

Jared (Jed) Goldstone

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- Education**
- Ph.D. in Chemical Oceanography** *February 2002*
Massachusetts Institute of Technology & Woods Hole Oceanographic Institute Joint Program in Oceanography. Thesis advisor: Bettina Voelker
- S.M in Inorganic Chemistry** *June 1996*
Massachusetts Institute of Technology. Thesis advisor: Alan Davison
- B.S in Chemistry** *June 1993*
Yale University. Thesis advisor: Robert Crabtree
- Experience**
- Research Specialist** *April 2009-present*
Department of Biology, Woods Hole Oceanographic Institution
- Visting Investigator** *October 2006-April 2009*
NIH Kirschstein NRSA Postdoctoral Fellow *September 2003-September 2006*
Postdoctoral Investigator *July 2002-September 2003*
Department of Biology, Woods Hole Oceanographic Institution
Senior Scientist John Stegeman. The involvement of ROS in the toxic mechanisms of polyhalogenated aromatic hydrocarbons. Molecular evolution of CYP genes.
- Research Assistant Professor** *March 2002-July 2002*
University of Maryland, College Park
Professor Neil Blough. Modeled the photobleaching spectra of humic substances.
- Graduate Reseach Assistant** *Sept. 1996-February 2002*
MIT Department of Civil and Environmental Engineering
Woods Hole Oceanographic Institute
Professor Bettina Voelker, Sr. Scientist Oliver Zafiriou (Woods Hole)
Photochemistry in natural waters. Reactive oxygen photochemistry.
- Graduate Research Assistant** *Sept. 1993-June 1996*
MIT Department of Chemistry
Professor Alan Davison. Synthesis of *cis*-dioxorhenium oxygen atom transfer catalysts, technetium radiopharmaceutical characterization.
- Professional Societies** American Chemical Society, American Geophysical Union, Society for Free Radical Biology and Medicine, The International Society for the Study of Xenobiotics, Society for Molecular Biology and Evolution, Society of Toxicology

Professional Reviewer for *Aquatic Toxicology*; *BMC Genomics*; *Deep Sea Research*; *Photochemistry and Activities* *Photobiology*; *Toxicological Sciences*; *Environmental Science and Technology*; *Molecular Biology Reports*; *Comp. Biochem. Physiol.*; *Comparative Biochemistry and Biophysics*; *Molecular Biology and Evolution*; *Biochemical Genetic*; *Environmental Toxicology and Chemistry*; *Marine and Environmental Research*; National Science Foundation. Founded annual WHOI Postdoctoral Symposium. Co-founded the WHOI Postdoctoral Association. First postdoctoral member of the WHOI Academic Council. Manage WHOI Biology Department bioinformatics servers. Co-organized 10th International Symposium on Cytochrome P450 Biodiversity and Biotechnology (2010). Member of the Falmouth, MA, Board of Health (2007-present; Vice Chair 2010-present)

Honors Ruth L. Kirschstein National Research Service Award
Dissertations Symposium in Chemical Oceanography (DISCO-XVII) invited participant
Ralph M. Parsons Graduate Fellowship
United States Navy Antarctic Service Medal
National Science Foundation Antarctic Service Award

Publications

41. D. R. Nelson, **J. V. Goldstone**, J. J. Stegeman. The cytochrome P450 genesis locus: The origin and evolution of animal cytochrome P450s. *Transactions of the Royal Society B* (invited; in press)
40. H.M.H. Goldstone, S. Tokugawa, J. J. Schelzinger, **J. V. Goldstone**, J. J. Stegeman. EZR1: A novel family of highly expressed retrotransposon deletion derivatives induced by TCDD and regulated by NF- κ B in embryos of zebrafish (*Danio rerio*). (2012) *Zebrafish* 9(1):15-25
39. A. R. Timme-Laragy, S. I. Karchner, D.G. Franks, M. J. Jenny, **J.V. Goldstone**, M. E. Hahn Nrf2b: A novel zebrafish paralog of the oxidant-responsive transcription factor Nrf2 (2012) *J. Biol. Chem.* 287(7):4609-4627
38. **J. V. Goldstone** and J. J. Stegeman. Methodological approaches to cytochrome P450 profiling in embryos. (2012) *Methods in Molecular Biology*
37. T. E. Parente, MF Rebelo, ML da-Silva, BR Woodin, **J.V. Goldstone**, PM Bisch, FJ Paumgarten, JJ Stegeman. Structural features of cytochrome P450 1A associated with the absence of EROD activity in liver of the loriciid catfish *Pterygoplichthys* sp. (2011) *Gene*. Epub Aug 5.
36. B. Shrestha, J. M. Reed, P. T. B. Starks, G. E. Kaufman, **J. V. Goldstone**, M. E. Roelke, S. J. O'Brien, K.-P. Koepfli, L. G. Frank, and M. H. Court (2011) Evolution of a major drug metabolizing enzyme defect in the domestic cat and other Felidae: Phylogenetic timing and the role of hypercarnivory *PLoS One* **6(3)**:e18046.
35. A. Kubota, J. J. Stegeman, **J.V. Goldstone**, D. R. Nelson, E. Y. Kim, S. Tanabe, H. Iwata. Cytochrome P450 CYP2 genes in the common cormorant: Evolutionary relationships with 130 diapsid CYP2 clan sequences and chemical effects on their expression. *Comp Biochem Physiol C Toxicol Pharmacol.* (2011) **153(3)**:280-9.

