal	127	1538	Sercia, Linda	016	122	Sharp, Jonathan	211	2554
Scotti, Melissa	095	1024	Sercia, Linda	090	927	Sharp, Jonathan	057	763
Sczyrba, Alex	176	1981	Sercia, Linda	016	121	Sharp, Susan	138	
Sczyrba, Alexander	031	368	Sercia, Linda	167	1836	Sharp, Susan	138	
Seal, Bruce	130	1567	Serichantalergs, Oralak	117	1363	Sharpton, Thomas	212	2578
Seale, Thomas	041	490	Serichantalergs, Oralak	231	LB-16	Sharville, Sybil	210	2534
Seale, Thomas	041	496	Serio, Victor	034	425	Shatti, Shama	166	1804
Sears, Michael	195	2243	Serrano-Carreón, Leobardo	026	300	Shaughnessy, Megan	208	2492
Seaton, Amanda	173	1934	Serre, Shannon	210	2537	Shaw, Carl	016	117
Seaton, Lylah	096	1048	Servant, Marc	078		Shaw, Jennifer	231	LB-14
Seaton, Sarah	128	1542	Servello, Adriana	201	2378	Shaw, Lindsey	014	93
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Secore, Susan	089	909	Sethi, Sanjay	182	2083	Shearer, Shelby	061	829
Secore, Susan	231	LB-13	Seth-Pasricha, Mansha	051	681	Shedden, Douglas	017	151
Sederoff, Heike	209	2527	Setlow, Peter	041	495	Sheehan, Kathy	092	966
Sedlak, David	211	2555	Seumahu, Cecilia	178	2010	Sheehan, Kathy	180	2053
Seeley, Renee	196	2273	Severin, Andrew	203	2396	Sheibley, Daniel	051	664
Seenivasan, Meena	060	818	Sevgen, Selami	124	1475	Sheikboudou, Christian	169	1866
Segawa, Shuichi	027	308	Sewell, Danny	131	1615	Sheikh, Abdul	090	920
Segawa, Takahiro	106	1190	Sexton, Jonathan	178	2012	Sheikh, Alaullah	192	2085
Segre, Julia	031	383	Sexton, Jonathan	132	1626	Shekar, Supriya	199	2349
Segre, Julie	118	1385	Sexton, Jonathan	132	1625	Sheldon, Jessica	116	1331
Segre, Julie	039	442	Seyoum, Tilahun	177	2006	Sheldon, Megan	108	1250
Segura, Daniel	019	184	Shabazi, Abolghasem	178	2014	Sheldon, Sarah	058	795
Segura, Mariela	134	1684	Shade, Ashley	081		Shemes, Stephen	015	102
Sei, Katherine	044	558	Shade, Ashley	101	1114	Shen, Ding-Xia	198	2329
Seider, Katja	093	987	Shafer, William	014	78	Shen, Dongqian	197	2299
Seifert, Harald	017	152	Shaffer, Carrie	019	203	Shen, Kai	182	2083
Seifert, Stephanie	202	2389	Shaffer, Julie	055	736	Shen, Lina	101	1108
Seifert, Stephanie	022	225	Shaffer, Justin	128	1543	Shen, Lisong	199	2347
Seipp, Michael	194	2228	Shafikhan, Sasha	116	1335	Shen, Shuo	054	729
Seitzer, Phillip	020	213	Shafiq, Amna	163	1750	Shen, Yuelian	104	1154
Sekar, Ramanan	056	748	Shah, Devendra	040	480	Shen, Zeli	186	2156
Sekedat, Matthew	164	1772	Shah, Devendra	062	853	Shen, Zeli	062	841
Sekizuka, T.	135	1704	Shah, Jigna	031	388	Shen, Zeli	186	2157
Selan, Laura	201	2373	Shah, Manesh	174	1944	Shen, Zhi	209	2516
Selan, Laura	201	2378	Shah, Megha	165	1782	Shendure, Jay	068	
Selcer, Katie	059	803	Shahani, Lokesh	126	1502	Shendure, Jay	168	1855
Selis, Nathan	122	1453	Shahbazi, Abolghasem	027	318	Shenk, Thomas	140	
Selle, Kurt	095	1001	Shaheen, Bashir	186	2169	Shenk, Thomas	004	
Sellman, Bret	116	1343	Shakir, Salika	041	490	Shepherd, Jennifer	022	234
Selvarangan, Rangaraj	WS-22		Shakir, Salika	041	496	Shepley, Aron	012	30
Selvarangan, Rangaraj	160		Shakir, Salika	041	504	Sheraz, Muhammad	033	410
