

## Supplementary Information for

### **Widespread gene expression divergence in butterfly sensory tissues plays a fundamental role during reproductive isolation and speciation**

Ningning Wu<sup>1</sup>, Elizabeth Evans<sup>2</sup>, Bas van Schooten<sup>2</sup>, Jesyka Meléndez-Rosa<sup>2</sup>, Yadira Ortiz<sup>2</sup>, Silvia M. Planas Soto-Navarro<sup>2,3</sup>, Steven M. Van Belleghem<sup>2,4</sup>, Brian A. Counterman<sup>5</sup>, Riccardo Papa<sup>2,3†\*</sup> and Wei Zhang<sup>1,6†\*</sup>

<sup>1</sup>State Key Laboratory of Protein and Plant Gene Research, School of Life Sciences, Peking University, Beijing 100871, China.

<sup>2</sup>Department of Biology, University of Puerto Rico, Rio Piedras, San Juan 00925, Puerto Rico, United States of America.

<sup>3</sup>Molecular Sciences and Research Center, University of Puerto Rico, San Juan 00907, Puerto Rico, United States of America.

<sup>4</sup>Ecology, Evolution and Conservation Biology, Biology Department, KU Leuven, Leuven, Belgium.

<sup>5</sup>Department of Biological Sciences, Auburn University, Auburn, AL 36849, United States of America.

<sup>6</sup>Peking-Tsinghua Center for Life Sciences, Academy for Advanced Interdisciplinary Studies, Peking University, Beijing 100871, China.

†These authors jointly supervised this project and contributed equally.

\*To whom correspondence should be addressed: wzhangvv@pku.edu.cn;

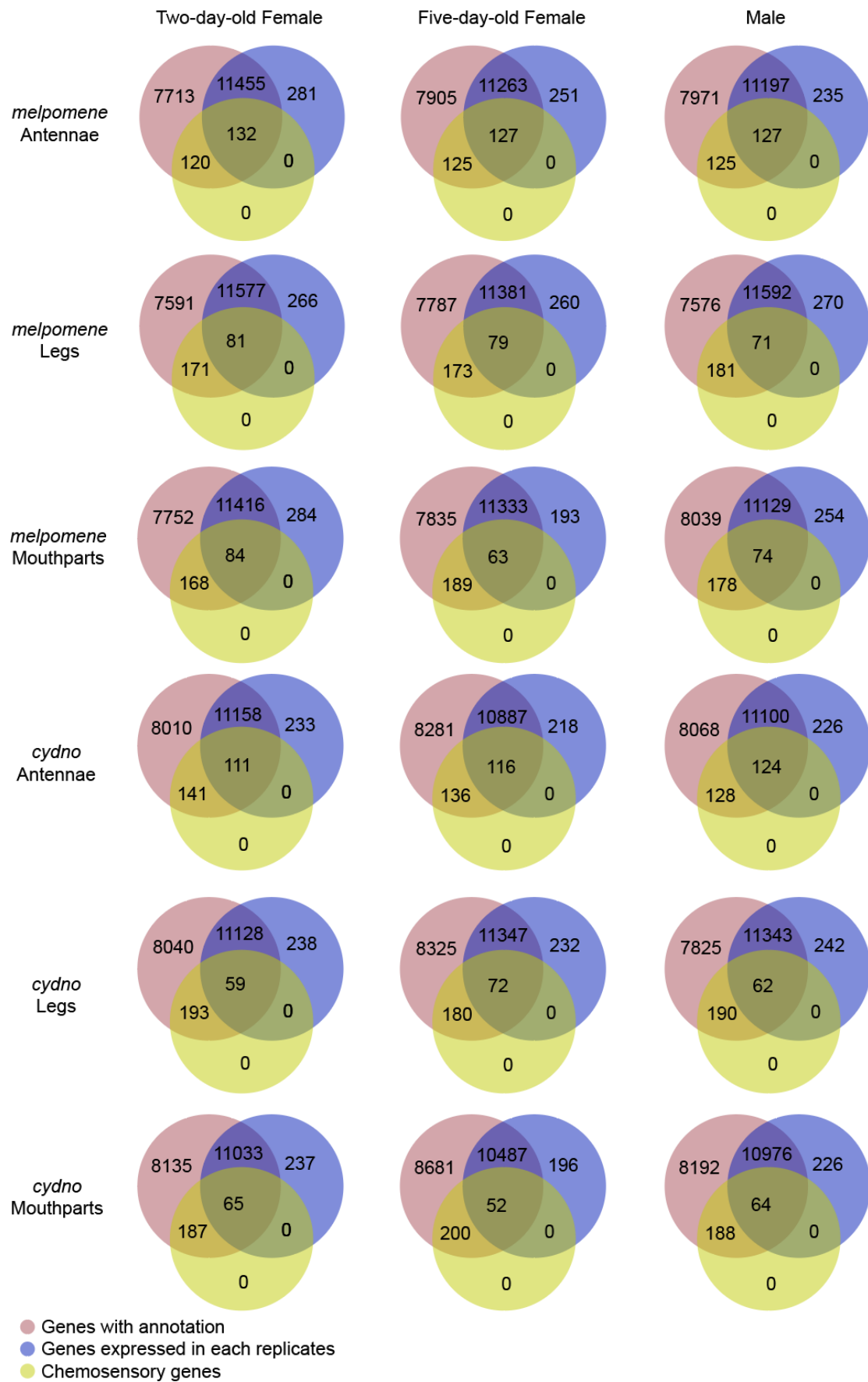
rpapa.lab@gmail.com

## Contents:

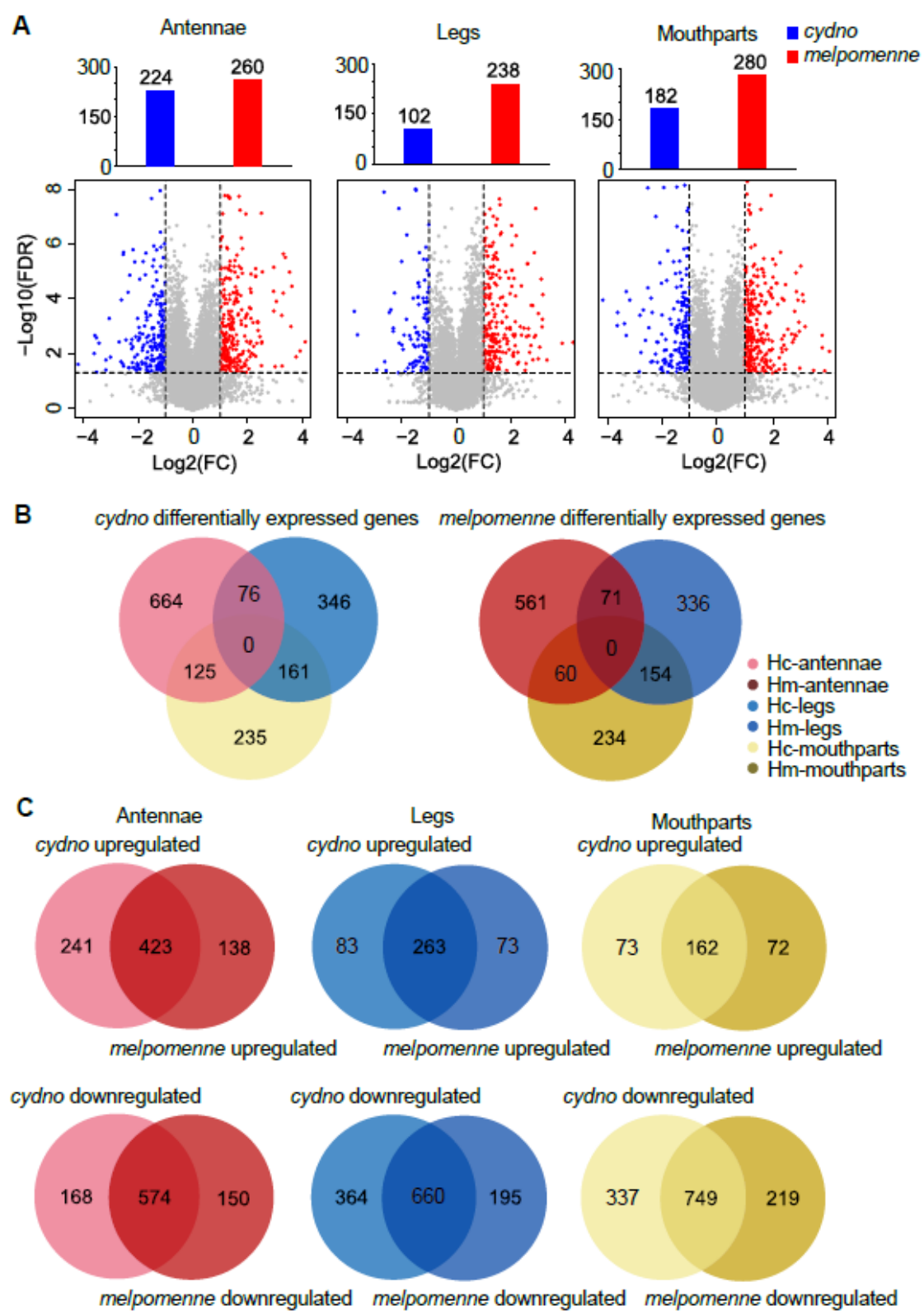
|                         |     |
|-------------------------|-----|
| Supplementary Figure 1  | 4   |
| Supplementary Figure 2  | 6   |
| Supplementary Figure 3  | 8   |
| Supplementary Figure 4  | 9   |
| Supplementary Figure 5  | 10  |
| Supplementary Figure 6  | 11  |
| Supplementary Figure 7  | 12  |
| Supplementary Figure 8  | 15  |
| Supplementary Figure 9  | 16  |
| Supplementary Figure 10 | 17  |
| Supplementary Figure 11 | 18  |
| Supplementary Figure 12 | 19  |
| Supplementary Figure 13 | 20  |
| Supplementary Figure 14 | 21  |
| Supplementary Figure 15 | 22  |
| Supplementary Table 1   | 23  |
| Supplementary Table 2   | 29  |
| Supplementary Table 3   | 30  |
| Supplementary Table 4   | 32  |
| Supplementary Table 5   | 37  |
| Supplementary Table 6   | 39  |
| Supplementary Table 7   | 40  |
| Supplementary Table 8   | 43  |
| Supplementary Table 9   | 68  |
| Supplementary Table 10  | 89  |
| Supplementary Table 11  | 95  |
| Supplementary Table 12  | 105 |
| Supplementary Table 13  | 106 |

**Supplementary Table 14**-----**107**

**Supplementary Table 15**-----**118**

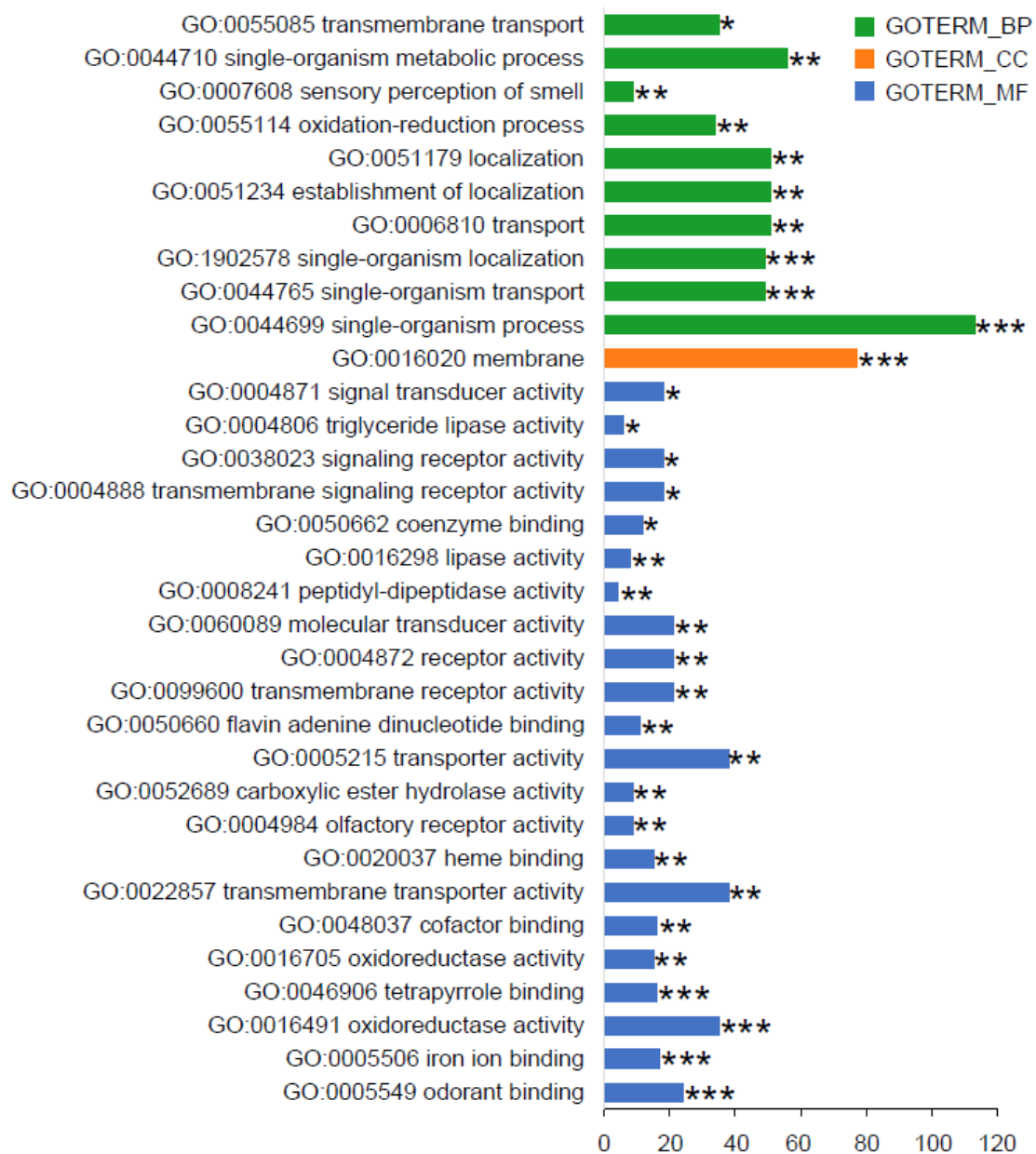


**Supplementary Figure 1. Venn diagrams of overlapping genes in transcriptome analysis results.** For two-day-old female, five-day-old female and male chemosensory organs in each species, a Venn diagram shows the overlapping total annotated genes, expressed genes, and chemosensory genes.



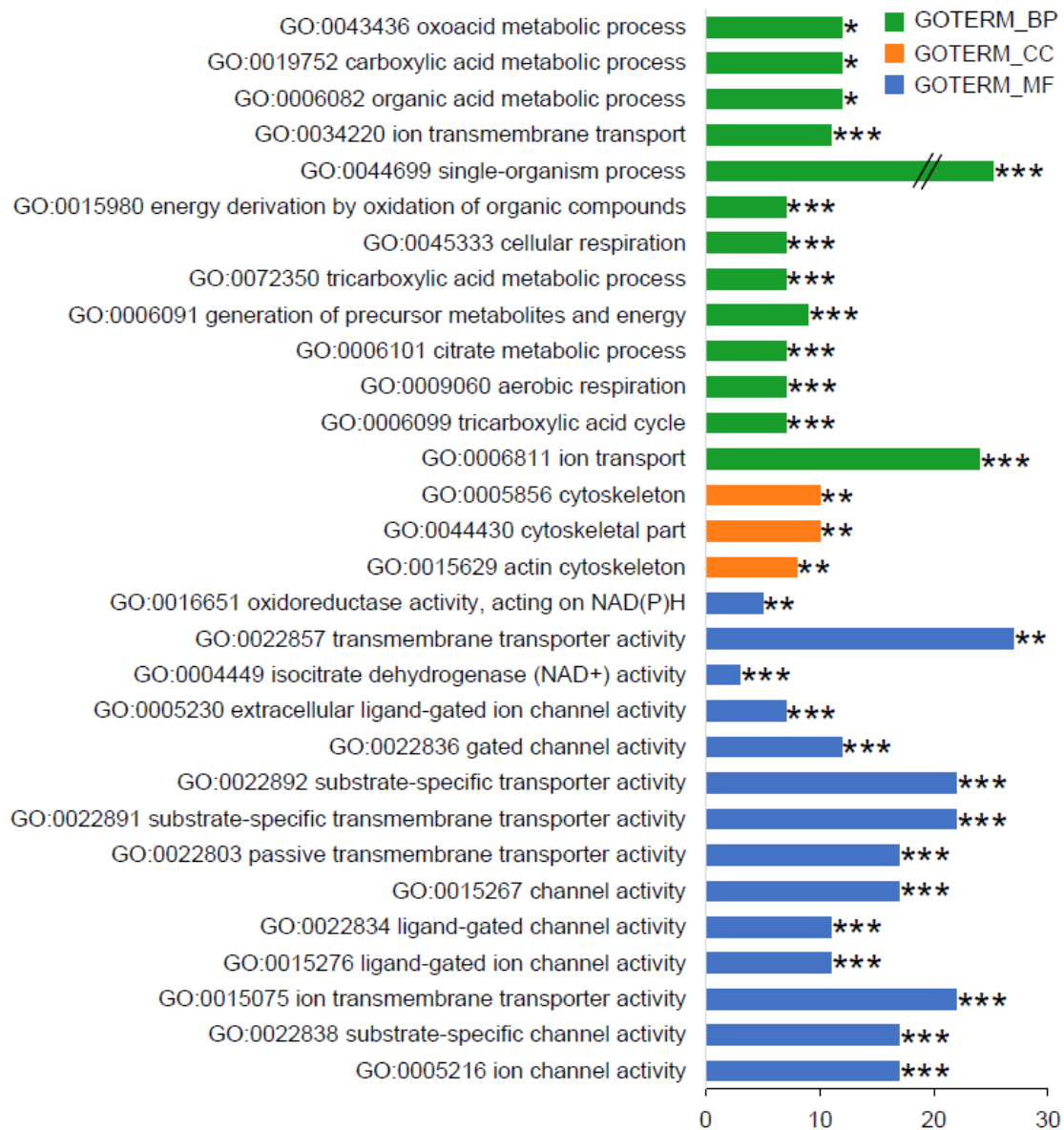
**Supplementary Figure 2. Gene expression patterns in chemosensory tissues between *H. cydno* and *H. melpomene*.** (A) Volcano plots and histograms showing differentially expressed genes (DEGs) between *H. cydno* and *H. melpomene* in antennae, legs, and mouthparts, respectively. (B) Venn diagrams showing the overlapping DEGs in antennae, legs, and

mouthparts. Hc and Hm refer to *H. cydno* and *H. melpomene*. (C) Venn diagrams showing the overlapping upregulated or downregulated genes between *H. cydno* and *H. melpomene* in antennae, legs, and mouthparts.