34. K. Gao., I. Brand, **J.V. Goldstone**, M.E. Jönsson . Cytochrome P450 1A, 1B, and 1C mRNA induction patterns in three-spined stickleback exposed to a transient and a persistent inducer. *Comp Biochem Physiol C Toxicol Pharmacol.* (2011) **154(1)**:42-55.
33. **J. V. Goldstone**, A. G. McArthur, J. Zanette, T. Parente, M. Jönsson, D. R. Nelson, and J. J. Stegeman. Identification and Developmental Expression of the Full Complement of Cytochrome P450 Genes in Zebrafish *BMC Genomics.* (2010) **11**:643
32. K. E. Whalen, **J. V. Goldstone**, M. E. Hahn. Cytochrome P450 diversity and induction by gorgonian allelochemicals in the marine gastropod *Cyphoma gibbosum.* *BMC Ecol.* (2010) **10**:24
31. M. E. Jönsson , C. Berg, **J. V. Goldstone**, J. J. Stegeman. New CYP1 genes in the frog *Xenopus (Silurana) tropicalis*: Induction patterns and effects of AHR agonists during development *Toxicol Appl Pharmacol* (2011) **250(2)**:170-83
30. M. C. Celander, **J. V. Goldstone**, N. D. Denslow, T. Iguchi, P. Kille, R. D. Meyerhoff, B. A. Smith, T. H. Hutchinson, J. R. Wheeler. Species Extrapolation for the 21st Century. *Environmental Toxicology and Chemistry* (2011) **30(1)** 52-63
29. M. C. K. Leung, **J. V. Goldstone**, W. A. Boyd, J. H. Freedman, J. N. Meyer *Caenorhabditis elegans* generates biologically relevant levels of genotoxic metabolites from aflatoxin B1 but not benzo[a]pyrene *in vivo.* *Toxicol. Sci.* (2010). **118(2)**:444-53.
28. K. E. Whalen, E. E. Sotka, **J. V. Goldstone**, M. E. Hahn. The role of multixenobiotic transporters in molluscan predators as defense mechanisms against dietary chemical stress. *Comp Biochem. Physiol.* (2010) **52(3)**:288-300
27. J. J. Stegeman, **J. V. Goldstone**, M. E. Hahn. Perspectives in Zebrafish as a Model in Environmental Toxicology. In: *Zebrafish.* S. F. Perry, M. Ekker, A. P. Farrell C. J. Brauner (eds). Elsevier. (2010)
26. M. E. Jönsson, K. Gao, J. A. Olsson, J. V. Goldstone, I. Brandt. Induction patterns of new CYP1 genes in environmentally exposed rainbow trout. *Aquatic Toxicology* (2010) **98(4)** 311-321.
25. L. Behrendt, M. E. Jonsson, **J. V. Goldstone**, and J. J. Stegeman. Induction of cytochrome P450 1 genes and stress response genes in zebrafish embryos exposed to ultraviolet radiation. *Aquatic Toxicology* (2010) **98(1)**, 74-82.
24. J. Zannette, **J. V. Goldstone**, Afonso C. D. Bairy, and J. J. Stegeman. New cytochrome P450 genes in bivalves – Identification of CYPs from mussel and oyster ESTs. *Marine Environmental Research* (2010) 69 Suppl:S1-3.
23. J. Zannette, M. J. Jenny, **J. V. Goldstone**, B. R. Woodin, Lauren A. Watka, Afonso C. D. Bairy, and J. J. Stegeman. New Cytochrome P450 1B1, 1C2 and 1D1 Genes in the Killifish *Fundulus heteroclitus*: Basal Expression and Response of Five Killifish CYP1s to the AHR Agonist PCB126. *Aquatic Toxicology.* (2009) **93(4)**, 234-43.