Semino-Mora, Cristina	197	2297	Shakya, Geeta	061	834	Sherlock, Gavin	135	1689
Semmelhack, Martin	114	1315	Shakya, Migun	205	2429	Sherlock, Gavin	068	

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Sherman, Kyle	041	493	Shu, Zhiqun	183	2113	Sinatra, Fulvia	045	578
Sherman, Quentin	059	814	Shukla, Hemangini	179	2027	Sing, Andreas	185	2145
Sherwood, Julie	130	1578	Shukla, Sanjay	016	125	Sing, Monica	025	278
Sherwood, Julie	130	1570	Shulman, Stanford	166	1818	Singer, Steven	056	756
Sherwood, Robert	024	271	Shuryak, Igor	047	615	Singer, Steven	031	376
Shetron-Rama, Lynne	033	412	Shutchenko, Pavlo	184	2139	Singh, Anup	031	389
Shetty, Amol	093	980	Shyni, S.	026	294	Singh, Atul	104	1161
Shetty, Shubhra	163	1737	Si, Yuanzheng	192	2192	Singh, Kiran	013	66
Sheu, Bor-Shyang	172	1921	Sia, Jonathan	071		Singh, Mini	044	567a
Shewmaker, Patricia	039	436	Siam, Rania	031	380	Singh, Narendra	170	1903
Shi, Aihua	012	42	Siddiqui, Khaizran	178	2018	Singh, Pallavi	025	277
Shi, Libin	109	1273	Sieber, Karsten	169	1879	Singh, Pradeep	200	2368
Shi, Shengnan	211	2557	Sieber, Karsten	135	1694	Singh, Raghuveer	171	1905
Shi, Vivian	108	1252	Siegel, Jeffrey	105	1179	Singh, Raghuveer	024	264
Shi, Xu	181	2078	Siegrist, J.	095	1002	Singh, Raghuveer	125	1493
Shi, Zhou	197	2307	Sievert, Stefan	176	1981	Singh, Shalesh	169	1876
Shi, Zhou	212	2590	Sievert, Stefan	213	2598	Singh, Shree	033	404
Shi, Zhou	056	753	Siezen, Roland	027	310	Singh, Shree	011	11
Shi, Zhou	031	378	Sigler, Lynne	199	2347	Singh, Shree	192	2198
Shi, Zhou	175	1961	Sigler, Von	132	1623	Singh, Shree	170	1891
Shiau, Yih-Ru	186	2165	Sigler, Von	106	1197	Singh, Shree	087	861
Shibata, Toshiyuki	103	1139	Sikorski, Johannes	030	360	Singh, Shweta	192	2192
Shibib, Dena	044	552	Silbart, Lawrence	122	1450	Singh, Swati	019	186
Shieh, Wun-Ju	166	1800	Silbert, Suzane	166	1811	Singh, Swati	074	
Shields, Christine	040	463	Silbert, Suzane	166	1810	Singh, Vineet	041	503
Shields, Meredith	178	2013	Silbert, Suzane	118	1386	Singh, Vineet	034	433
Shigyo, Tatsuro	027	308	Silbert, Suzane	195	2241	Singla, Varun	182	2101
Shih, Meng-Hsin	107	1230	Silbert, Suzane	166	1801	Singleton, David	211	2572
Shih, Ming-Che	022	231	Silby, Mark	128	1542	Singleton, Rana	033	405
Shih, Warren	163	1741	Silby, Mark	206	2457	Sinha, Navita	020	214
Shikula, Kristina	022	225	Siletzky, Robin	130	1586	Sinha, Sunita	200	2370
Shikula, Kristina	202	2389	Silva, Deyse	130	1587	Sinsabaugh, Robert	053	695
Shimada, Kayo	016	134	Silva, Ediane	092	973	Siow, Jia Eng	195	2252
Shimizu, Mari	019	194	Silva, Ediane	115	1327	Siqueira, I.	015	99
Shimoyama, Yu	012	41	Silva, Isba	191	2179	Siqueira, Itacy	119	1402
Shimoyama, Yu	050	657	Silva, Patricia	132	1635	Siqueiros-Cendon, Tania	214	2612
Shin, Jeon-Soo	184	2129	Silva, Suzane	163	1739	Siqueiros-Cendon, Tania	033	406
Shin, Jong Hee	117	1368	Silva, Vania	163	1751	Siragusa, Gregory	155	
Shin, Sang Heum	073		Silva, Vania	163	1739	Siriani, Luciana	018	166