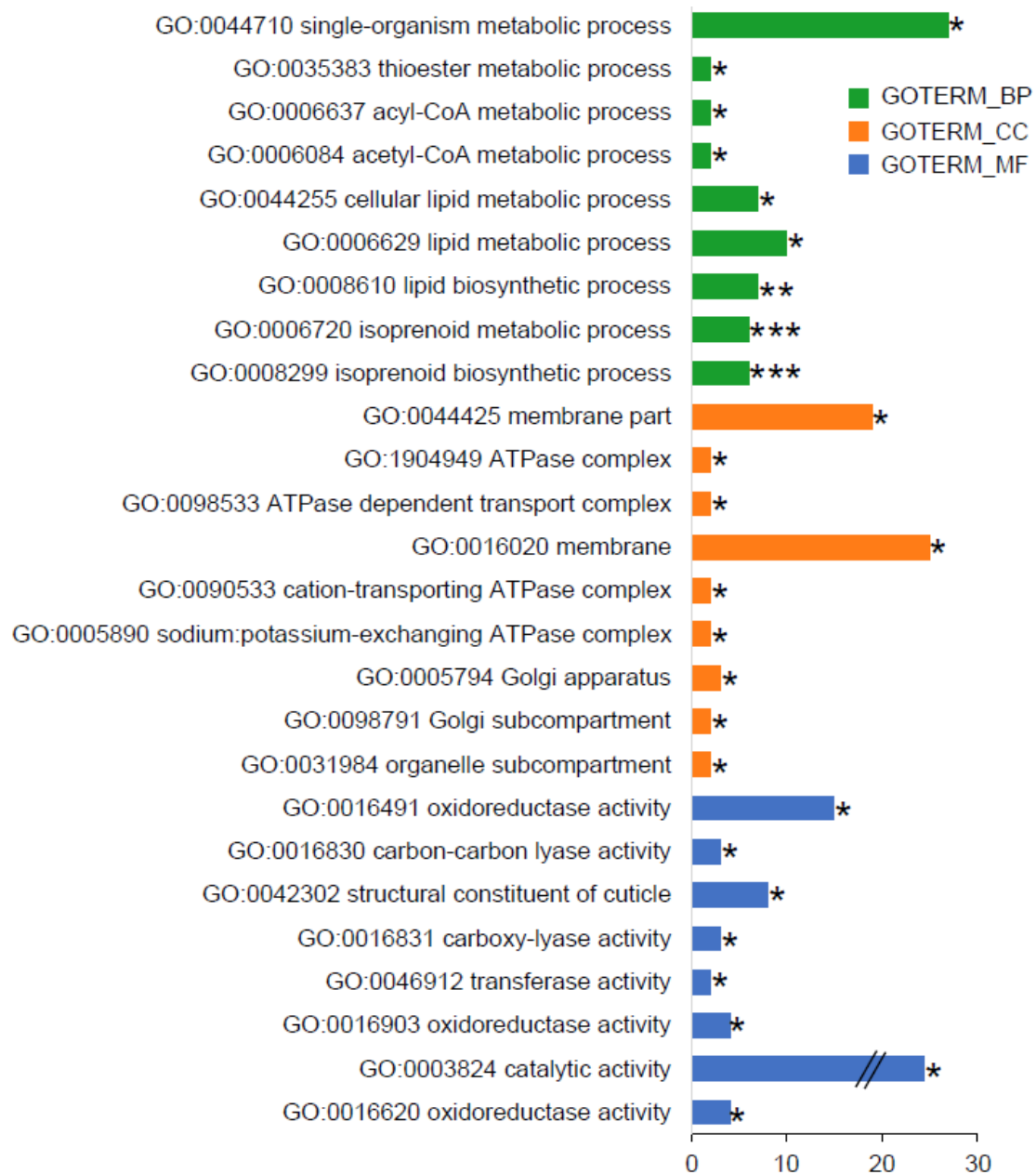


**Supplementary Figure 3. Significantly enriched GO terms for upregulated antenna genes in both *H. cydno* and *H. melpomene*.** GO enrichment analyses were performed for upregulated genes in antenna tissues relative to other tissues. BP, CC, and MF refer to the biological process, cellular component, and molecular function categories, respectively. The bar plots indicate the hit counts of GO terms. \* indicates  $P < 0.05$ , \*\* indicates  $P < 0.01$ , and \*\*\* indicates  $P < 0.001$ .

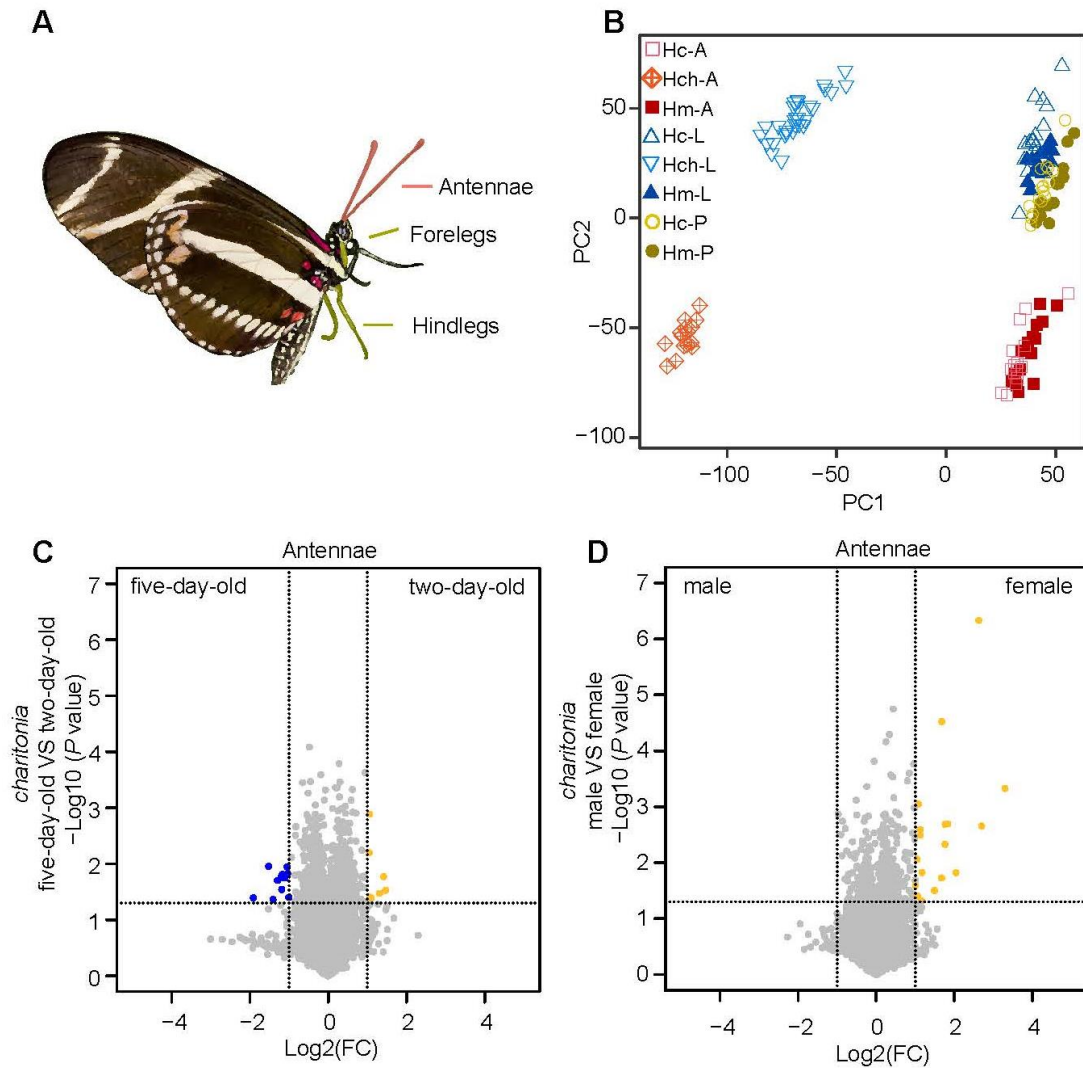




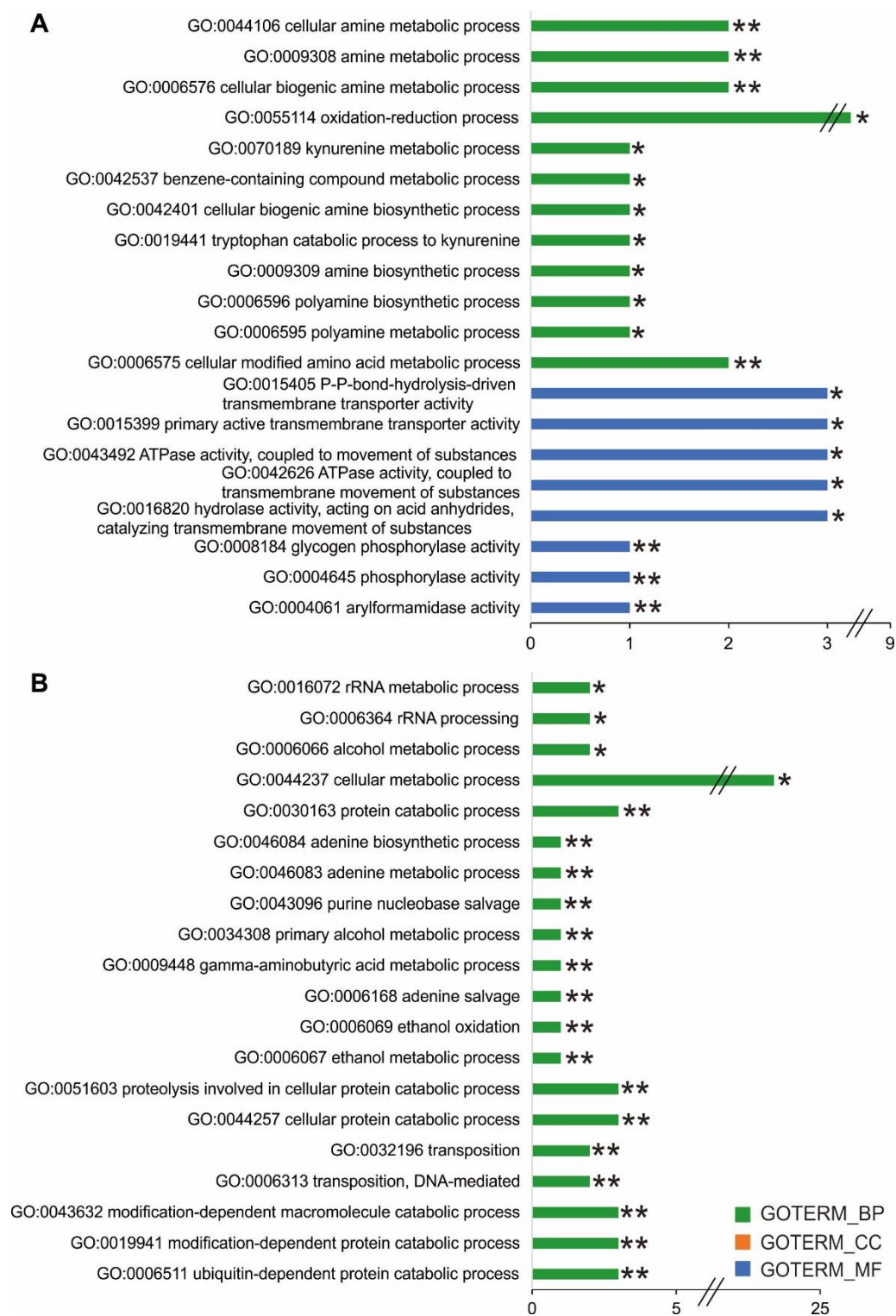
**Supplementary Figure 4. Significantly enriched GO terms for upregulated leg genes in both *H. cydno* and *H. melpomene*.** GO enrichment analyses were performed for upregulated genes in leg tissues relative to other tissues. BP, CC, and MF refer to the biological process, cellular component, and molecular function categories, respectively. The bar plots indicate the hit counts of GO terms. \* indicates  $P < 0.05$ , \*\* indicates  $P < 0.01$ , and \*\*\* indicates  $P < 0.001$ .

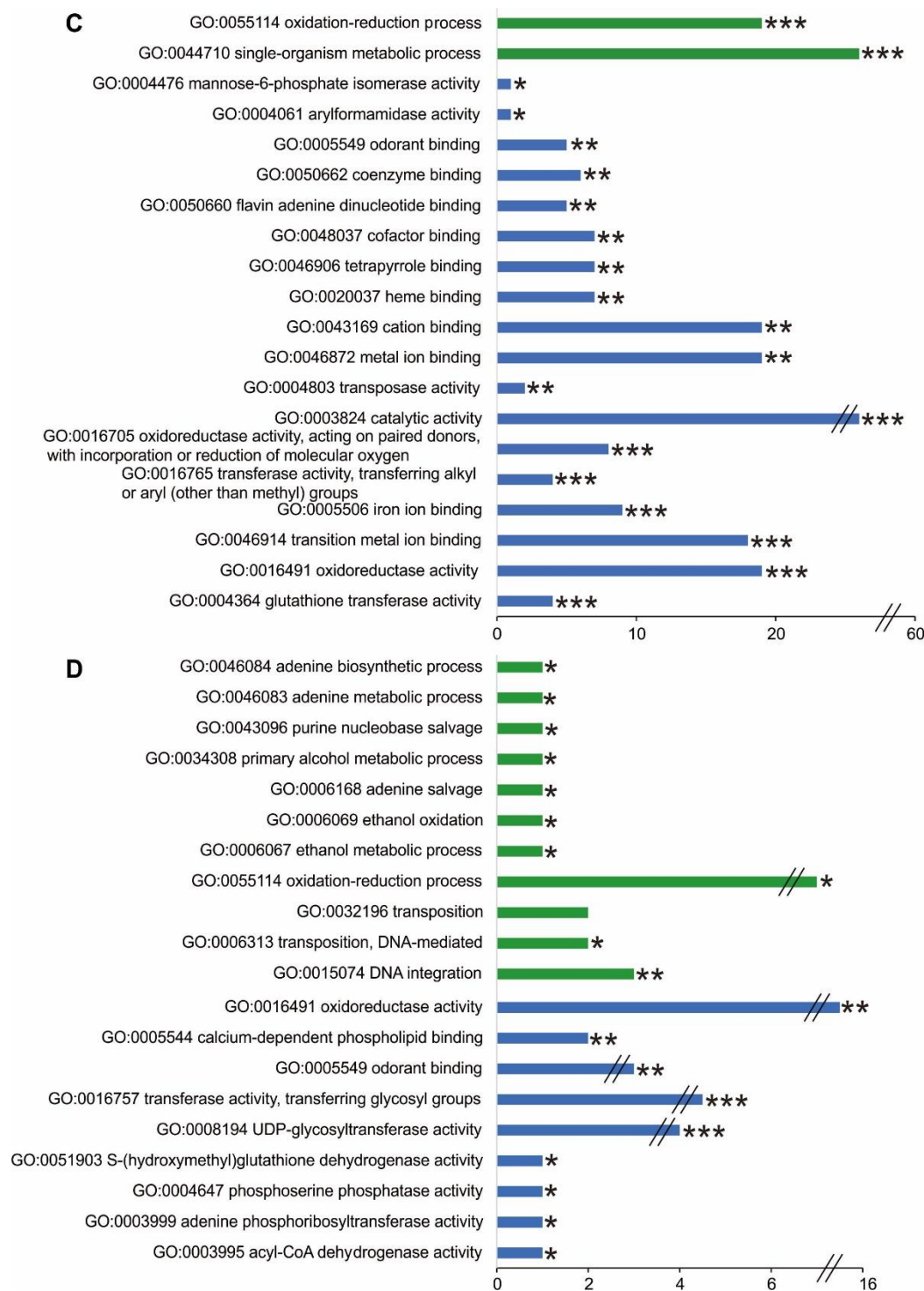


**Supplementary Figure 5. Significantly enriched GO terms for upregulated mouthpart genes in both *H. cydno* and *H. melpomene*.** GO enrichment analyses were performed for upregulated genes in mouthpart tissues relative to other tissues. BP, CC, and MF refer to the biological process, cellular component, and molecular function categories, respectively. The bar plots indicate the hit counts of GO terms. \* indicates  $P < 0.05$ , \*\* indicates  $P < 0.01$ , and \*\*\* indicates  $P < 0.001$ .



**Supplementary Figure 6. Gene expression patterns in chemosensory tissues of *H. charithonia*.** (A) Diagram of the body structure of *H. charithonia* with the antennae, forelegs and hindlegs labeled and colored in red and yellow, respectively. (B) Principal component analysis (PCA) of *H. charithonia*, *H. melpomene* and *H. cydno* chemosensory tissues based on their overall gene expression profiles. Solid circles represent the 95% confidence interval regions. Hch, Hm, and Hc refer to *H. charithonia*, *H. melpomene* and *H. cydno*, respectively, whereas A, L and P refer to antennae, legs and mouthparts, respectively. Volcano plots showing differentially expressed genes between two-day-old and five-day-old females in antennae (C) and between five-day-old males and females in antennae (D).