22. **J. V. Goldstone**, M. E. Jönsson, L. Behrendt, B. R. Woodin, M. J. Jenny, D. R. Nelson and J. J. Stegeman. Cytochrome P450 1D1: a novel CYP1A-related gene that is not transcriptionally activated by PCB126 or TCDD. *Archives of Biochemistry and Biophysics*. (2009) **482(1-2)**:7-16.
21. **J. V. Goldstone**. Environmental sensing and response genes in Cnidaria: the chemical defense in the sea anemone *Nematostella vectensis*. *Cell Biology and Toxicology* (2008) **24(6)** 483-502.
20. K. E. Whalen, D. Morin, C. Y. Lin, R. S. Tjeerdema, **J. V. Goldstone**, M. E. Hahn. Proteomic identification, biochemical characterization and cDNA cloning of glutathione S-transferases from the generalist marine gastropod, *Cyphoma gibbosum*. *Archives of Biochemistry and Biophysics*. (2008) **478(1)**:7-17.
19. R. M. Gould, T. Oakley, **J. V. Goldstone**, J. C. Dugas, S. T. Brady, A. Gow. Myelin sheaths are formed with proteins that originated in vertebrate lineages. *Neuron Glia Biology*. (2008) **4(2)**:137-52.
18. Abad, P. et al (56 co-authors) Plant parasitism in metazoans: insight from the *Meloidogyne incognita* nematode genome. *Nature Biotechnology*. (2008) **26(8)**:909-15.
17. **J. V. Goldstone** and J. J. Stegeman. Gene Structure of the Novel Cytochrome P450 1D1 Genes in Stickleback (*Gasterosteus aculeatus*) and Medaka (*Oryzias latipes*). *Marine Environmental Research*. (2008) **66(1)**:19-20.
16. G. de Toledo-Silva, M. N. Siebert; I. D. Medeiros, T. Sincero, M. O. Moraes, **J. V. Goldstone**, A. C. D. Bainy. Cloning a new Cytochrome P450 isoform (CYP356A1) from the oyster *Crassostrea gigas*. *Marine Environmental Research*. (2008) **66(1)**:15-18.
15. **J. V. Goldstone**, H. M. H. Goldstone, A. M. Morrison, A. M. Tarrant, S. E. Kern, B. R. Woodin, and J. J. Stegeman. Cytochrome P450 1 genes in early deuterostomes (tunicates and sea urchins) and vertebrates (chicken and frog): Origin and diversification of the CYP1 gene family. *Molecular Biology and Evolution*. (2007) **24(12)**:2619-2631.
14. Jönsson, M. E., R. Orrego, B. R. Woodin, **J. V. Goldstone**, and J. J. Stegeman. Basal and 3,3',4,4',5-pentachlorobiphenyl-induced expression of cytochrome P450 1A, 1B, and 1C genes in zebrafish. *Toxicology and Applied Pharmacology* (2007) **221(1)**:29-41.
13. Prasad, J., **J. V. Goldstone**, C. J. Camacho, J. J. Stegeman and S. Vajda. Ensemble modeling of substrate binding to cytochromes P450: analysis of catalytic differences between CYP1A orthologues. *Biochemistry* (2007) **46(10)**, 2640-2654.
12. The Sea Urchin Genome Consortium. The genome of the sea urchin *Strongylocentrotus purpuratus*. *Science* (2006) 10 Nov **314:5801**, 941 - 952
11. **J. V. Goldstone**, A. Hamdoun, B.J. Cole, M. Howard-Ashby, D. W. Nebert, M. Scally, M. Dean, D. Epel, M.E. Hahn, J.J. Stegeman. The chemical defense: Environmental sensing and response genes in the *Strongylocentrotus purpuratus* genome. *Developmental Biology* (2006) **300:1** 366-384.