Shin, Sunguk	179	2034	Silva, Vania	192	2193	Sirirunguang, Sasilada	109	1274
Shine, Emilee	173	1929	Silva-Del Toro, Stephanie	031	375	Sirisopana, Narongrid	184	2137
Shingala, Bhavisha	163	1741	Silva-Gonzalez, Gloria	055	745	Sirisopana, Narongrid	214	2609
Shinn, Sharon	017	149	Silveira, Alessandro	017	138	Siriwardhana, Nalin	131	1593
Shinn, Sharon	017	148	Silveira, Flavio	116	1339	Sirobhushanam, Sirisha	023	244
Shinn, Sharon	017	147	Silverberg, John	017	146	Sirobhushanam, Sirisha	125	1498
Shinn, Sharon	017	155	Silverman, Robert	108	1254	Sirois, Marc	205	2430
Shinno, Keisuke	202	2395	Silwal, S.	132	1632	Siryaporn, Albert	202	2383
Shinohara, Masahiro	125	1489	Sim, Nam	059	808	Sischo, William	186	2162
Shipelskiy, Yan	120	1428	Simard, Sebastien	168	1846	Sischo, William	231	LB-18
Shirai, Makoto	204	2417	Simard, Sebastien	168	1856	Sistrunk, Jeticia	182	2085
Shireen, Tahsina	039	454	Simionato, Maria	193	2213	Sitton, Oliver	072	
Shirkot, C.	180	2056	Simionato, Maria Regina	018	166	Sivaramakrishnan, Gayathri	116	1335
Shirtliff, Mark	164	1768	Simmon, Jennifer	047	614	Sizova, Maria	197	2308
Shishir, Asaduzzaman	180	2060	Simmons, Blake	056	756	Sizova, Maria	095	1009
Shittu, Olufunke	132	1637	Simmons, Karen	175	1959	Sjoquist, Daniel	197	2315
Shogan, Benjamin	169	1861	Simmons, Otto	130	1571	Skamel, Claudia	033	405
Shoji, Ai	045	568	Simmons, Otto	210	2538	Skarszewski, Adam	031	368
Shoji, Kazuyuki	050	656	Simmons, Sheri	175	1966	Skerry, Ciaran	109	1279
Shokeen, S.	132	1632	Simner, Patricia	044	566	Skibsted, Leif	191	2187
Shore-Maggio, Amanda	102	1122	Simner, Patricia	183	2107	Skinner, Craig	089	900
Shortridge, Dee	039	455	Simon, Dawn	055	736	Skinner, Julie	089	909
Shrago, Andy	196	2282	Simon, Nathaniel	094	995	Skinner, Julie	231	LB-13
Shree, Singh	033	405	Simoneau, Esther	016	123	Skinner, Kathrine	130	1576
Shresta, Sujun	214	2616	Simonet, Michel	016	130	Skrivankova, Veronika	231	LB-08
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Shrestha, Devesh	095	1017	Simonsen, Martin	094	991	Slavnic, Dejan	051	678
Shrestha, Minita	095	1017	Simor, Andrew	163	1741	Slayden, Richard	058	795
Shrestha, Pravin	209	2520	Simpson, Brent	225		Slechta, E.	199	2347
Shrestha, Pravin Malla	095	1017	Simpson, Steven	061	828	Slechta, E. Susan	194	2228
Shrestha, Sanjaya	185	2151	Simpson-Haidaris, Patricia	165	1786	Slechta, Elaine	183	2114
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Small, Glen	195	2251	Snyder, Debbie	027	313	Sorg, Joseph	041	489
Smartt, Abby	106	1207	Snyder, Dillon	213	2608	Soros, Ampai	210	2546
Smedema, Melinda	199	2355	Snyder, James	044	563	Sosa, Oscar		069
Smeianov, Vladimir	150		Snyder, Jim	159		Sosa, Oscar	053	708
Smidt, Hauke	105	1177	Snyder, Jim	159		Soto Beltran, Marcela	210	2551
Smieja, Marek	091	939	Snyder, Michelle	046	592	Soto-Justiniano, Priscilla	097	1058
Smikle, Monica	121	1439	Snydman, David	199	2349	Soto-Santiago, Jose	055	742
Smiley, Ronald	104	1154	So, Magdalene	048	621	Sousa, Alexander	095	1010
Smith, Alexandra	213	2601	Soares, Jana	198	2319	Sousa, Marcelo	098	1061