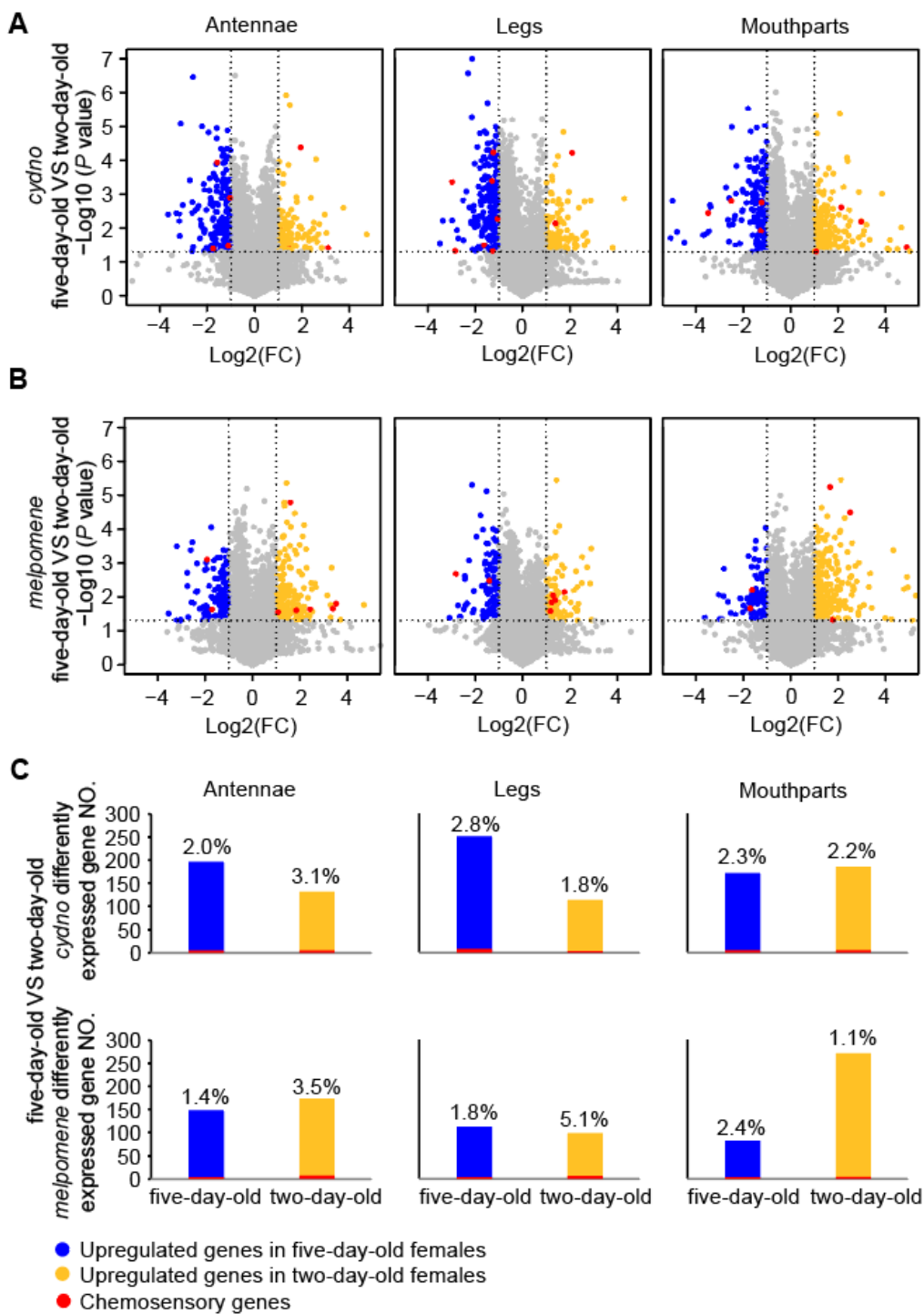




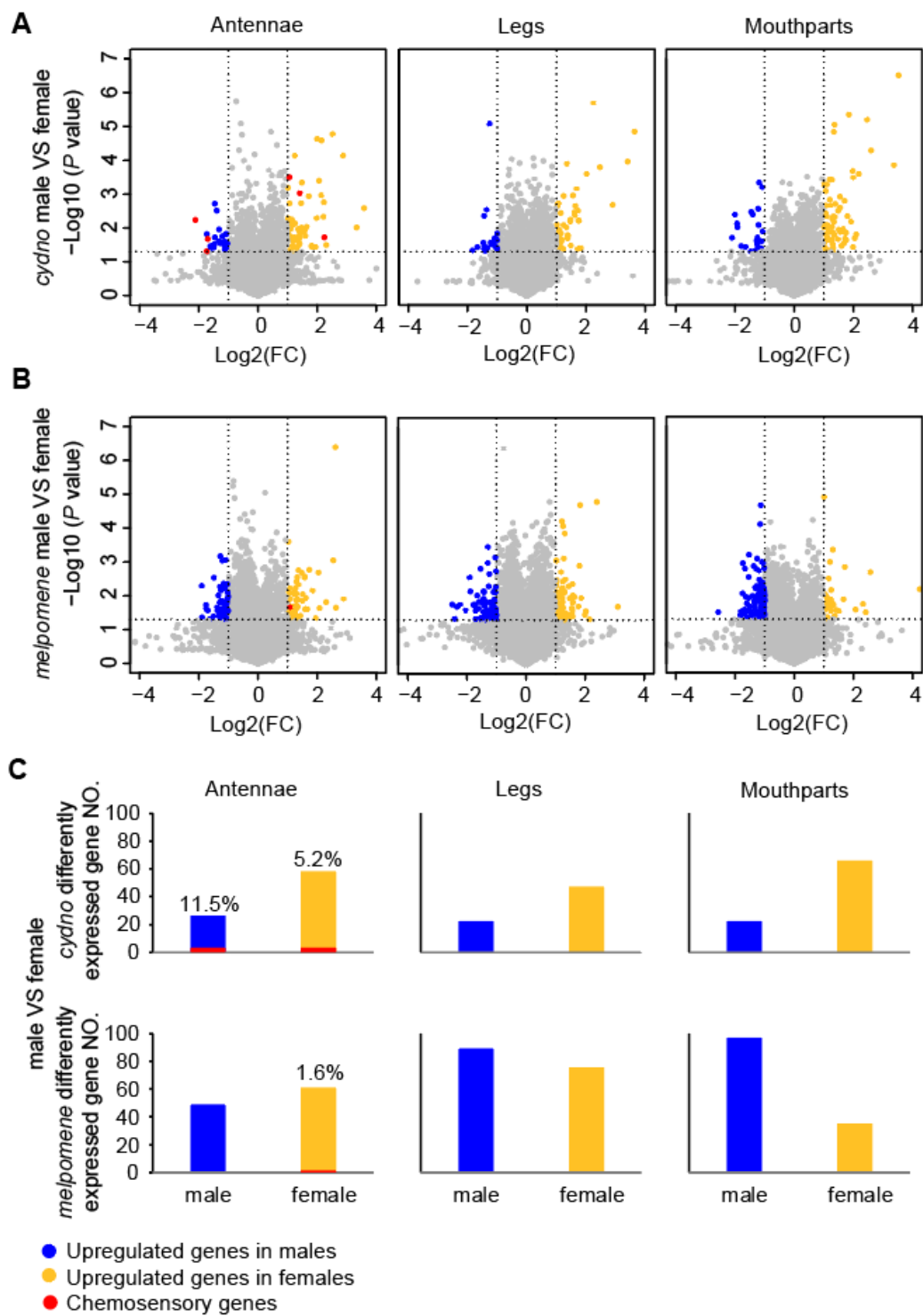
**Supplementary Figure 7. Top 20 significantly enriched GO terms for upregulated genes in pooled and 5-day-old female antennae in the comparison of *H. cydno* and *H. melpomene*.**

(A) Top 20 significantly enriched GO terms for upregulated genes in pooled female antennae in *H. cydno*. (B) Top 20 significantly enriched GO terms for upregulated genes in pooled female antennae in *H. melpomene*. (C) Top 20 significantly enriched GO terms for upregulated genes in 5-day-old female antennae in *H. cydno*. (D) Top 20 significantly enriched GO terms for

upregulated genes in 5-day-old female antennae in *H. melpomene*. BP, CC, and MF refer to the biological process, cellular component, and molecular function categories, respectively. The bar plots indicate the hit counts of GO terms. \* indicates  $P < 0.05$ , \*\* indicates  $P < 0.01$ , and \*\*\* indicates  $P < 0.001$ .

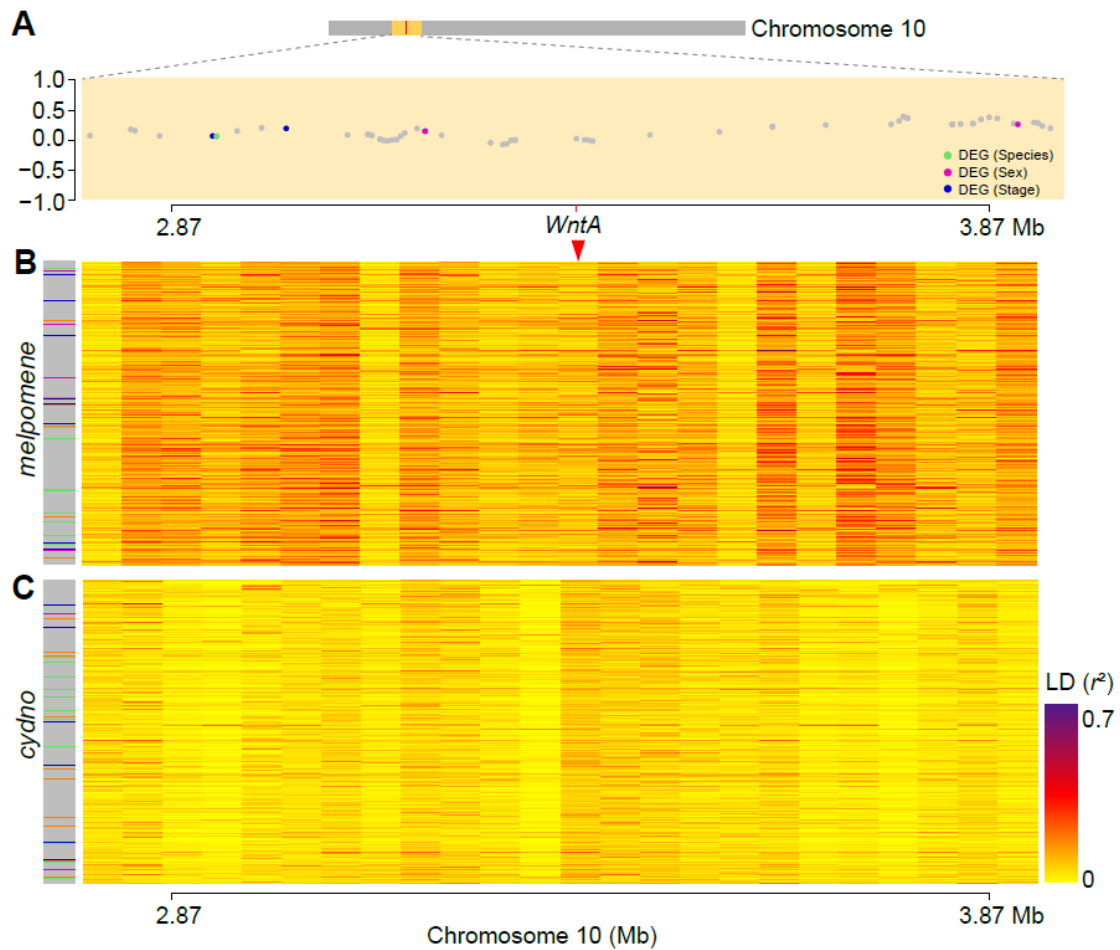


**Supplementary Figure 8. Gene expression patterns in chemosensory tissues between five-day-old and two-day-old females. (A, B)** Volcano plots showing differentially expressed genes between five-day-old and two-day-old females in antennae, legs, and mouthparts. **(C)** Histograms showing the expressed gene numbers when comparing five-day-old and two-day-old female tissues. The percentage refers to the proportion of chemosensory genes contained therein, if any.

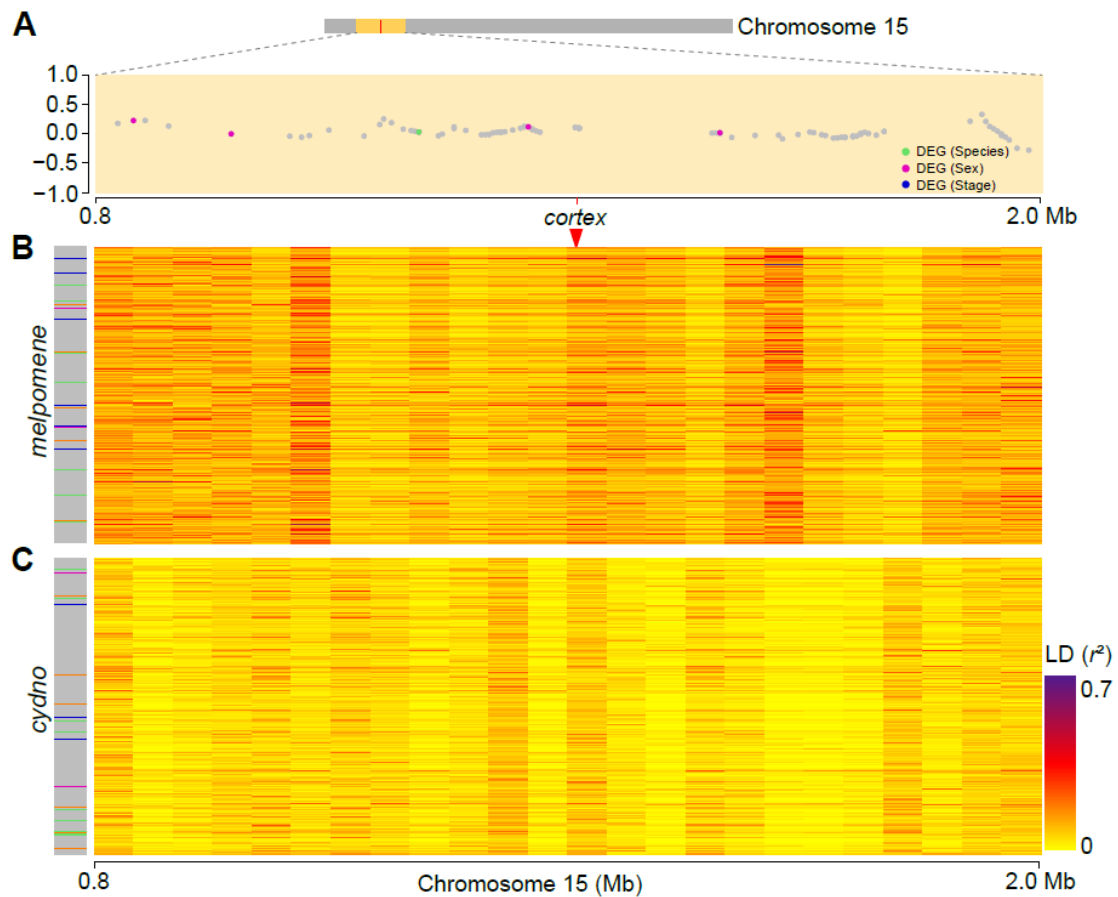


**Supplementary Figure 9. Gene expression patterns in chemosensory tissues between five-day-old males and females. (A, B)** Volcano plots showing differentially expressed genes between five-day-old males and females in antennae, legs, and mouthparts. **(C)** Histograms showing the expressed gene numbers when comparing male and female tissues. The percentage refers to the proportion of chemosensory genes contained therein, if any.