10. Verslyke, T., **J. V. Goldstone**, and J. J. Stegeman. Isolation and phylogeny of novel urochordate clon 3 cytochrome P450 genes. *Molecular Phylogenetics and Evolution* (2006). **40(3)**, 760-71.
9. Schlezinger, J. J., W. D. J. Struntz, **J. V. Goldstone**, J. J. Stegeman. Uncoupling of cytochrome P450 1A and stimulation of reactive oxygen species production by co-planar polychlorinated biphenyl congeners. *Aquatic Toxicology* (2006). **77(4)**, 422-32.
8. Godard C. A. J., **J. V. Goldstone***, M. S. Said, R. L. Dickerson, B.R. Woodin, and J. J. Stegeman. The New Vertebrate CYP1C Family: Cloning of New Subfamily Members and Phylogenetic Analysis. *Biochemical and Biophysical Research Communications* (2005), **331(4)**, 1016-1024. *co-first author.
- 7. Goldstone, J. V.**, R. Del Vecchio, B. M. Voelker, and N. V. Blough. A multicomponent model of CDOM photobleaching. *Photochemistry and Photobiology* (2004), **80**, 52-60.
6. Pullin, M. J., S. Bertilsson, **J. V Goldstone**, and B. M. Voelker. Photo-induced changes in dissolved organic matter bioavailability: formation of low molecular weight organic acids and other substrates. *Limnology and Oceanography* (2004), **49**, 2011-2022.
5. **Goldstone, J. V.**, M. J. Pullin, S. Bertilsson, and B. M. Voelker. Reactions of hydroxyl radical with humic substances: Bleaching, mineralization, and production of bioavailable carbon substrates. *Environmental Science and Technology* (2002), **36** (3), 364-372.
4. **Goldstone, J. V.** and B. M. Voelker. The chemistry of superoxide in seawater: CDOM associated sink of superoxide in coastal waters. *Environmental Science and Technology* (2000), **34** (6), 1043-1048.
3. Mahmood A., M. H. Kuchma, E. Freiberg, **J. V. Goldstone.**, A. Davison, A. G. Jones. Functionalized tetradentate N2S2 ligands and their technetium-99 and rhenium complexes: synthesis, spectroscopy, and structural characterization. In *Technetium, Rhenium, and Other Metals in Chemistry and Nuclear Medicine*. Vol 5. (1998) 253-257.
2. Mahmood A., M. H. Kuchma, **J. V. Goldstone**, C. Morse, A. Davison, A. G. Jones. An N2S2 tetradentate chelate for solid-phase synthesis: evaluation in solution and solid phase and characterization of technetium-99 complexes. In *Technetium, Rhenium, and Other Metals in Chemistry and Nuclear Medicine*. Vol 5. (1998) 71-76.
1. Neale P. J., M. P. Lesser, J. J. Cullen, **J. Goldstone**. Detecting UV-induced inhibition of photosynthesis in Antarctic phytoplankton. *Antarctic Journal of The United States*, **27**, 122-124 (1992).

Thesis
Titles

Ph.D. Direct and indirect photoreactions of chromophoric dissolved organic matter: Roles of reactive oxygen species and iron.
S. M. Rhenium (VII) *cis*-dioxo complexes. Synthesis and characterization of rhenium complexes for oxygen atom transfer catalysis.
B.S. Synthesis of *bis*-pyrrolo-2-methyl-sulfone as a ligand for rhodium-catalyzed alkane activation.

Extended

Goldstone, J. V., R. Del Vecchio, B. M. Voelker, and N. V. Blough. A multicomponent

Abstracts model of CDOM photobleaching. Extended Abstracts of Papers of the American Chemical Society. **225**:055-ENVR Part 1 (March 23 2003).

Goldstone, J. V. and B. M. Voelker. CDOM associated sink of superoxide in coastal waters. Extended Abstracts of Papers of the American Chemical Society. **216**:057-ENVR Part 1 (Aug 23 1998).

Presentations (more than 55 posters, talks, and invited talks, 1998-2012)

Most recent invited presentations listed:

Zebrafish Cytochrome P450s, *Fish and Amphibian Embryos as Alternative Models in Toxicology and Teratology*, Paris, France, October 2012, invited

Origins of metazoan CYP diversity. *11th International Symposium on Cytochrome P450 Biodiversity and Biotechnology*, Turin, Italy, June 2012, invited

Zebrafish Cytochrome P450s. *Zebrafish Norway Network Symposium*. Bergen, Norway, November 2011, invited.

Research R/V Endeavour, 2003, Georgia Bight
Cruises R/V Endeavour, 2000, Sargasso Sea
 R/V Cape Henlopen, 1999, Delaware Bay
 R/V Weatherbird II, 1997, Sargasso Sea
 R/V Cape Hatteras, 1997, Chesapeake Bay and Sargasso Sea
 R/V Cape Hatteras, 1991, Gulf of Maine and Mid-Atlantic Bight