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Smith, Arnold	182	2083	Sobel, Rachel	125	1497	Souza, Daniele	163	1751
Smith, Ashley	045	581	Sobolev, Dmitri	206	2447	Souza, Kathleen	033	400
Smith, Becky	126	1519	Sobsey, Mark	179	2040	Souza, Valeria	206	2450
Smith, Belle	129	1549	Sobsey, Mark	210	2546	Souza, Valeria	135	1698
Smith, Bonnie	091	950	Sobsey, Mark	210	2538	Sow, Papa	033	408
Smith, Bonnie	091	938	Sobuz, Shihab	043	541	Soyer, Yesim	104	1151
Smith, Carranza	016	116	Soderholm, Beatrice	126	1512	Spacht, Drew	100	1097
Smith, Daniel	198	2330	Sodowich, Bruce	017	154	Spady, Emma	096	1034
Smith, Daniel	066		Sodowich, Bruce	168	1847	Spain, Anne	054	716
Smith, Diana	121	1437	Soelberg, Scott	183	2113	Spain, Jim	211	2561
Smith, Forrest	087	860	Soewarna, Victoria	108	1250	Spanbauer, Trisha	054	726
Smith, Geof	033	420	Soge, Olusegun	091	945	Spangler, Jessica	168	1855
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Smith, Jessica	095	1017	Sohn, Jiho	197	2311	Spear, John	101	1113
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Smith, Kerry	051	673	Solomon, Rebecca	120	1404	Spencer, John	183	2106
Smith, Kirk	208	2492	Solomon, Steven	166	1827	Spencer, Susan	179	2037
Smith, Lisa	061	825	Solomon, Wesley	115	1321	Spencer, Susan	210	2545
Smith, M.	196	2274	Solomotis, Marianna	137	1734	Spero, Melanie	220	
Smith, Mark	024	265	Solon, John	194	2224	Spies, Fernanda	109	1272
Smith, Mark	116	1344	Solorio, Francisco	205	2435	Spiliopoulou, Iris	012	27
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Smith, Nathan	028	335	Sommer, Daniel	212	2576	Springer, Jan	231	LB-12
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Smith, Sara	013	72	Son, Jee-Soo	042	516	Spröer, Cathrin	012	50
Smith, Sara	013	53	Son, Jee-Soo	042	519	Spurbeck, Rachel	182	2089
Smith, Sara	170	1885	Son, Jee-soo	042	518	Sreevatsan, Srinand	013	58
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Smith, Tara	185	2144	Song, Danfeng	178	2014	Srinivasan, Sathiyaraj	057	781
Smith, Tara	061	835	Song, Helena	027	307	Srinivasan, Sujatha	197	2308
Smith, Tara	137	1725	Song, Jeongmin	092	965	Srinivasan, Velusamy	039	436
Smith, Terri	091	943	Song, Rong	096	1028	Sriskandan, Shiranee	118	1387a
Smith, Thomas	015	111	Song, Seung-Eun	183	2126	Sriskandan, Shiranee	042	520
Smith, Timothy	106	1202	Song, Sooyeon	027	309	Srivastava, Akhil	047	600
Smith, Zachary	044	552	Song, Yi	012	49	St. Charles, Jessica	012	33
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Smriga, Steven	053	697	Sonnenschein, Eva	103	1142	Stabb, Eric	095	1000
Smulian, Alan	047	617	Sontag, Tom	212	2583	Stabler, Richard	191	2190
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Stanikzai, Nasir	117	1371	Stevenson, Christine	225		Stuchlik, Olga	015	96
Stanley, Theresa	090	926	Stevenson, David	207	2469	Stuczen, Monica	017	151
Stanton, Eliot	104	1163	Stevenson, James	048	623	Stukey, Joseph	100	1102
Stanton, Thad	155		Stevenson, R. Jan	179	2048	Stukey, Joseph	100	1106