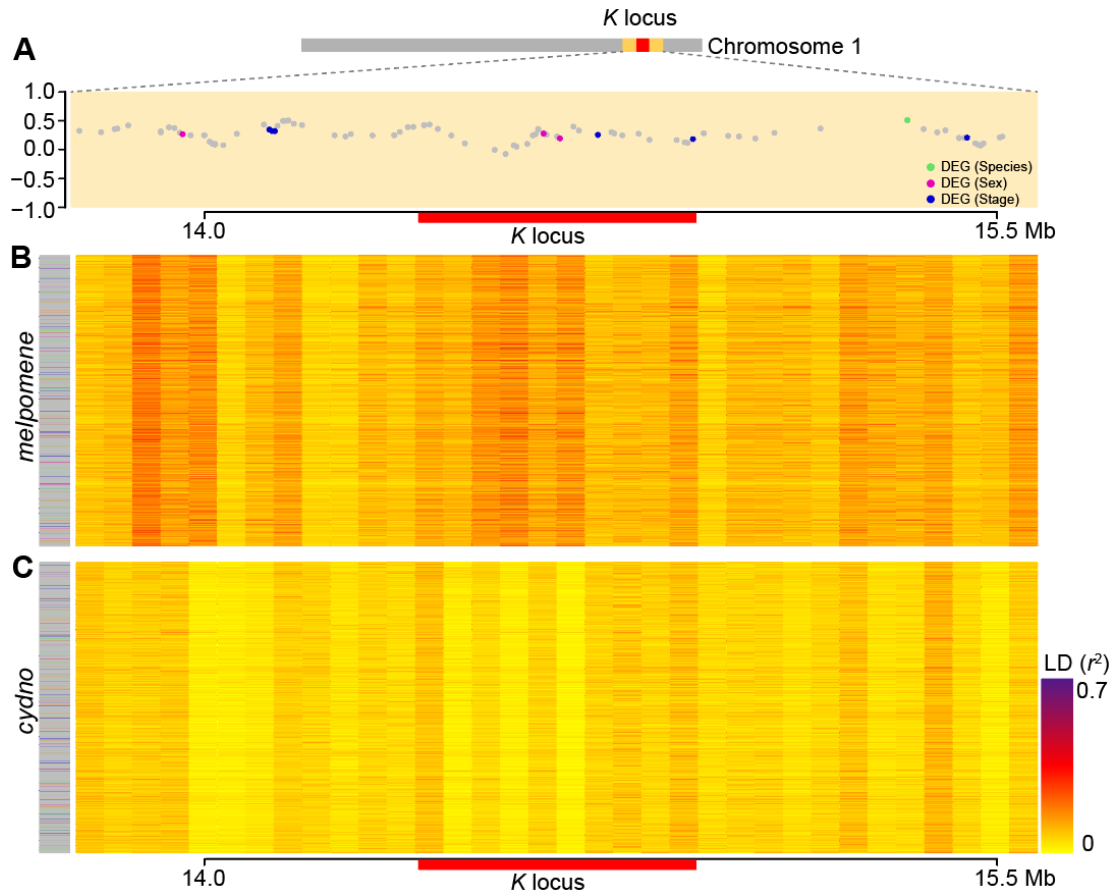




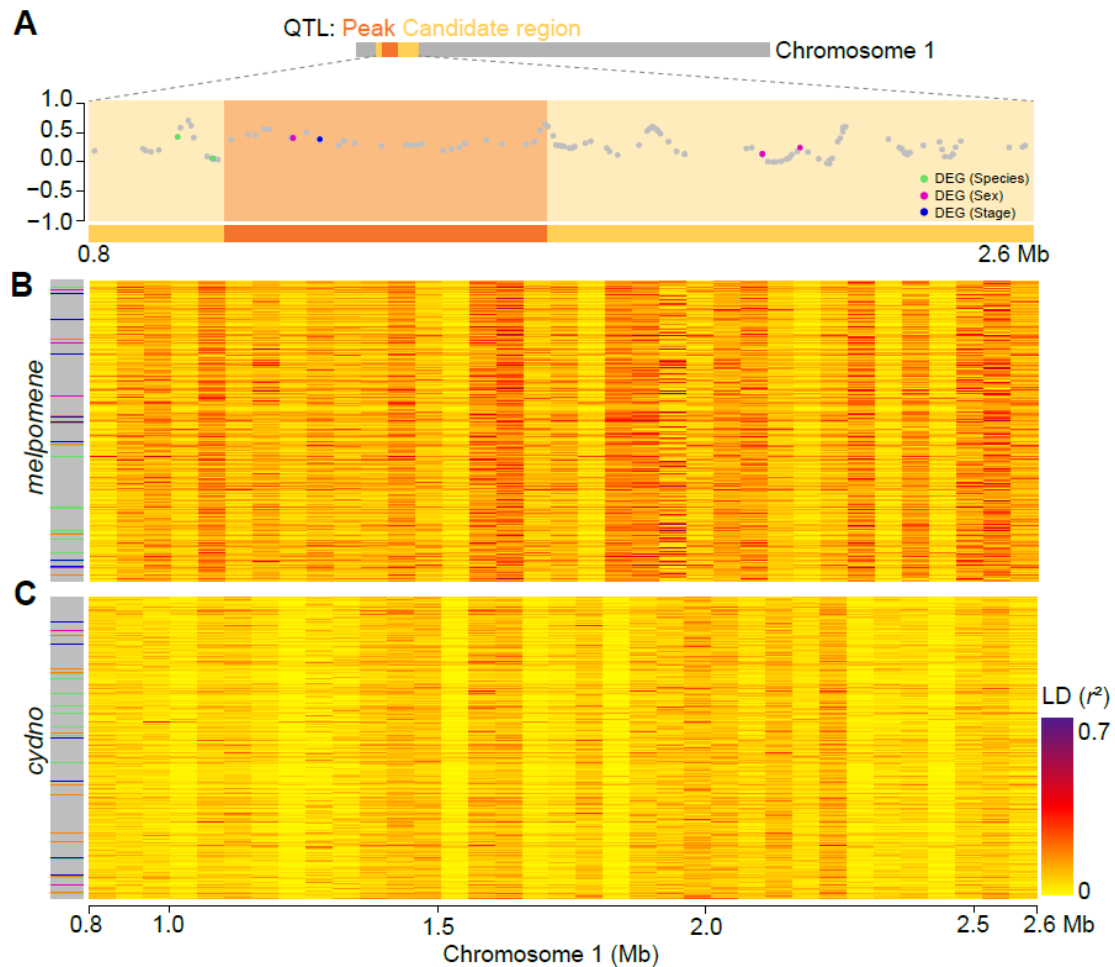
**Supplementary Figure 10. Genomic divergence and differential expression of chemosensory tissues associated with the color-pattern gene *WntA*.** (A) Non-introgressed and differentially expressed genes (DEGs) at the color-pattern gene *WntA* on chromosome 10. Gray points indicate non-DEGs. Green, purple, and blue points indicate DEGs. Points above the horizontal dotted line are introgressed genes ( $f_d > 0$ ), while the others are non-introgressed ( $f_d \leq 0$ ). Linkage disequilibrium (LD) map of genome-wide non-introgressed genes and the focal region containing *WntA* in *H. melpomene* (B) and *H. cydno* (C). Non-introgressed genes are ordered according to their  $f_d$  values. The x-axis corresponds to the physical positions shown in (A). The LD values ( $r^2$ ) were calculated in 50 kb windows.



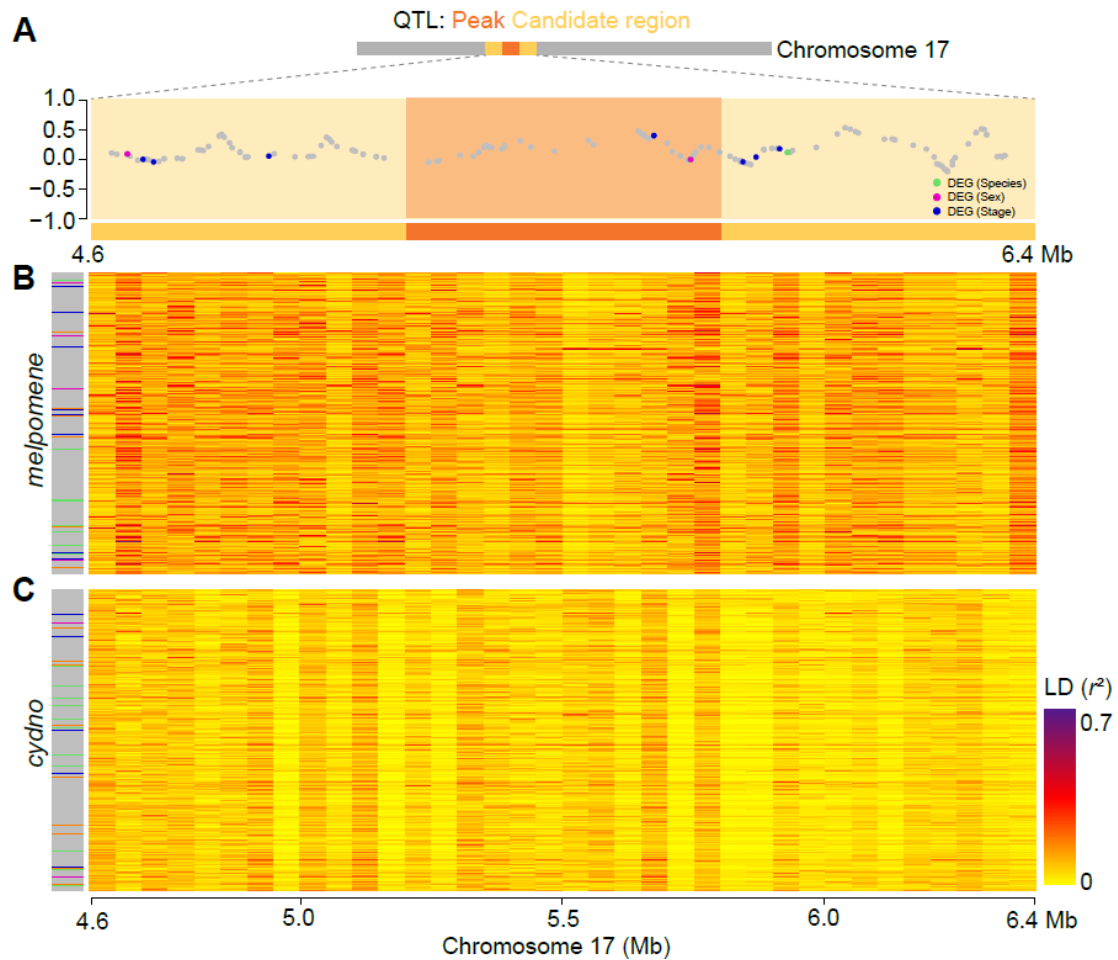
**Supplementary Figure 11. Genomic divergence and differential expression of chemosensory tissues associated with the color-pattern gene *cortex*.** (A) Non-introgressed and differentially expressed genes (DEGs) in the color-pattern gene *cortex* on chromosome 15. Gray points indicate non-DEGs. Green, purple, and blue points indicate DEGs. Points above the horizontal dotted line are introgressed genes ( $f_d > 0$ ), while the others are non-introgressed ( $f_d \leq 0$ ). Linkage disequilibrium (LD) map of genome-wide non-introgressed genes and the focal region containing the *cortex* in *H. melpomene* (B) and *H. cydno* (C). Non-introgressed genes are ordered according to their  $f_d$  values. The x-axis corresponds to the physical positions shown in (A). The LD values ( $r^2$ ) were calculated in 50 kb windows.



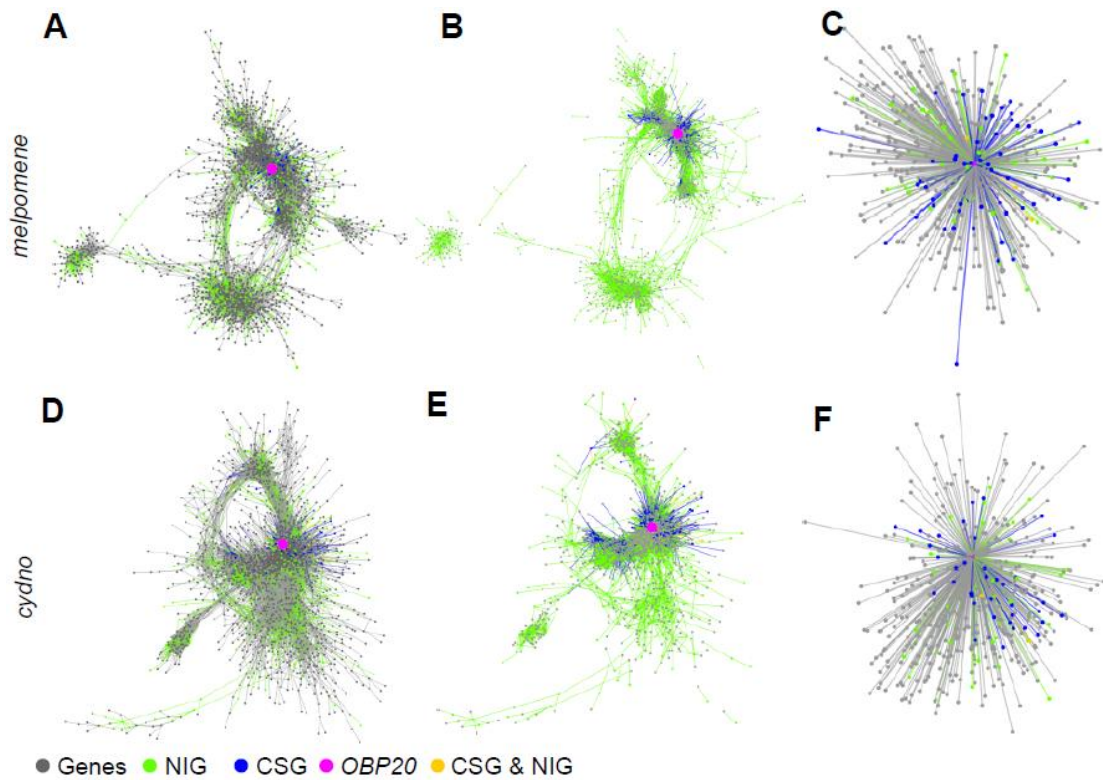
**Supplementary Figure 12. Genomic divergence and differential expression of chemosensory tissues associated with the color-pattern locus *K*.** (A) Non-introgressed and differentially expressed genes (DEGs) at the *K* locus on chromosome 1. Gray points indicate non-DEGs. Green, purple, and blue points indicate DEGs. Points above the horizontal dotted line are introgressed genes ( $f_d > 0$ ), while the others are non-introgressed ( $f_d \leq 0$ ). Linkage disequilibrium (LD) map of genome-wide non-introgressed genes and the focal region containing the *K* locus in *H. melpomene* (B) and *H. cydno* (C). Non-introgressed genes are ordered according to their  $f_d$  values. The  $x$ -axis corresponds to the physical positions shown in (A). The LD values ( $r^2$ ) were calculated in 50 kb windows.



**Supplementary Figure 13. Genomic divergence and differential expression of chemosensory tissues associated with mate preference QTLs on chromosome 1.** (A) Non-introgressed and differentially expressed genes (DEGs) at the mate preference QTL on chromosome 1, including the QTL peak region and the nearby 1.5 log odds ratio candidate region. Gray points indicate non-DEGs. Green, purple, and blue points indicate DEGs. Points above the horizontal dotted line are introgressed genes ( $f_d > 0$ ), while the others are non-introgressed ( $f_d \leq 0$ ). Linkage disequilibrium (LD) map of genome-wide non-introgressed genes and mate preference QTLs in *H. melpomene* (B) and *H. cydno* (C). Non-introgressed genes are ordered according to their  $f_d$  values. The  $x$ -axis corresponds to the physical positions shown in (A). The LD values ( $r^2$ ) were calculated in 50 kb windows.



**Supplementary Figure 14. Genomic divergence and differential expression of chemosensory tissues associated with the mate preference QTL on chromosome 17, including the QTL peak region and the nearby 1.5 log odds ratio candidate region. (A)** Non-introgressed and differentially expressed genes (DEGs) at the mate preference QTL on chromosome 17. Gray points indicate non-DEGs. Green, purple, and blue points indicate DEGs. Points above the horizontal dotted line are introgressed genes ( $f_d > 0$ ), while the others are non-introgressed ( $f_d \leq 0$ ). Linkage disequilibrium (LD) map of genome-wide non-introgressed genes and mate preference QTLs in *H. melpomene* **(B)** and *H. cydno* **(C)**. Non-introgressed genes are ordered according to their  $f_d$  values. The  $x$ -axis corresponds to the physical positions shown in **(A)**. The LD values ( $r^2$ ) were calculated in 50 kb windows.



**Supplementary Figure 15. Weighted gene coexpression (GC) networks for chemosensory genes (CSGs) and non-introgressed genes (NIGs).** The main networks were constructed for *H. melpomene* (A) and *H. cydno* (C) chemosensory tissues, showing three major clusters interacting with each other and marked by solid circles. The filtered networks include CSGs and NIGs and their primary network partners in *H. melpomene* (B) and *H. cydno* (E). *OBP20* and its primary network partners are illustrated in *H. melpomene* (C) and *H. cydno* (F). Green dots, non-introgressed genes; blue dots, chemosensory genes; pink dots, *OBP20*; yellow dots, non-introgressed chemosensory genes; gray dots, genes involved in networks. Green edges, interactions involving NIGs; blue edges, interactions involving CSGs; yellow edges, interactions involving CSGs and NIGs; gray edges, interactions with other genes.

**Supplementary Table 1. Sample information and sequencing statistics.**

| Sample | Data Source | Taxon               | Age (days old) | Sex               | Tissue     | Reads (Mb) | Alignment Rate |
|--------|-------------|---------------------|----------------|-------------------|------------|------------|----------------|
| M9P    | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | mouthparts | 309.6      | 96.2           |
| M9L    | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | legs       | 467.0      | 97.6           |
| M9A    | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | antennae   | 413.8      | 96.8           |
| C25A   | PRJNA577441 | <i>H. cydno</i>     | 2              | female (day two)  | antenna    | 378.5      | 96.5           |
| M44P   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | mouthparts | 498.7      | 96.2           |
| M44L   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | legs       | 314.4      | 97.7           |
| M44A   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | antennae   | 381.1      | 96.8           |
| M43P   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | mouthparts | 424.0      | 96.5           |
| M43L   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | legs       | 423.6      | 97.6           |
| M41P   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | mouthparts | 303.9      | 95.5           |
| M41L   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | legs       | 574.0      | 97.6           |
| M41A   | PRJNA577441 | <i>H. melpomene</i> | 5              | female (day five) | antennae   | 383.8      | 96.8           |
| M37P   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | mouthparts | 405.9      | 96.3           |
| C24P   | PRJNA577441 | <i>H. cydno</i>     | 2              | female (day two)  | mouthparts | 281.8      | 96.7           |
| M37L   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | legs       | 511.8      | 97.9           |
| M37A   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | antennae   | 371.7      | 97.1           |
| M35P   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | mouthparts | 410.8      | 96.1           |
| M35L   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | legs       | 640.9      | 97.7           |
| M35A   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | antennae   | 378.8      | 96.8           |
| M32P   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | mouthparts | 304.0      | 96.5           |
| M32L   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | legs       | 523.7      | 97.8           |
| M32A   | PRJNA577441 | <i>H. melpomene</i> | 5              | male (day five)   | antennae   | 272.9      | 96.9           |
| M26P   | PRJNA577441 | <i>H. melpomene</i> | 2              | female (day two)  | mouthparts | 347.9      | 94.7           |

|      |             |                     |   |                  |            |       |      |
|------|-------------|---------------------|---|------------------|------------|-------|------|
| M26L | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | legs       | 335.0 | 97.5 |
| C24L | PRJNA577441 | <i>H. cydno</i>     | 2 | female (day two) | legs       | 424.5 | 98.1 |
| M26A | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | antennae   | 348.8 | 97.0 |
| M25P | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | mouthparts | 557.2 | 96.0 |
| M25L | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | legs       | 486.4 | 97.5 |
| M25A | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | antennae   | 529.3 | 96.6 |
| M23P | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | mouthparts | 556.5 | 96.2 |
| M23L | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | legs       | 413.6 | 97.6 |
| M23A | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | antennae   | 376.5 | 96.8 |
| M22P | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | mouthparts | 445.2 | 96.2 |
| M22L | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | legs       | 561.9 | 97.7 |
| M22A | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | antennae   | 620.3 | 96.9 |
| C24A | PRJNA577441 | <i>H. cydno</i>     | 2 | female (day two) | antennae   | 506.7 | 97.0 |
| M21P | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | mouthparts | 395.2 | 95.7 |
| M21L | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | legs       | 592.7 | 97.2 |
| M21A | PRJNA577441 | <i>H. melpomene</i> | 2 | female (day two) | antennae   | 413.7 | 97.1 |
| M20P | PRJNA577441 | <i>H. melpomene</i> | 5 | male (day five)  | mouthparts | 403.5 | 95.5 |
| M20L | PRJNA577441 | <i>H. melpomene</i> | 5 | male (day five)  | legs       | 399.9 | 97.5 |
| M20A | PRJNA577441 | <i>H. melpomene</i> | 5 | male (day five)  | antennae   | 379.9 | 95.9 |
| M19L | PRJNA577441 | <i>H. melpomene</i> | 5 | male (day five)  | legs       | 432.1 | 97.7 |
| M19A | PRJNA577441 | <i>H. melpomene</i> | 5 | male (day five)  | antennae   | 391.3 | 97.1 |
| M10P | PRJNA577441 | <i>H. melpomene</i> | 5 | female (mated)   | mouthparts | 359.5 | 95.8 |
| C23P | PRJNA577441 | <i>H. cydno</i>     | 2 | female (unmated) | mouthparts | 314.7 | 96.8 |
| M10L | PRJNA577441 | <i>H. melpomene</i> | 5 | female (mated)   | legs       | 357.2 | 97.6 |
| M10A | PRJNA577441 | <i>H. melpomene</i> | 5 | female (mated)   | antennae   | 417.2 | 96.1 |
| C9P  | PRJNA577441 | <i>H. cydno</i>     | 5 | female (mated)   | mouthparts | 416.7 | 95.3 |



|      |             |                 |   |                  |            |         |      |
|------|-------------|-----------------|---|------------------|------------|---------|------|
| C9L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 519.9   | 97.8 |
| C9A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 253.7   | 96.8 |
| C8P  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | mouthparts | 220.2   | 95.5 |
| C8L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 318.7   | 97.4 |
| C8A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 344.4   | 96.6 |
| C6P  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | mouthparts | 268.8   | 95.1 |
| C6L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 459.4   | 97.7 |
| C23L | PRJNA577441 | <i>H. cydno</i> | 2 | female (unmated) | legs       | 704.9   | 97.8 |
| C6A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 336.3   | 96.7 |
| C5P  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | mouthparts | 260.1   | 96.4 |
| C5L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 472.4   | 97.6 |
| C5A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 278.3   | 96.8 |
| C4P  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | mouthparts | 243.1   | 96.3 |
| C4L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 818.0   | 97.9 |
| C4A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 248.4   | 96.8 |
| C3P  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | mouthparts | 189.8   | 96.7 |
| C3L  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | legs       | 372.3   | 97.9 |
| C3A  | PRJNA577441 | <i>H. cydno</i> | 5 | female (mated)   | antennae   | 260.6   | 96.7 |
| C23A | PRJNA577441 | <i>H. cydno</i> | 2 | female (unmated) | antennae   | 285.3   | 96.6 |
| C36P | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | mouthparts | 408.4   | 95.6 |
| C36L | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | legs       | 1,026.0 | 97.9 |
| C36A | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | antennae   | 353.2   | 96.6 |
| C35P | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | mouthparts | 414.1   | 95.8 |
| C35L | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | legs       | 782.9   | 97.9 |
| C35A | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | antennae   | 370.7   | 96.8 |
| C33P | PRJNA577441 | <i>H. cydno</i> | 5 | male (day five)  | mouthparts | 243.9   | 96.3 |

|      |              |                      |   |                  |            |         |      |
|------|--------------|----------------------|---|------------------|------------|---------|------|
| C33L | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | legs       | 255.7   | 97.6 |
| C33A | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | antennae   | 244.5   | 96.5 |
| C32P | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | mouthparts | 356.9   | 96.0 |
| C21P | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | mouthparts | 338.9   | 96.8 |
| C32L | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | legs       | 663.3   | 97.8 |
| C32A | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | antennae   | 252.8   | 96.7 |
| C31P | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | mouthparts | 357.1   | 96.7 |
| C31L | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | legs       | 303.6   | 98.0 |
| C31A | PRJNA577441  | <i>H. cydno</i>      | 5 | male (day five)  | antennae   | 368.3   | 96.9 |
| C26P | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | mouthparts | 387.3   | 96.4 |
| C26L | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | legs       | 609.7   | 97.8 |
| C26A | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | antennae   | 395.5   | 96.4 |
| C25P | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | mouthparts | 360.4   | 96.5 |
| C25L | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | legs       | 314.0   | 97.9 |
| C21L | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | legs       | 426.5   | 97.9 |
| C21A | PRJNA577441  | <i>H. cydno</i>      | 2 | female (unmated) | antennae   | 309.9   | 96.2 |
| M43A | PRJNA577441  | <i>H. melpomene</i>  | 5 | female (mated)   | antennae   | 430.6   | 97.1 |
| M19P | PRJNA577441  | <i>H. melpomene</i>  | 5 | male (day five)  | mouthparts | 460.7   | 94.7 |
| J_5  | SAMN30448756 | <i>H. charitonia</i> | 5 | male (day five)  | antennae   | 1,279.9 | 57.8 |
| J_6  | SAMN30448757 | <i>H. charitonia</i> | 5 | male (day five)  | antennae   | 3,382.1 | 60.2 |
| J_7  | SAMN30448758 | <i>H. charitonia</i> | 5 | male (day five)  | antennae   | 2,996.7 | 56.7 |
| J_8  | SAMN30448759 | <i>H. charitonia</i> | 5 | male (day five)  | antennae   | 3,844.8 | 55.3 |
| J_9  | SAMN30448760 | <i>H. charitonia</i> | 5 | male (day five)  | antennae   | 1,998.6 | 55.0 |
| J_10 | SAMN30448761 | <i>H. charitonia</i> | 5 | female (mated)   | antennae   | 3,204.2 | 57.6 |
| J_11 | SAMN30448762 | <i>H. charitonia</i> | 5 | female (mated)   | antennae   | 1,801.4 | 56.3 |
| J_12 | SAMN30448763 | <i>H. charitonia</i> | 5 | female (mated)   | antennae   | 3,113.7 | 63.2 |

|      |              |                      |   |                  |          |          |      |
|------|--------------|----------------------|---|------------------|----------|----------|------|
| J_13 | SAMN30448764 | <i>H. charitonia</i> | 5 | female (mated)   | antennae | 3,512.7  | 55.9 |
| J_14 | SAMN30448765 | <i>H. charitonia</i> | 5 | female (mated)   | antennae | 2,710.1  | 60.5 |
| J_15 | SAMN30448766 | <i>H. charitonia</i> | 2 | female (unmated) | antennae | 4,448.1  | 57.9 |
| J_17 | SAMN30448767 | <i>H. charitonia</i> | 2 | female (unmated) | antennae | 3,607.8  | 58.8 |
| J_18 | SAMN30448768 | <i>H. charitonia</i> | 2 | female (unmated) | antennae | 4,233.9  | 57.4 |
| J_19 | SAMN30448769 | <i>H. charitonia</i> | 2 | female (unmated) | antennae | 4,684.7  | 62.0 |
| J_20 | SAMN30448770 | <i>H. charitonia</i> | 5 | male (day five)  | hindlegs | 3,242.2  | 58.1 |
| J_21 | SAMN30448771 | <i>H. charitonia</i> | 5 | male (day five)  | hindlegs | 2,974.3  | 60.9 |
| J_22 | SAMN30448772 | <i>H. charitonia</i> | 5 | male (day five)  | hindlegs | 2,347.8  | 65.9 |
| J_23 | SAMN30448773 | <i>H. charitonia</i> | 5 | male (day five)  | hindlegs | 4,036.2  | 62.1 |
| J_24 | SAMN30448774 | <i>H. charitonia</i> | 5 | male (day five)  | hindlegs | 6,160.2  | 64.1 |
| J_25 | SAMN30448775 | <i>H. charitonia</i> | 5 | female (mated)   | hindlegs | 3,473.7  | 66.6 |
| J_26 | SAMN30448776 | <i>H. charitonia</i> | 5 | female (mated)   | hindlegs | 4,199.8  | 63.8 |
| J_27 | SAMN30448777 | <i>H. charitonia</i> | 5 | female (mated)   | hindlegs | 3,938.5  | 61.6 |
| J_28 | SAMN30448778 | <i>H. charitonia</i> | 5 | female (mated)   | hindlegs | 2,836.9  | 63.4 |
| J_29 | SAMN30448779 | <i>H. charitonia</i> | 5 | female (mated)   | hindlegs | 5,109.4  | 62.4 |
| J_30 | SAMN30448780 | <i>H. charitonia</i> | 2 | female (unmated) | hindlegs | 4,100.5  | 59.3 |
| J_31 | SAMN30448781 | <i>H. charitonia</i> | 2 | female (unmated) | hindlegs | 2,056.2  | 61.4 |
| J_32 | SAMN30448782 | <i>H. charitonia</i> | 2 | female (unmated) | hindlegs | 4912.4   | 62.9 |
| J_33 | SAMN30448783 | <i>H. charitonia</i> | 2 | female (unmated) | hindlegs | 4,037.7  | 62.2 |
| J_34 | SAMN30448784 | <i>H. charitonia</i> | 2 | female (unmated) | hindlegs | 6,046.5  | 62.8 |
| J_35 | SAMN30448785 | <i>H. charitonia</i> | 5 | female (mated)   | forelegs | 3,471.2  | 65.1 |
| J_36 | SAMN30448786 | <i>H. charitonia</i> | 5 | female (mated)   | forelegs | 11,874.6 | 65.0 |
| J_37 | SAMN30448787 | <i>H. charitonia</i> | 5 | female (mated)   | forelegs | 3,686.2  | 65.5 |
| J_38 | SAMN30448788 | <i>H. charitonia</i> | 5 | female (mated)   | forelegs | 8,478.5  | 64.0 |
| J_39 | SAMN30448789 | <i>H. charitonia</i> | 5 | female (mated)   | forelegs | 2,705.7  | 68.8 |

|      |              |                      |   |                  |          |         |      |
|------|--------------|----------------------|---|------------------|----------|---------|------|
| J_40 | SAMN30448790 | <i>H. charitonia</i> | 5 | male             | forelegs | 1,786.8 | 62.6 |
| J_41 | SAMN30448791 | <i>H. charitonia</i> | 5 | male             | forelegs | 2,787.0 | 65.2 |
| J_42 | SAMN30448792 | <i>H. charitonia</i> | 5 | male             | forelegs | 2,149.7 | 62.6 |
| J_43 | SAMN30448793 | <i>H. charitonia</i> | 5 | male             | forelegs | 3,620.8 | 56.4 |
| J_44 | SAMN30448794 | <i>H. charitonia</i> | 5 | male             | forelegs | 6,618.4 | 64.8 |
| J_50 | SAMN30448795 | <i>H. charitonia</i> | 2 | female (unmated) | antennae | 3,962.1 | 61.7 |
| J_51 | SAMN30448796 | <i>H. charitonia</i> | 2 | female (unmated) | forelegs | 2,912.7 | 65.6 |
| J_52 | SAMN30448797 | <i>H. charitonia</i> | 2 | female (unmated) | forelegs | 4,415.1 | 63.9 |
| J_53 | SAMN30448798 | <i>H. charitonia</i> | 2 | female (unmated) | forelegs | 1,087.9 | 63.6 |
| J_54 | SAMN30448799 | <i>H. charitonia</i> | 2 | female (unmated) | forelegs | 2,964.9 | 64.6 |
| J_55 | SAMN30448800 | <i>H. charitonia</i> | 2 | female (unmated) | forelegs | 1,279.9 | 64.1 |

**Supplementary Table 2. Transcriptome analysis results.**

| <b>Taxon</b>        | <b>Tissue</b> | <b>Sex</b>        | <b>Expressed Genes</b> | <b>Expressed Chemosensory Genes (CSP/GR/IR/OBP/OR)</b> |
|---------------------|---------------|-------------------|------------------------|--|
| <i>H. melpomene</i> | antennae      | female (day two)  | 11868                  | 132 (21/5/21/33/52)                                    |
|                     |               | female (day five) | 11641                  | 127 (20/5/20/35/47)                                    |
|                     |               | male (day five)   | 11559                  | 127 (17/9/20/32/49)                                    |
|                     | legs          | female (day two)  | 11924                  | 81 (23/14/12/24/8)                                     |
|                     |               | female (day five) | 11720                  | 79 (19/9/11/29/11)                                     |
|                     |               | male (day five)   | 11933                  | 71 (20/6/12/24/9)                                      |
|                     | mouthparts    | female (day two)  | 11784                  | 84 (23/15/10/24/12)                                    |
|                     |               | female (day five) | 10589                  | 63 (19/8/7/22/7)                                       |
|                     |               | male (day five)   | 11457                  | 74 (20/13/9/22/10)                                     |
|                     | antennae      | female (day two)  | 11502                  | 111 (18/5/19/31/38)                                    |
|                     |               | female (day five) | 11221                  | 116 (19/5/19/31/42)                                    |
|                     |               | male (day five)   | 11450                  | 124 (20/5/19/31/49)                                    |
| <i>H. cydno</i>     | legs          | female (day two)  | 11425                  | 59 (18/12/6/20/3)                                      |
|                     |               | female (day five) | 11561                  | 71 (20/11/8/27/5)                                      |
|                     |               | male (day five)   | 11647                  | 62 (18/6/13/21/4)                                      |
|                     | mouthparts    | female (day two)  | 11335                  | 65 (22/11/7/21/4)                                      |
|                     |               | female (day five) | 10735                  | 52 (19/5/4/21/3)                                       |
|                     |               | male (day five)   | 11266                  | 63 (20/7/8/24/4)                                       |

Note. – Genes that were expressed in three replicates were taken into account. CSP, chemosensory protein; GR, gustatory receptor; IR, ionotropic receptor; OBP, olfactory binding receptor; OR, olfactor receptor.

**Supplementary Table 3. GO enrichment analysis of upregulated antenna genes in both *H. cydno* and *H. melpomene*.**

| ID         | Number | Class              | Description   | P value  | Q value  |
|------------|--------|--------------------|---|----------|----------|
| GO:0005549 | 24     | Molecular Function | odorant binding   | 5.59E-16 | 1.26E-13 |
| GO:0005506 | 17     | Molecular Function | iron ion binding  | 1.89E-06 | 2.13E-04 |
| GO:0016491 | 35     | Molecular Function | oxidoreductase activity   | 6.26E-06 | 4.71E-04 |
| GO:0046906 | 16     | Molecular Function | tetrapyrrole binding  | 1.56E-05 | 8.83E-04 |
| GO:0016705 | 15     | Molecular Function | oxidoreductase activity, acting on paired donors, with incorporation or reduction of molecular oxygen | 3.26E-05 | 1.45E-03 |
| GO:0048037 | 16     | Molecular Function | cofactor binding  | 4.20E-05 | 1.45E-03 |
| GO:0022857 | 38     | Molecular Function | transmembrane transporter activity  | 5.16E-05 | 1.45E-03 |
| GO:0020037 | 15     | Molecular Function | heme binding  | 5.76E-05 | 1.45E-03 |
| GO:0004984 | 9      | Molecular Function | olfactory receptor activity   | 5.77E-05 | 1.45E-03 |
| GO:0052689 | 9      | Molecular Function | carboxylic ester hydrolase activity   | 9.38E-05 | 2.12E-03 |
| GO:0005215 | 38     | Molecular Function | transporter activity  | 1.05E-04 | 2.16E-03 |
| GO:0050660 | 11     | Molecular Function | flavin adenine dinucleotide binding   | 1.28E-04 | 2.41E-03 |
| GO:0099600 | 21     | Molecular Function | transmembrane receptor activity   | 1.81E-04 | 3.15E-03 |
| GO:0004872 | 21     | Molecular Function | receptor activity   | 2.25E-04 | 3.31E-03 |
| GO:0060089 | 21     | Molecular Function | molecular transducer activity   | 2.25E-04 | 3.31E-03 |
| GO:0008241 | 4      | Molecular Function | peptidyl-dipeptidase activity   | 2.34E-04 | 3.31E-03 |
| GO:0016298 | 8      | Molecular Function | lipase activity   | 4.74E-04 | 6.29E-03 |
| GO:0050662 | 12     | Molecular Function | coenzyme binding  | 8.16E-04 | 1.02E-02 |
| GO:0004888 | 18     | Molecular Function | transmembrane signaling receptor activity   | 1.55E-03 | 1.84E-02 |
| GO:0038023 | 18     | Molecular Function | signaling receptor activity   | 1.73E-03 | 1.96E-02 |

|            |     |                       |                                   |          |          |
|------------|-----|-----------------------|-----------------------------------|----------|----------|
| GO:0004806 | 6   | Molecular<br>Function | triglyceride lipase activity      | 2.13E-03 | 2.30E-02 |
| GO:0004871 | 18  | Molecular<br>Function | signal transducer activity        | 2.65E-03 | 2.72E-02 |
| GO:0016020 | 77  | Cellular<br>Component | membrane                          | 4.34E-12 | 3.34E-10 |
| GO:0044699 | 113 | Biological<br>Process | single-organism process           | 1.59E-07 | 5.08E-05 |
| GO:0044765 | 49  | Biological<br>Process | single-organism transport         | 6.06E-06 | 7.13E-04 |
| GO:1902578 | 49  | Biological<br>Process | single-organism localization      | 6.70E-06 | 7.13E-04 |
| GO:0006810 | 51  | Biological<br>Process | transport                         | 2.55E-05 | 1.73E-03 |
| GO:0051234 | 51  | Biological<br>Process | establishment of localization     | 2.71E-05 | 1.73E-03 |
| GO:0051179 | 51  | Biological<br>Process | localization                      | 3.42E-05 | 1.82E-03 |
| GO:0055114 | 34  | Biological<br>Process | oxidation-reduction process       | 5.54E-05 | 2.52E-03 |
| GO:0007608 | 9   | Biological<br>Process | sensory perception of smell       | 1.29E-04 | 5.14E-03 |
| GO:0044710 | 56  | Biological<br>Process | single-organism metabolic process | 2.60E-04 | 9.21E-03 |
| GO:0055085 | 35  | Biological<br>Process | transmembrane transport           | 3.23E-04 | 1.03E-02 |