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Stanton, Thaddeus	100	1103	Stewart, Benjamin	125	1485	Stull, Terrence	041	496
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Stempien, Judy	090	923	Strain, Errol	130	1581	Summers, Amy	128	1541
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Stenzel, Tim	196	2276	Strand, Stephanie	042	509	Summers, Michael	048	629
Stenzel, Timothy	196	2275	Strand, Stephanie	133	1661	Summers, Michael	108	1251
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Tevdoradze, E.....	184	2133	Tiedje, James.....	129	1554	Toranzos, Gary.....	135	1701
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Thanassi, David.....	089	902	Tiedje, James.....	179	2028	Toro, Magaly.....	130	1575
Thanbichler, Martin.....	065		Tiedje, James.....	212	2584	Torralba, Manolito.....	204	2413
Thanyasrisung, Panida.....	090	928	Tiedje, James.....	197	2310	Torres, Antoni.....	090	921
Thao, Sandy.....	051	672	Tiedje, James.....	072		Torres, Cesar.....	209	2507
Thapa, Badri.....	163	1757	Tiedje, James.....	031	378	Torres, César.....	209	2506
Thapa, Laxmi.....	185	2151	Tiedje, James.....	198	2330	Torres, Helio.....	015	97
Thapaliya, Dipendra.....	185	2144	Tiedje, James.....	129	1551	Torres, Pedro.....	197	2295
Thayil, Seema.....	109	1279	Tiedje, James.....	031	373	Torres, Ricardo.....	105	1178
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Theel, Elitza.....	090	929	Tieku, Prince.....	088	889	Torres, Victor.....	116	1352
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Thieme, Juergen.....	050	649	Timenetsky, Jorge.....	122	1453	Tosado-Rodriguez, Eduardo.....	020	208
Thigpen, Julius.....	016	116	Timenetsky, Jorge.....	120	1419	Tosh, Pritish.....	201	2375
Thiriot, David.....	089	909	Timke, Markus.....	183	2111	Tosti, Lauren.....	012	30
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Thomas, Ivor.....	196	2283	Timpanaro, Rossella.....	087	867	Tournier, Jean-Nicolas.....	169	1858
Thomas, Jacob.....	135	1697	Tin, Jina.....	179	2025	Towle, Dana.....	195	2253
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Thomas, Laura.....	197	2316	Tinker, Juliette.....	170	1899	Townsend, Guy.....	051	669
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Thompson, Capricia.....	130	1570	Tiwari, Pooja.....	192	2198	Tran-Osowski, Ly'.....	095	1024
Thompson, Claudette.....	120	1425	Tjhie, Jeroen.....	196	2277	Trauscht, Robert.....	117	1361
Thompson, Courtney.....	206	2462	Tjhio, Joyce.....	017	149	Trauscht, Robert.....	196	2280
Thompson, Curtis.....	062	854	Tjhio, Joyce.....	044	558	Traverse, Charles.....	182	2097
Thompson, Hayley.....	176	1975	Tjhio, Joyce.....	017	148	Travisano, Michael.....	135	1691
Thompson, Kevin.....	041	504	Tjhio, Joyce.....	017	155	Traxler, Matthew.....	141	
Thompson, Leslie.....	131	1597	Tjhio, Joyce.....	017	147	Trchounian, Armen.....	177	2001
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Thomson, Gina.....	044	563	Tobar, Eric.....	089	914	Trchounian, Karen.....	125	1486
Thomson, Joshua.....	051	664	Tobin, David.....	093	983	Treangen, Todd.....	212	2576