**Supplementary Table 4. GO enrichment analysis of upregulated leg genes in both *H. cydno* and *H. melpomene*.**

| ID         | Number | Class              | Description   | P value  | Q value  |
|------------|--------|--------------------|---|----------|----------|
| GO:0005216 | 17     | Molecular Function | ion channel activity  | 7.15E-08 | 5.13E-06 |
| GO:0022838 | 17     | Molecular Function | substrate-specific channel activity   | 7.15E-08 | 5.13E-06 |
| GO:0015075 | 22     | Molecular Function | ion transmembrane transporter activity  | 1.31E-07 | 5.13E-06 |
| GO:0015276 | 11     | Molecular Function | ligand-gated ion channel activity   | 1.33E-07 | 5.13E-06 |
| GO:0022834 | 11     | Molecular Function | ligand-gated channel activity   | 1.33E-07 | 5.13E-06 |
| GO:0015267 | 17     | Molecular Function | channel activity  | 1.53E-07 | 5.13E-06 |
| GO:0022803 | 17     | Molecular Function | passive transmembrane transporter activity  | 1.53E-07 | 5.13E-06 |
| GO:0022891 | 22     | Molecular Function | substrate-specific transmembrane transporter activity                                 | 1.85E-07 | 5.41E-06 |
| GO:0022892 | 22     | Molecular Function | substrate-specific transporter activity   | 4.94E-07 | 1.28E-05 |
| GO:0022836 | 12     | Molecular Function | gated channel activity  | 3.81E-06 | 8.92E-05 |
| GO:0005230 | 7      | Molecular Function | extracellular ligand-gated ion channel activity                                       | 4.50E-05 | 9.56E-04 |
| GO:0004449 | 3      | Molecular Function | isocitrate dehydrogenase (NAD <sup>+</sup> ) activity                                 | 4.92E-05 | 9.58E-04 |
| GO:0022857 | 27     | Molecular Function | transmembrane transporter activity  | 7.06E-05 | 1.27E-03 |
| GO:0016651 | 5      | Molecular Function | oxidoreductase activity, acting on NAD(P)H  | 8.49E-05 | 1.42E-03 |
| GO:0005215 | 27     | Molecular Function | transporter activity  | 1.24E-04 | 1.93E-03 |
| GO:0004448 | 3      | Molecular Function | isocitrate dehydrogenase activity   | 1.68E-04 | 2.45E-03 |
| GO:0005219 | 3      | Molecular Function | ryanodine-sensitive calcium-release channel activity                                  | 2.65E-04 | 3.65E-03 |
| GO:0016616 | 5      | Molecular Function | oxidoreductase activity, acting on the CH-OH group of donors, NAD or NADP as acceptor | 3.99E-04 | 5.19E-03 |
| GO:0015085 | 5      | Molecular Function | calcium ion transmembrane transporter activity  | 5.13E-04 | 6.32E-03 |
| GO:0008324 | 12     | Molecular Function | cation transmembrane transporter activity   | 5.75E-04 | 6.44E-03 |



|            |    |                       |   |          |          |
|------------|----|-----------------------|---|----------|----------|
| GO:0072509 | 5  | Molecular<br>Function | divalent inorganic cation<br>transmembrane transporter<br>activity                          | 5.78E-04 | 6.44E-03 |
| GO:0016491 | 21 | Molecular<br>Function | oxidoreductase activity   | 8.01E-04 | 7.96E-03 |
| GO:0003779 | 6  | Molecular<br>Function | actin binding   | 9.23E-04 | 7.96E-03 |
| GO:0051287 | 4  | Molecular<br>Function | NAD binding   | 9.48E-04 | 7.96E-03 |
| GO:0005217 | 3  | Molecular<br>Function | intracellular ligand-gated ion<br>channel activity  | 9.89E-04 | 7.96E-03 |
| GO:0015278 | 3  | Molecular<br>Function | calcium-release channel activity  | 9.89E-04 | 7.96E-03 |
| GO:0099604 | 3  | Molecular<br>Function | ligand-gated calcium channel<br>activity  | 9.89E-04 | 7.96E-03 |
| GO:0051536 | 5  | Molecular<br>Function | iron-sulfur cluster binding   | 1.00E-03 | 7.96E-03 |
| GO:0051540 | 5  | Molecular<br>Function | metal cluster binding   | 1.00E-03 | 7.96E-03 |
| GO:0022890 | 11 | Molecular<br>Function | inorganic cation transmembrane<br>transporter activity                                      | 1.02E-03 | 7.96E-03 |
| GO:0005388 | 2  | Molecular<br>Function | calcium-transporting ATPase<br>activity   | 1.74E-03 | 1.31E-02 |
| GO:0051015 | 4  | Molecular<br>Function | actin filament binding  | 2.64E-03 | 1.92E-02 |
| GO:0032440 | 2  | Molecular<br>Function | 2-alkenal reductase [NAD(P)]<br>activity  | 2.86E-03 | 1.92E-02 |
| GO:0047522 | 2  | Molecular<br>Function | 15-oxoprostaglandin 13-oxidase<br>activity  | 2.86E-03 | 1.92E-02 |
| GO:0005057 | 3  | Molecular<br>Function | receptor signaling protein activity   | 2.87E-03 | 1.92E-02 |
| GO:0046873 | 8  | Molecular<br>Function | metal ion transmembrane<br>transporter activity   | 3.24E-03 | 2.11E-02 |
| GO:0005261 | 7  | Molecular<br>Function | cation channel activity   | 3.66E-03 | 2.31E-02 |
| GO:0004970 | 3  | Molecular<br>Function | ionotropic glutamate receptor<br>activity   | 3.99E-03 | 2.39E-02 |
| GO:0008066 | 3  | Molecular<br>Function | glutamate receptor activity   | 3.99E-03 | 2.39E-02 |
| GO:0016628 | 2  | Molecular<br>Function | oxidoreductase activity, acting on<br>the CH-CH group of donors,<br>NAD or NADP as acceptor | 4.25E-03 | 2.48E-02 |
| GO:0016614 | 6  | Molecular<br>Function | oxidoreductase activity, acting on<br>CH-OH group of donors                                 | 4.52E-03 | 2.58E-02 |

|            |    |                    |   |          |          |
|------------|----|--------------------|---|----------|----------|
| GO:0015662 | 2  | Molecular Function | ATPase activity, coupled to transmembrane movement of ions, phosphorylative mechanism | 5.88E-03 | 3.27E-02 |
| GO:0009055 | 4  | Molecular Function | electron carrier activity   | 6.77E-03 | 3.69E-02 |
| GO:0099600 | 12 | Molecular Function | transmembrane receptor activity   | 8.94E-03 | 4.76E-02 |
| GO:0015629 | 8  | Cellular Component | actin cytoskeleton  | 2.58E-05 | 1.58E-03 |
| GO:0044430 | 10 | Cellular Component | cytoskeletal part   | 3.60E-05 | 1.58E-03 |
| GO:0005856 | 10 | Cellular Component | cytoskeleton  | 6.50E-05 | 1.91E-03 |
| GO:0016459 | 5  | Cellular Component | myosin complex  | 6.57E-04 | 8.07E-03 |
| GO:0005861 | 3  | Cellular Component | troponin complex  | 1.01E-03 | 8.07E-03 |
| GO:0005865 | 3  | Cellular Component | striated muscle thin filament   | 1.01E-03 | 8.07E-03 |
| GO:0030016 | 3  | Cellular Component | myofibril   | 1.01E-03 | 8.07E-03 |
| GO:0030017 | 3  | Cellular Component | sarcomere   | 1.01E-03 | 8.07E-03 |
| GO:0036379 | 3  | Cellular Component | myofilament   | 1.01E-03 | 8.07E-03 |
| GO:0043292 | 3  | Cellular Component | contractile fiber   | 1.01E-03 | 8.07E-03 |
| GO:0044449 | 3  | Cellular Component | contractile fiber part  | 1.01E-03 | 8.07E-03 |
| GO:0009331 | 2  | Cellular Component | glycerol-3-phosphate dehydrogenase complex  | 1.34E-03 | 9.80E-03 |
| GO:1990204 | 3  | Cellular Component | oxidoreductase complex  | 4.29E-03 | 2.91E-02 |
| GO:0006811 | 24 | Biological Process | ion transport   | 7.82E-09 | 2.15E-06 |
| GO:0006099 | 7  | Biological Process | tricarboxylic acid cycle  | 6.44E-08 | 5.91E-06 |
| GO:0009060 | 7  | Biological Process | aerobic respiration   | 6.44E-08 | 5.91E-06 |
| GO:0006101 | 7  | Biological Process | citrate metabolic process   | 1.23E-07 | 8.45E-06 |
| GO:0006091 | 9  | Biological Process | generation of precursor metabolites and energy  | 1.91E-07 | 1.01E-05 |
| GO:0072350 | 7  | Biological Process | tricarboxylic acid metabolic  | 2.21E-07 | 1.01E-05 |

|            |    | Process            | process   |          |          |
|------------|----|--------------------|---|----------|----------|
| GO:0045333 | 7  | Biological Process | cellular respiration                                | 7.81E-07 | 3.07E-05 |
| GO:0015980 | 7  | Biological Process | energy derivation by oxidation of organic compounds | 1.83E-06 | 6.30E-05 |
| GO:0044699 | 65 | Biological Process | single-organism process                             | 7.85E-06 | 2.40E-04 |
| GO:0034220 | 11 | Biological Process | ion transmembrane transport                         | 2.09E-05 | 5.74E-04 |
| GO:0006082 | 12 | Biological Process | organic acid metabolic process                      | 8.85E-05 | 1.87E-03 |
| GO:0019752 | 12 | Biological Process | carboxylic acid metabolic process                   | 8.85E-05 | 1.87E-03 |
| GO:0043436 | 12 | Biological Process | oxoacid metabolic process                           | 8.85E-05 | 1.87E-03 |
| GO:0044765 | 29 | Biological Process | single-organism transport                           | 1.30E-04 | 2.52E-03 |
| GO:1902578 | 29 | Biological Process | single-organism localization                        | 1.38E-04 | 2.52E-03 |
| GO:0030001 | 11 | Biological Process | metal ion transport                                 | 1.47E-04 | 2.52E-03 |
| GO:0006812 | 13 | Biological Process | cation transport                                    | 2.12E-04 | 3.43E-03 |
| GO:0055114 | 21 | Biological Process | oxidation-reduction process                         | 3.07E-04 | 4.69E-03 |
| GO:0006816 | 5  | Biological Process | calcium ion transport                               | 3.65E-04 | 5.28E-03 |
| GO:0070838 | 5  | Biological Process | divalent metal ion transport                        | 4.15E-04 | 5.43E-03 |
| GO:0072511 | 5  | Biological Process | divalent inorganic cation transport                 | 4.15E-04 | 5.43E-03 |
| GO:0006810 | 29 | Biological Process | transport   | 8.57E-04 | 1.06E-02 |
| GO:0051234 | 29 | Biological Process | establishment of localization                       | 8.87E-04 | 1.06E-02 |
| GO:0051179 | 29 | Biological Process | localization  | 1.02E-03 | 1.17E-02 |
| GO:0006874 | 2  | Biological Process | cellular calcium ion homeostasis                    | 1.69E-03 | 1.66E-02 |
| GO:0055074 | 2  | Biological Process | calcium ion homeostasis                             | 1.69E-03 | 1.66E-02 |
| GO:0072503 | 2  | Biological Process | cellular divalent inorganic cation homeostasis      | 1.69E-03 | 1.66E-02 |
| GO:0072507 | 2  | Biological Process | divalent inorganic cation                           | 1.69E-03 | 1.66E-02 |

|            |    |                       |   |          |          |
|------------|----|-----------------------|---|----------|----------|
| GO:0070588 | 4  | Biological<br>Process | homeostasis<br>calcium ion transmembrane<br>transport | 2.22E-03 | 2.10E-02 |
| GO:0044281 | 15 | Biological<br>Process | small molecule metabolic process                      | 2.62E-03 | 2.40E-02 |
| GO:0006072 | 2  | Biological<br>Process | glycerol-3-phosphate metabolic<br>process             | 2.79E-03 | 2.47E-02 |
| GO:0006873 | 2  | Biological<br>Process | cellular ion homeostasis                              | 5.72E-03 | 4.37E-02 |
| GO:0006875 | 2  | Biological<br>Process | cellular metal ion homeostasis                        | 5.72E-03 | 4.37E-02 |
| GO:0030003 | 2  | Biological<br>Process | cellular cation homeostasis                           | 5.72E-03 | 4.37E-02 |
| GO:0052646 | 2  | Biological<br>Process | alditol phosphate metabolic<br>process                | 5.72E-03 | 4.37E-02 |
| GO:0055082 | 2  | Biological<br>Process | cellular chemical homeostasis                         | 5.72E-03 | 4.37E-02 |
| GO:0015672 | 8  | Biological<br>Process | monovalent inorganic cation<br>transport              | 6.26E-03 | 4.65E-02 |

**Supplementary Table 5. GO enrichment analysis of upregulated mouthpart genes in both *H. cydno* and *H. melpomene*.**

| ID         | Number | Class              | Description   | P value  | Q value  |
|------------|--------|--------------------|---|----------|----------|
| GO:0016620 | 4      | Molecular Function | oxidoreductase activity, acting on the aldehyde or oxo group of donors, NAD or NADP as acceptor | 6.52E-05 | 1.02E-02 |
| GO:0003824 | 55     | Molecular Function | catalytic activity  | 1.31E-04 | 1.03E-02 |
| GO:0016903 | 4      | Molecular Function | oxidoreductase activity, acting on the aldehyde or oxo group of donors                          | 2.22E-04 | 1.16E-02 |
| GO:0046912 | 2      | Molecular Function | transferase activity, transferring acyl groups, acyl groups converted into alkyl on transfer    | 7.52E-04 | 2.49E-02 |
| GO:0016831 | 3      | Molecular Function | carboxy-lyase activity  | 8.55E-04 | 2.49E-02 |
| GO:0042302 | 8      | Molecular Function | structural constituent of cuticle   | 9.50E-04 | 2.49E-02 |
| GO:0016830 | 3      | Molecular Function | carbon-carbon lyase activity  | 1.62E-03 | 3.63E-02 |
| GO:0016491 | 15     | Molecular Function | oxidoreductase activity   | 1.86E-03 | 3.65E-02 |
| GO:0031984 | 2      | Cellular Component | organelle subcompartment  | 1.85E-03 | 3.79E-02 |
| GO:0098791 | 2      | Cellular Component | Golgi subcompartment  | 1.85E-03 | 3.79E-02 |
| GO:0005794 | 3      | Cellular Component | Golgi apparatus   | 2.96E-03 | 3.79E-02 |
| GO:0005890 | 2      | Cellular Component | sodium:potassium-exchanging ATPase complex  | 4.35E-03 | 3.79E-02 |
| GO:0090533 | 2      | Cellular Component | cation-transporting ATPase complex  | 4.35E-03 | 3.79E-02 |
| GO:0016020 | 25     | Cellular Component | membrane  | 4.62E-03 | 3.79E-02 |
| GO:0098533 | 2      | Cellular Component | ATPase dependent transmembrane transport complex  | 5.40E-03 | 3.79E-02 |
| GO:1904949 | 2      | Cellular Component | ATPase complex  | 5.40E-03 | 3.79E-02 |
| GO:0044425 | 19     | Cellular Component | membrane part   | 5.88E-03 | 3.79E-02 |
| GO:0008299 | 6      | Biological Process | isoprenoid biosynthetic process   | 1.51E-07 | 2.00E-05 |
| GO:0006720 | 6      | Biological Process | isoprenoid metabolic process  | 2.10E-07 | 2.00E-05 |
| GO:0008610 | 7      | Biological Process | lipid biosynthetic process  | 1.69E-05 | 1.07E-03 |

|            |    |                       |                                   |          |          |
|------------|----|-----------------------|-----------------------------------|----------|----------|
| GO:0006629 | 10 | Biological<br>Process | lipid metabolic process           | 2.14E-04 | 1.02E-02 |
| GO:0044255 | 7  | Biological<br>Process | cellular lipid metabolic process  | 5.01E-04 | 1.25E-02 |
| GO:0006084 | 2  | Biological<br>Process | acetyl-CoA metabolic process      | 5.24E-04 | 1.25E-02 |
| GO:0006637 | 2  | Biological<br>Process | acyl-CoA metabolic process        | 5.24E-04 | 1.25E-02 |
| GO:0035383 | 2  | Biological<br>Process | thioester metabolic process       | 5.24E-04 | 1.25E-02 |
| GO:0044710 | 27 | Biological<br>Process | single-organism metabolic process | 1.74E-03 | 3.68E-02 |

**Supplementary Table 6. Counts of top 10% upregulated differentially expressed genes (DEGs) in antenna tissues between *H. cydno* and *H. melpomene* in the comparisons between *H. cydno* and *H. melpomene*, between *H. melpomene* and *H. charithonia* and between *H. cydno* and *H. charithonia*.**

|                           | <i>cydno</i> vs. <i>melpomene</i>   |   |  |  |
|---------------------------|---|---|--|--|
|                           | top 10% upregulated DEGs in <i>cydno</i><br>(all upregulated DEGs in <i>cydno</i> ) | top 10% upregulated DEGs in <i>melpomene</i><br>(all upregulated DEGs in <i>melpomene</i> ) | <i>charithonia</i> vs. <i>melpomene</i> <sup>a</sup> | <i>charithonia</i> vs. <i>cydno</i> <sup>b</sup> |
| pooled antennae           | 23 (224)  | 26 (260)  | 34   | 20   |
| 2-day-old female antennae | (1)   | (3)   | 3  | 1  |
| 5-day-old female antennae | 14 (135)  | 14 (134)  | 18   | 15   |
| male antennae             | 1 (7)   | 2 (17)  | 2  | 1  |

<sup>a</sup>DEGs in *charithonia* vs. *melpomene* overlap with those 10% upregulated DEGs between *H. cydno* and *H. melpomene*.

<sup>b</sup>DEGs in *charithonia* vs. *cydno* overlap with those 10% upregulated DEGs between *H. cydno* and *H. melpomene*.

**Supplementary Table 7. Top 10% upregulated differentially expressed genes (DEGs) in antenna tissues between *H. cydno* and *H. melpomene* in the comparisons between *H. cydno* and *H. melpomene*, between *H. melpomene* and *H. charithonia* and between *H. cydno* and *H. charithonia*.**

| Groups   | Gene                                    | Annotation   |
|--|---|--|
| pooled antennae<br>top 10% in <i>cydno</i>     | HMEL033334g1.t1                         | endonuclease-reverse transcriptase HmRTE-e01                           |
|  | HMEL030356g1.t1                         | hypothetical protein B5X24_HaOG206241                                  |
|  | HMEL034229g1.t1                         | Probable RNA-directed DNA polymerase from transposon BS                |
|  | HmelUGT42B3.mrna                        | UDP glycosyltransferase  |
|  | HMEL009425g1.t1                         | peptidoglycan-recognition protein LB-like                              |
|  | HMEL034230g1.t1                         | hypothetical protein B5X24_HaOG202969, partial                         |
|  | HMEL034753g1.t1                         | androgen-dependent TFPI-regulating protein-like                        |
|  | HMEL035925g1.t1                         | uncharacterized protein LOC113402932                                   |
|  | HMEL016088g1.t1                         | spermine oxidase-like  |
|  | HMEL030967g1.t1                         | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
|  | HMEL012792g1.t1                         | copper-transporting ATPase 1 isoform X1                                |
|  | HMEL013052g1.t1                         | mitochondrial 2-oxoglutarate/malate carrier protein-like               |
|  | HmelGSTo7.mrna                          | glutathione S-transferase  |
|  | HMEL005705g1.t1                         | retinol dehydrogenase 11-like  |
|  | HMEL017341g1.t1                         | cuticle protein 7-like   |
|  | HMEL021874g1.t1                         | RAB6A-GEF complex partner protein 2                                    |
|  | HMEL021460g1.t1                         | nudC domain-containing protein 3                                       |
|  | HMEL031425g1.t1                         | reverse transcriptase  |
|  | HMEL022384g1.t1                         | retinol dehydrogenase 11-like  |
|  | HMEL010201g1.t1                         | uncharacterized protein LOC113395223 isoform X1                        |
| HMEL036992g1.t1                                | ---NA---                                |  |
| HMEL004124g2.t1                                | Transposable element Tcb2 transposase   |  |
| HMEL002147g1.t2                                | copper-transporting ATPase 1 isoform X1 |  |
| pooled antennae<br>top 10% in <i>melpomene</i> | HMEL030226g1.t1                         | ---NA---   |
|  | HMEL034567g1.t1                         | AGAP001623-PA-like protein   |
|  | HMEL033609g1.t1                         | ---NA---   |
|  | HMEL008225g1.t1                         | copper-transporting ATPase 1 isoform X1                                |
|  | HMEL036170g1.t1                         | ---NA---   |
|  | HmOBP15                                 | Odorant-binding protein  |
|  | HMEL035448g1.t1                         | ---NA---   |
|  | HMEL033514g1.t1                         | uncharacterized protein LOC116776760                                   |
|  | HMEL033207g1.t1                         | RNAi efficiency-related nuclease REase                                 |
|  | HMEL011741g1.t1                         | Uncharacterized protein OBRU01_06617                                   |
|  | HMEL031443g1.t1                         | myrosinase 1-like  |
|  | HMEL003479g2.t1                         | ---NA---   |



|  |                 |  |
|--|-----------------|--|
|  | HMEL032361g1.t1 | endonuclease-reverse transcriptase                         |
|  | HMEL030869g1.t1 | ---NA---   |
|  | HMEL030560g1.t2 | ---NA---   |
|  | HMEL004480g1.t1 | high affinity copper uptake protein 1-like                 |
|  | HMEL035802g1.t1 | ---NA---   |
|  | HMEL015074g1.t1 | unnamed protein product                                    |
|  | HMEL015932g1.t1 | uncharacterized protein LOC113399715                       |
|  | HMEL030560g1.t1 | ---NA---   |
|  | HMEL022555-RA   | UDP-glucuronosyltransferase-like                           |
|  | HMEL033604g1.t1 | ---NA---   |
|  | HMEL034176g1.t1 | PREDICTED: uncharacterized protein K02A2.6-like isoform X1 |
|  | HMEL034101g1.t1 | uncharacterized protein K02A2.6-like isoform X1            |
|  | HMEL010631g1.t1 | Protein abnormal spindle                                   |
|  | HMEL031741g1.t1 | ---NA---   |
| 2-day-old female antennae<br>top 10% in <i>cydno</i>     | HMEL008111g1.t1 | putative dsRNase   |
| 2-day-old female antennae<br>top 10% in <i>melpomene</i> | HMEL035833g1.t1 | Outer dense fiber protein 3-like protein 2                 |
|  | HMEL013050g1.t1 | protein NDRG3 isoform X1                                   |
|  | HMEL005302g1.t2 | tryptophan--tRNA ligase, mitochondrial                     |
| 5-day-old female antennae<br>top 10% in <i>cydno</i>     | HMEL021874g1.t1 | RAB6A-GEF complex partner protein 2                        |
|  | HMEL012792g1.t1 | copper-transporting ATPase 1 isoform X1                    |
|  | HMEL032516g1.t1 | ---NA---   |
|  | HMEL034229g1.t1 | Probable RNA-directed DNA polymerase from transposon BS    |
|  | HMEL032637g1.t1 | hypothetical protein B5V51_2590                            |
|  | HmelGSTs10.mrna | glutathione S-transferase                                  |
|  | HMEL011715g1.t1 | ---NA---   |
|  | HMEL014410g1.t1 | uncharacterized protein LOC113400617                       |
|  | HMEL034230g1.t1 | hypothetical protein B5X24_HaOG202969, partial             |
|  | HMEL005705g1.t1 | retinol dehydrogenase 11-like                              |
|  | HMEL018077g1.t1 | aspartic and glutamic acid-rich protein-like isoform X2    |

|  |                  |  |
|--|------------------|--|
|  | HMEL016088g1.t1  | spermine oxidase-like                                      |
|  | HMEL038045g1.t1  | integumentary mucin C.1                                    |
|  | HMEL013052g1.t1  | mitochondrial 2-oxoglutarate/malate carrier protein-like   |
| 5-day-old female antennae<br>top 10% in <i>melpomene</i> | HMEL022659-RA    | UDP-glucuronosyltransferase 2B2-like                       |
|  | HMEL035448g1.t1  | ---NA---   |
|  | HMEL010004g1.t1  | uncharacterized protein LOC113395234                       |
|  | HMEL011740g1.t1  | zinc finger CCHC domain-containing protein 24-like         |
|  | HMEL005392g2.t1  | RNA exonuclease 4  |
|  | HMEL004480g1.t1  | high affinity copper uptake protein 1-like                 |
|  | HMEL030226g1.t1  | ---NA---   |
|  | HMEL034176g1.t1  | PREDICTED: uncharacterized protein K02A2.6-like isoform X1 |
|  | HMEL033207g1.t1  | RNAi efficiency-related nuclease Rease                     |
|  | HMEL034101g1.t1  | uncharacterized protein K02A2.6-like isoform X1            |
|  | HMEL035802g1.t1  | ---NA---   |
|  | HMEL010631g1.t1  | Protein abnormal spindle                                   |
|  | HmelUGT33X1.mrna | UDP glycosyltransferase                                    |
|  | HMEL015074g1.t1  | unnamed protein product                                    |
| male antennae<br>top 10% in <i>cydno</i>                 | HMEL033323g1.t1  | alpha-tocopherol transfer protein-like                     |
| male antennae<br>top 10% in <i>melpomene</i>             | HMEL015074g1.t1  | unnamed protein product                                    |
|  | HmelGSTe2.mrna   | glutathione S-transferase                                  |

**Note:** Yellow font indicates DEGs between *H. charithonia* and *H. melpomene*. Blue font indicates DEGs between *H. charithonia* and *H. cydno*. Green font indicates overlap between yellow font and blue font.

**Supplementary Table 8. Gene annotation of upregulated genes when comparing five-day-old and two-day-old female antenna, leg, and mouthpart tissues in *H. cydno*.**

| Upregulated genes in antennae of <i>H. cydno</i> two-day-old females |   |
|--|---|
| ID   | Annotation  |
| HMEL002715g1.t1  | 4-hydroxyphenylpyruvate dioxygenase-like                        |
| HMEL013909g1.t1  | cuticular protein CPH   |
| HMEL013199g1.t2  | phosphoenolpyruvate carboxykinase [GTP]-like isoform X2         |
| HmOBP42  | olfactory binding protein                                       |
| HMEL007986g1.t1  | pupal cuticle protein PCP52-like                                |
| HMEL037613g1.t1  | cuticular protein CPH   |
| HMEL037611g1.t1  | putative cuticle protein  |
| HMEL003429g1.t1  | homogentisate 1,2-dioxygenase                                   |
| HMEL003671g1.t1  | putative cuticle protein  |
| HMEL013908g1.t1  | cuticular protein CPH   |
| HMEL003670g1.t1  | pupal cuticle protein G1A-like                                  |
| HMEL011699g1.t1  | uncharacterized protein LOC113394755                            |
| HMEL013974g1.t1  | Phage tape measure minor tail protein                           |
| HMEL012441g1.t1  | tyrosine aminotransferase                                       |
| HMEL003910g1.t1  | hyphal wall protein 2-like                                      |
| HMEL006214g1.t1  | flocculation protein FLO11 isoform X1                           |
| HMEL017435g2.t1  | retinol dehydrogenase 13-like                                   |
| HMEL015861g1.t1  | pupal cuticle protein PCP52-like                                |
| HMEL007151g1.t2  | tropomyosin-2 isoform X8  |
| HMEL021853g1.t1  | ---NA---  |
| HMEL011066g2.t1  | alpha-tocopherol transfer protein-like                          |
| HMEL020600g1.t1  | putative cuticle protein  |
| HMEL016247g1.t1  | eukaryotic translation initiation factor 4E-binding protein 2   |
| HMEL017701g1.t1  | cuticular protein SICPAP1-A                                     |
| HMEL005816g1.t1  | uncharacterized protein LOC117987429 isoform X2                 |
| HMEL007613-RA  | general odorant-binding protein 56a-like                        |
| HmOBP31  | olfactory binding protein                                       |
| HMEL038072g1.t1  | putative serine carboxypeptidase CPVL                           |
| HMEL002519g1.t1  | succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial |
| HMEL007153g2.t1  | fructose-1,6-bisphosphatase 1                                   |
| HMEL014104g1.t1  | uncharacterized protein LOC113401956 isoform X5                 |
| HMEL034177g1.t1  | circadian clock-controlled protein-like                         |
| HMEL013908g2.t1  | cuticular protein CPH   |
| HMEL037608g1.t1  | cuticle protein LPCP-23-like                                    |
| HMEL010460g1.t1  | glucose dehydrogenase [FAD, quinone]-like                       |
| HMEL014363g1.t2  | zinc finger CCCH domain-containing protein 13 isoform X1        |
| HMEL031781g1.t2  | four and a half LIM domains protein 2 isoform X5                |
| HMEL032062g1.t1  | basic proline-rich protein isoform X1                           |
| HMEL030892g1.t1  | seroin transcript 3   |
| HMEL031805g1.t1  | facilitated trehalose transporter Tret1-like isoform X1         |

|                  |   |
|------------------|---|
| HMEL036377g1.t1  | synaptic vesicle glycoprotein 2B-like                                   |
| HMEL037738g1.t1  | uncharacterized LOC106121242  |
| HMEL013202g1.t1  | WAP, Kazal, immunoglobulin, Kunitz and NTR domain-containing protein    |
| HMEL013231g1.t1  | ---NA---  |
| HMEL007137g1.t1  | seminal fluid protein HACP036   |
| HMEL011396g1.t1  | uricase   |
| HMEL003322g1.t1  | C-type lectin   |
| HMEL005056g1.t1  | phosphoglycolate phosphatase 1B, chloroplastic-like                     |
| HmelUGT40W2.mrna | UGT   |
| HMEL009840g1.t1  | organic cation transporter protein-like                                 |
| HMEL007136g1.t1  | cuticle protein 1-like  |
| HMEL038071g1.t1  | PREDICTED: uncharacterized protein LOC106721535                         |
| HMEL032309g1.t1  | esterase FE4-like   |
| HMEL014879g1.t1  | DNA-binding protein Ets97D isoform X1                                   |
| HmCSP7           | chemosensory protein  |
| HMEL002923g1.t1  | uncharacterized protein LOC113401355 isoform X1                         |
| HMEL030675g1.t1  | chymotrypsin-like elastase family member 2A                             |
| HMEL010199g1.t2  | ubiquitin-conjugating enzyme E2 G1                                      |
| HMEL033041g1.t1  | C-type lectin 27kD  |
| HMEL036512g1.t1  | organic cation transporter protein-like                                 |
| HMEL010483g1.t1  | protein lethal(2)essential for life-like                                |
| HMEL016381g1.t1  | uncharacterized protein LOC113392853                                    |
| HMEL032310g1.t1  | esterase FE4-like   |
| HMEL037738g1.t2  | uncharacterized LOC106121242  |
| HMEL009383g1.t1  | cysteine-rich venom protein TEL1-like                                   |
| HMEL031897g1.t2  | pancreatic triacylglycerol lipase-like isoform X1                       |
| HMEL007743g1.t1  | dihydropyrimidine dehydrogenase [NADP(+)]                               |
| HMEL009754g1.t1  | hexokinase type 2 isoform X1  |
| HMEL034483g1.t1  | uncharacterized threonine-rich GPI-anchored glycoprotein PJ4664.02-like |
| HMEL003114-RA    | ejaculatory bulb-specific protein 3-like                                |
| HMEL004916g1.t1  | neuropathy target esterase sws isoform X3                               |
| HMEL037733g1.t1  | retinol dehydrogenase 11-like   |
| HMEL010010g1.t1  | ecdysone-induced protein 74EF isoform X1                                |
| HMEL015321g1.t1  | phosphoserine phosphatase isoform X1                                    |
| HMEL013360-RA    | protein spaetzle 5  |
| HMEL009297g1.t1  | skin secretory protein xP2-like4  |
| HMEL004916g3.t1  | neuropathy target esterase sws isoform X2                               |
| HMEL003998g1.t1  | calcium-binding protein P-like  |
| HMEL002369g1.t1  | nose resistant to fluoxetine protein 6-like                             |
| HMEL037732g1.t1  | retinol dehydrogenase 11-like   |
| HMEL021174g1.t1  | zinc finger BED domain-containing protein 5-like                        |
| HMEL014508g1.t1  | putative lipase;Gene=RR48_12383   |

|                 |  |
|-----------------|--|
| HMEL021432g1.t1 | Secreted protein member of chemokine factor super family         |
| HMEL034424g1.t1 | facilitated trehalose transporter Tret1-2 homolog                |
| HMEL007377g1.t1 | immune-related Hdd1  |
| HMEL004593g2.t2 | trehalase-like isoform X1  |
| HMEL002971g2.t1 | calpain-A-like isoform X2  |
| HMEL010633g1.t1 | alpha-tocopherol transfer protein-like                           |
| HMEL010636g1.t1 | alpha-tocopherol transfer protein-like                           |
| HMEL006799g1.t1 | protein 60A  |
| HMEL036491g1.t1 | tropomyosin-2 isoform X20  |
| HMEL032512g1.t1 | UDP-glucose 4-epimerase-like                                     |
| HMEL032925g1.t1 | probable cytochrome P450 9f2                                     |
| HMEL013037g2.t1 | membrane-bound alkaline phosphatase-like                         |
| HMEL032795g1.t1 | uncharacterized protein LOC113394989 isoform X1                  |
| HMEL030102g1.t1 | ommochrome-binding protein-like                                  |
| HMEL003074g1.t1 | global transcription regulator sge1                              |
| HMEL015031g1.t1 | putative fatty acyl-CoA reductase CG5065                         |
| HMEL032463g1.t1 | thrombospondin type-1 domain-containing protein 4-like           |
| HMEL004097g1.t1 | ras-related and estrogen-regulated growth inhibitor-like protein |
| HMEL036448g1.t1 | hypothetical protein evm_006714                                  |
| HMEL037703g1.t1 | putative NUF1  |
| HMEL003666g3.t1 | ---NA---   |
| HMEL031464g1.t1 | pancreatic triacylglycerol lipase-like                           |
| HMEL002880g1.t1 | lysozyme-like  |
| HMEL009855g1.t1 | inducible metalloproteinase inhibitor protein-like               |
| HMEL017996g1.t1 | 27 kDa hemolymph protein-like                                    |
| HMEL021388g1.t1 | anther-specific proline-rich protein APG                         |
| HMEL034199g1.t1 | regucalcin-like  |
| HMEL030401g1.t1 | uncharacterized protein LOC113401782 isoform X1                  |
| HMEL033459g1.t1 | zinc finger DNA binding protein                                  |
| HMEL015271g1.t1 | retinol dehydrogenase 13-like                                    |
| HMEL010103g1.t1 | transcription cofactor vestigial-like protein 4 isoform X2       |
| HmCSP25         | chemosensory protein   |
| HMEL004510g1.t1 | cuticle protein 3-like   |
| HMEL031257g1.t1 | ecdysone-induced protein 74EF isoform X3                         |
| HMEL015230g1.t1 | seminal fluid protein CSSFP066                                   |
| HMEL036398g1.t1 | furin-like protease 1 isoform X1                                 |
| HMEL010976g1.t1 | pollen-specific leucine-rich repeat extensin-like protein 1      |
| HMEL033281g1.t1 | pickpocket protein 28-like                                       |
| HMEL031829g1.t1 | isovaleryl-CoA dehydrogenase, mitochondrial                      |
| HMEL034786g1.t1 | DDB1- and CUL4-associated factor 13                              |
| HMEL004514g1.t1 | uncharacterized protein LOC113393602 isoform X1                  |
| HMEL014952g1.t1 | flocculation protein FLO11-like                                  |
| HMEL010273g2.t1 | putative dde superfamily endonuclease                            |
| HMEL033890g1.t1 | reverse transcriptase  |

|                 |  |
|-----------------|--|
| HMEL006811g2.t1 | chitin deacetylase 1                                     |
| HMEL009312g1.t1 | protein Im not dead yet                                  |
| HMEL015566g1.t1 | dystroglycan isoform X1                                  |
| HMEL004347g1.t1 | katanin p60 ATPase-containing subunit A1-like isoform X1 |
| HMEL009008g1.t1 | myrosinase 1-like  |