Thomson, Kenneth.....	044	563	Tocheva, Elitza.....	098	1064	Treangen, Todd.....	127	1537
Thomson, Rachel.....	183	2122	Tockes, Kaleigh.....	123	1459	Tree, Jai.....	077	
Thomson, Richard.....	118	1379	Todd, Angeliq.....	204	2413	Trees, Eija.....	104	1166
Thomson, Richard.....	044	552	Todd, Bryan.....	129	1557	Trees, Eija.....	137	1728
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Van der Graaf, Linda	094	995
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Van Geen, Alexander	106	1207	Vega Thurber, Rebecca	062	840	Virata, Michael	118	1387
Van Gool, Tom	111	1306	Veizaga, Andrea	055	742	Visenio, Michael	045	583
Van Helden, Paul	194	2239	Vela, Maria	017	156	Vishnivetskaya, Tatiana	129	1553
Van Hijum, Sacha	027	310	Velarde, Jorge	042	508	Visi, David	057	779
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Van Leuven, James	135	1696	Vendrone, Elaine	118	1386	Vives, Martha	049	640
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Van Nostrand, Joy	209	2509	VerBerkmoes, Nathan	174	1944	Volegova, Marina	040	479
Van Nostrand, Joy	101	1116	VerBerkmoes, Nathan	129	1550	Volkan, Ender	165	1788
Van Timmeren, Mirjan	012	31	Vercammen, Ken	019	188	Vollmer, Amy	221	
Van Treuren, Will	031	382	Verdi, Joseph	106	1216	Vollmer, Amy	133	1657
Van Voorhis, Wesley	040	469	Verghese, Tina	118	1372	Vollmer, Amy	096	1034
Van Wamel, Willem	012	31	Verheijen, Bram	106	1209	Vollmer, Steven	102	1130
Van Wart, Diana	097	1057	Verhoeven, Paul	166	1826	Voltolini, Marco	028	336
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Vandamme, Peter	222		Verma, Naresh	165	1783	Vongsa, Rebecca	197	2298
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VandeWalle, Jessica	106	1195	Verstappen, Koen	173	1937	Voordouw, Johanna	206	2454
Vangala, Mahesh	057	766	Verstraeten, Natalie	096	1026	Voorhees, Kent	231	LB-11
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Vanner, Cynthia	060	815	Verstraeten, Natalie	077		Voorhies, Randy	194	2223
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VanSickle, Marthe	097	1051	Vetter, K.	095	1002	Vora, Mansi	227	
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Varani, Gabriele	040	469	Viazis, Stelios	061	824	Vorholt, Julia	139	
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Vargas, Paloma	089	916	Victor, Tommie	183	2118	Vouk, Roxy	137	1730
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Varkey, Stephen	104	1167	Vidal, Jorge	018	169	Voyich, Jovanka	186	2170
Varki, Ajit	045	570	Vidal, Jorge	116	1334	Vozenilek, Aimee	120	1410
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Vasquez-Mejia, Clara	131	1605	Vig, Komal	033	404	Vyas, S.	137	1731
Vaughn, Meagan	061	830	Vig, Komal	087	861	Vyas, Shilpi	208	2496
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Wall, Judy	134	1673	Wang, Shao-Hung	110	1282	Watkins, Tonya	199	2341
Wall, Judy	123	1461	Wang, Shiao	053	711	Watkins, Tonya	199	2341
Wall, Judy	096	1028	Wang, Shiao	107	1238	Watkins, Tonya	090	924
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