---

**Upregulated genes in antennae of *H. cydno* five-day-old females**

---

| ID              | Annotation   |
|-----------------|--|
| HMEL014236g1.t1 | complement factor I-like   |
| HMEL008354g1.t1 | NAD kinase-like isoform X2   |
| HMEL017000g1.t1 | peroxidase-like isoform X3   |
| HMEL004406g3.t1 | protein sprint isoform X1  |
| HMEL008484g1.t1 | ---NA---   |
| HMEL017600g1.t1 | regucalcin-like  |
| HMEL010959g1.t1 | major facilitator superfamily domain-containing protein 6                              |
| HMEL033919g1.t1 | venom dipeptidyl peptidase 4-like isoform X1   |
| HMEL037697g1.t2 | E3 ubiquitin-protein ligase MARCH6   |
| HMEL016763g1.t1 | putative carbonic anhydrase 3  |
| HMEL021033g2.t1 | androgen-induced gene 1 protein-like   |
| HMEL008064g1.t1 | protein yellow-like  |
| HMEL003562g1.t1 | phosphorylase b kinase gamma catalytic chain, skeletal muscle/heart isoform isoform X1 |
| HMEL002874g1.t1 | lysozyme-like isoform X1   |
| HMEL010437g1.t1 | protein tramtrack, beta isoform-like isoform X2  |
| HMEL002127g1.t1 | apyrase-like   |
| HMEL010779g1.t1 | chymotrypsin-like elastase family member 2A  |
| HMEL020420g1.t1 | unnamed protein product  |
| HMEL037137g1.t1 | nimrod B precursor   |
| HMEL003683g1.t1 | serine protease snake-like   |
| HMEL002401g1.t1 | Krueppel-like factor 10  |
| HMEL022460g1.t1 | HmCSP16 chemosensory protein   |
| HMEL017524g1.t2 | peroxisomal multifunctional enzyme type 2  |
| HMEL008762g1.t4 | pyruvate carboxylase, mitochondrial isoform X1   |
| HMEL012223g1.t1 | multidrug resistance-associated protein 1 isoform X1                                   |
| HMEL014920g1.t1 | glutamine synthetase 2 cytoplasmic   |
| HMEL017504g1.t1 | uncharacterized protein LOC113402575   |
| HMEL036946g1.t1 | elongation of very long chain fatty acids protein AAEL008004-like                      |
| HMEL003257g1.t1 | 5-aminolevulinate synthase, nonspecific, mitochondrial                                 |
| HMEL014452g1.t4 | juvenile hormone epoxide hydrolase-like  |
| HMEL008774g1.t1 | annexin B9 isoform X1  |
| HMEL004112g1.t1 | probable medium-chain specific acyl-CoA dehydrogenase, mitochondrial isoform X2        |
| HMEL033570g1.t1 | probable sodium-coupled neutral amino acid transporter 6                               |
| HMEL014623g1.t1 | uncharacterized protein LOC112048164 isoform X2  |
|                 | protein transport protein Sec61 subunit alpha  |

|                 |  |
|-----------------|--|
| HMEL021304g1.t1 | monocarboxylate transporter 14-like  |
| HMEL016262g1.t1 | inositol-3-phosphate synthase  |
| HMEL036190g1.t1 | carboxylesterase 3   |
| HMEL005773g1.t1 | pollen-specific leucine-rich repeat extensin-like protein 1                  |
| HMEL012250g1.t1 | uncharacterized oxidoreductase TM_0325-like                                  |
| HMEL022178g1.t1 | ---NA---   |
| HMEL036689g1.t1 | fatty-acid amide hydrolase 2-B   |
| HMEL014238g1.t1 | zinc finger protein 608-like isoform X1                                      |
| HMEL012366g1.t1 | uncharacterized protein LOC113394873   |
| HMEL034838g1.t1 | stearoyl-CoA desaturase 5-like isoform X2                                    |
| HMEL031638g1.t1 | Phosphonates-binding periplasmic protein                                     |
| HmOBP38         | olfactory binding protein  |
| HMEL014247-RA   | scavenger receptor class B member 1 isoform X2                               |
| HMEL002148g1.t1 | blastula protease 10-like isoform X2   |
| HMEL010629g1.t1 | aldo-keto reductase AKR2E4-like  |
| HMEL035990g1.t1 | Transposase-like protein   |
| HMEL033940g1.t1 | membrane-associated progesterone receptor component 1-like                   |
| HMEL006560g1.t1 | kynurenine formamidase isoform X2  |
| HMEL021269g1.t1 | protein white  |
| HMEL014864g1.t1 | facilitated trehalose transporter Tret1-2 homolog isoform X2                 |
| HMEL013405g1.t1 | sodium/potassium/calcium exchanger 4-like                                    |
| HMEL006748g1.t1 | odorant binding protein  |
| HMEL035316g1.t1 | fasciclin-3 isoform X2   |
| HMEL017092g1.t1 | esterase B1-like   |
| HMEL014309g1.t1 | 23 kDa integral membrane protein-like  |
| HMEL010062g1.t1 | potassium channel subfamily K member 1-like isoform X1                       |
| HMEL010126g1.t4 | seminal fluid protein HACP059  |
| HMEL016825g1.t1 | facilitated trehalose transporter Tret1-like                                 |
| HMEL006174g2.t1 | uncharacterized protein LOC113402709   |
| HMEL011017g1.t1 | amino acid transporter AVT1D-like  |
| HMEL020654g1.t1 | sphingolipid delta(4)-desaturase DES1  |
| HMEL032250g1.t1 | uncharacterized protein LOC112055290   |
| HMEL012362g1.t1 | post-GPI attachment to proteins factor 6                                     |
| HMEL004426g1.t1 | pyridoxal phosphate phosphatase PHOSPHO2-like                                |
| HMEL017506g1.t1 | elongation of very long chain fatty acids protein AAEL008004-like isoform X1 |
| HMEL006304g1.t2 | purine nucleoside phosphorylase-like isoform X2                              |
| HMEL006827g1.t2 | transcriptional regulator ovo-like isoform X2                                |
| HMEL005408g2.t2 | elongation of very long chain fatty acids protein AAEL008004 isoform X2      |
| HMEL016700g1.t1 | circadian clock-controlled protein-like                                      |
| HMEL010310g2.t1 | hypothetical protein KGM_213858A, partial                                    |
| HMEL036816g1.t2 | NPC intracellular cholesterol transporter 1 isoform X3                       |
| HMEL008599g1.t1 | clavesin-1-like isoform X2   |

|                 |   |           |
|-----------------|---|-----------|
| HMEL036015g1.t1 | glucose transporter type 1-like isoform X2                  |           |
| HMEL031498g1.t1 | cationic amino acid transporter 2-like                      |           |
| HMEL015932g1.t1 | uncharacterized protein LOC113399715                        |           |
| HMEL006853g1.t1 | alpha-tocopherol transfer protein-like                      |           |
| HMEL014796g1.t1 | Group 3 secretory phospholipase A2                          |           |
| HMEL033015g1.t1 | glycerophosphocholine phosphodiesterase GPCPD1 isoform X1   |           |
| HMEL002238g1.t1 | protein white   |           |
| HMEL033177g1.t1 | hypothetical protein B5X24_HaOG203370                       |           |
| HMEL034406g1.t1 | circadian clock-controlled protein-like                     |           |
| HMEL005285g2.t1 | trace amine-associated receptor 1                           |           |
| HMEL010126g1.t1 | seminal fluid protein HACP059                               |           |
| HMEL013185g1.t1 | facilitated trehalose transporter Tret1-like                |           |
| HMEL038146g1.t1 | protein PF14_0175-like                                      |           |
| HMEL002238g3.t1 | protein white   |           |
| HMEL012124g1.t1 | allantoinase-like   |           |
| HMEL030903g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like |           |
| HMEL013136g4.t1 | myrosinase 1-like   |           |
| HMEL011728g1.t1 | glycerophosphodiester phosphodiesterase GDPD6-like          |           |
| HMEL012832g2.t1 | long-chain fatty acid transport protein 4-like              |           |
| HMEL015572g1.t1 | saccharopine dehydrogenase-like oxidoreductase              |           |
| HMEL030964g1.t1 | ---NA---  |           |
| HMEL006560g2.t1 | kynurenine formamidase isoform X2                           |           |
| HMEL009710g1.t1 | alpha-tocopherol transfer protein-like                      |           |
| HMEL004160g1.t3 | aldehyde dehydrogenase, dimeric NADP-preferring isoform X1  |           |
| HMEL010737g1.t2 | lysosomal alpha-mannosidase-like isoform X2                 |           |
| HMEL031991g1.t1 | cytochrome P450 4c3-like                                    |           |
| HMEL007637g1.t1 | ecdysteroid-regulated 16 kDa protein-like                   |           |
| HMEL017153-RA   | cytochrome P450 6B5-like                                    |           |
| HMEL014628g1.t1 | alpha-tocopherol transfer protein-like                      |           |
| HMEL036736g1.t1 | estradiol 17-beta-dehydrogenase 11-like                     |           |
| HMEL002271g1.t1 | hypothetical protein KGM_209237                             |           |
| HMEL035405g1.t1 | scavenger receptor class B member 1                         |           |
| HMEL002834g1.t1 | hypothetical protein B5V51_2590                             |           |
| HMEL005093g1.t2 | presenilin-1 isoform X1                                     |           |
| HMEL009558g3.t1 | alpha-1,6-mannosyl-glycoprotein                             | 2-beta-N- |
|                 | acetylglucosaminyltransferase isoform X1                    |           |
| HMEL007474g1.t1 | facilitated trehalose transporter Tret1-like                |           |
| HMEL014492g1.t1 | phospholipase A1-like                                       |           |
| HMEL011026g1.t1 | protein cycle isoform X2                                    |           |
| HMEL017464-RA   | cytochrome P450 6k1-like                                    |           |
| HMEL006217g1.t1 | cocoonase 4   |           |
| HMEL009054g1.t1 | ---NA---  |           |
| HMEL016204g1.t1 | delta-1-pyrroline-5-carboxylate synthase isoform X1         |           |
| HMEL006577g1.t1 | organic solute transporter alpha-like protein               |           |



|                  |  |
|------------------|--|
| HMEL010190g2.t1  | glucose dehydrogenase [FAD, quinone]   |
| HMEL002147g1.t1  | copper-transporting ATPase 1 isoform X4                                      |
| HMEL016273g1.t2  | espin isoform X1   |
| HMEL008385g1.t1  | A disintegrin and metalloproteinase with thrombospondin motifs 7             |
| HMEL035250g1.t1  | CD63 antigen-like  |
| HMEL006997g1.t1  | esterase FE4-like  |
| HMEL015404g1.t1  | la1-like protein 15 isoform X4   |
| HMEL013064g1.t1  | serine protease snake-like   |
| HMEL005408g2.t1  | elongation of very long chain fatty acids protein AAEL008004-like isoform X1 |
| HmOBP50          | olfactory binding protein  |
| HMEL010294g2.t1  | protein charybde-like  |
| HMEL015010g2.t1  | phosphatidylinositol-binding clathrin assembly protein LAP isoform X1        |
| HMEL016367g1.t1  | uridine 5-monophosphate synthase-like  |
| HMEL030922g1.t1  | probable peroxisomal acyl-coenzyme A oxidase 1                               |
| HMEL014531g5.t1  | uncharacterized protein LOC113392023   |
| HMEL011919g1.t1  | protein hairy  |
| HMEL010190g3.t1  | glucose dehydrogenase [FAD, quinone]   |
| HMEL003531g1.t1  | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase isoform X1              |
| HMEL008412g1.t1  | membrane alanyl aminopeptidase-like  |
| HMEL017304g1.t1  | seminal fluid protein HACP059  |
| HMEL037395g1.t2  | homeotic protein distal-less isoform X1                                      |
| HMEL009081g1.t1  | protein scarlet-like   |
| HMEL020720g1.t1  | cuticular protein RR-2 motif 125 precursor                                   |
| HMEL005408g1.t1  | ---NA---   |
| HMEL015808g1.t1  | cuticle protein 19.8-like  |
| HMEL008564g1.t2  | peptide methionine sulfoxide reductase                                       |
| HMEL008564g1.t1  | peptide methionine sulfoxide reductase                                       |
| HMEL013489g1.t1  | putative inactive cysteine synthase 2  |
| HMEL010990-RA    | ejaculatory bulb-specific protein 3-like                                     |
| HMEL006341-RA    | scavenger receptor class B member 1-like isoform X1                          |
| HMEL021635g1.t1  | FERM domain-containing protein 8   |
| HMEL030086g1.t1  | prostamide/prostaglandin F synthase-like isoform X1                          |
| HmCSP8           | chemosensory protein   |
| HMEL034237g1.t1  | reverse transcriptase  |
| HMEL032052g1.t1  | cuticular protein RR-3 motif 148 precursor                                   |
| HmelUGT40V2.mrna | UGT  |
| HMEL010126g1.t2  | seminal fluid protein HACP059  |
| HMEL030995g1.t1  | uncharacterized protein LOC116768575   |
| HMEL008807g1.t1  | tan protein  |
| HMEL030595g1.t1  | endonuclease-reverse transcriptase HmRTE-e01                                 |
| HMEL006535g4.t1  | trans-1,2-dihydrobenzene-1,2-diol dehydrogenase-like                         |
| HMEL008902g1.t1  | PHD finger protein 14 isoform X1   |

|                  |   |
|------------------|---|
| HMEL011684g1.t1  | uncharacterized protein LOC113404648                    |
| HMEL030029g1.t1  | Probable RNA-directed DNA polymerase from transposon BS |
| HMEL002124g1.t1  | fatty acid-binding protein, muscle-like                 |
| HMEL015278g1.t1  | pancreatic triacylglycerol lipase-like                  |
| HMEL006217g2.t1  | cocoonase 4   |
| HMEL011384g2.t1  | putative defense protein Hdd11                          |
| HMEL016237g1.t1  | circadian clock-controlled protein-like                 |
| HMEL034861g1.t1  | androgen-dependent TFPI-regulating protein-like         |
| HMEL004850g2.t1  | dopamine N-acetyltransferase-like                       |
| HMEL010126g1.t3  | seminal fluid protein HACP059                           |
| HMEL017154-RA    | cytochrome P450 6B2-like                                |
| HMEL004446g1.t1  | uncharacterized protein LOC116768575                    |
| HMEL014225g1.t1  | protein phosphatase 1 regulatory subunit 3C             |
| HMEL034236g1.t1  | reverse transcriptase                                   |
| HMEL002003g1.t1  | apolipoprotein D-like                                   |
| HmelUGT33Z2.mrna | UGT   |
| HMEL011873g2.t1  | arylsulfatase B-like                                    |
| HMEL013164g1.t1  | facilitated trehalose transporter Tret1-like            |
| HMEL033667g1.t1  | xanthine dehydrogenase-like                             |
| HMEL011266g1.t1  | nose resistant to fluoxetine protein 6-like             |
| HMEL007905g1.t1  | glycogen-binding subunit 76A isoform X1                 |
| HMEL016058g1.t1  | seminal fluid protein HACP044                           |
| HMEL037992g1.t1  | senecionine N-oxygenase-like                            |
| HMEL032516g1.t1  | ---NA---  |
| HMEL036843g1.t1  | chymotrypsin inhibitor                                  |
| HMEL016688g1.t1  | eye-specific diacylglycerol kinase isoform X1           |
| HMEL015726g1.t1  | stearoyl-CoA desaturase 5-like                          |
| HMEL032327g1.t1  | beta-hexosaminidase subunit beta-like                   |
| HMEL032637g1.t1  | hypothetical protein B5V51_2590                         |
| HMEL008541g1.t1  | protein app1-like                                       |
| HMEL013977g1.t1  | ---NA---  |
| HMEL006784g1.t1  | alpha,alpha-trehalose-phosphate synthase [UDP-forming]  |
| HMEL009055g1.t1  | ---NA---  |
| HMEL017149-RA    | Cytochrome P450 4V2                                     |

**Upregulated genes in legs of *H. cydno* two-day-old females**

| ID              | Annotation  |
|-----------------|---|
| HMEL007986g1.t1 | pupal cuticle protein PCP52-like                        |
| HMEL031927g1.t1 | endocuticle structural glycoprotein ABD-4-like          |
| HMEL002715g1.t1 | 4-hydroxyphenylpyruvate dioxygenase-like                |
| HMEL013199g1.t2 | phosphoenolpyruvate carboxykinase [GTP]-like isoform X2 |
| HMEL009754g1.t3 | hexokinase type 2 isoform X3                            |
| HMEL004242g1.t1 | calcium-independent phospholipase A2-gamma-like         |
| HMEL003429g1.t1 | homogentisate 1,2-dioxygenase                           |
| HMEL003671g1.t1 | putative cuticle protein                                |

|                 |   |
|-----------------|---|
| HMEL035722g1.t1 | putative glycine-rich cell wall structural protein 1                              |
| HMEL010500g2.t1 | ---NA---  |
| HMEL037613g1.t1 | cuticular protein CPH   |
| HMEL011939g1.t1 | facilitated trehalose transporter Tret1-like                                      |
| HMEL005934g1.t1 | glutaminase liver isoform, mitochondrial isoform X1                               |
| HMEL006697g1.t3 | phosphatidate phosphatase LPIN3 isoform X1  |
| HmOBP31         | olfactory binding protein   |
| HMEL014926g2.t1 | monocarboxylate transporter 3   |
| HMEL004916g3.t4 | neuropathy target esterase sws isoform X4   |
| HMEL007613-RA   | general odorant-binding protein 56a-like  |
| HMEL030840g1.t1 | facilitated trehalose transporter Tret1-like isoform X1                           |
| HMEL010735g1.t1 | BCL2/adenovirus E1B 19 kDa protein-interacting protein 3 isoform X2               |
| HMEL014094g1.t1 | insulin-like receptor   |
| HMEL037950g1.t1 | RING finger protein 145   |
| HMEL013908g1.t1 | cuticular protein CPH   |
| HMEL016141g1.t1 | uncharacterized LOC106128526  |
| HMEL032926g1.t1 | senecionine N-oxygenase isoform X1  |
| HMEL006697g2.t1 | phosphatidate phosphatase LPIN3 isoform X1  |
| HMEL012441g1.t1 | tyrosine aminotransferase   |
| HMEL012521g1.t1 | troponin C-like   |
| HMEL015321g1.t1 | phosphoserine phosphatase isoform X1  |
| HMEL016247g1.t1 | eukaryotic translation initiation factor 4E-binding protein 2                     |
| HMEL007353g1.t2 | troponin I isoform X15  |
| HMEL004713g3.t1 | methyltransferase-like protein 13   |
| HMEL004412g1.t1 | uncharacterized protein LOC113401620  |
| HMEL003719g1.t1 | larval cuticle protein LCP-22-like  |
| HMEL020073g1.t1 | adiponectin receptor protein  |
| HMEL006214g1.t1 | flocculation protein FLO11 isoform X1   |
| HMEL031928g1.t1 | endocuticle structural glycoprotein SgAbd-2-like                                  |
| HMEL030210g1.t1 | ras-related and estrogen-regulated growth inhibitor-like protein                  |
| HMEL002369g1.t1 | nose resistant to fluoxetine protein 6-like                                       |
| HMEL008353g1.t2 | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1              |
| HMEL003673g1.t2 | collagen and calcium-binding EGF domain-containing protein 1-like isoform X1      |
| HMEL032730g1.t1 | insulin-like growth factor-binding protein complex acid labile subunit isoform X1 |
| HMEL037738g1.t2 | uncharacterized LOC106121242  |
| HMEL014632g1.t1 | endochitinase-like isoform X2   |
| HMEL036512g1.t1 | organic cation transporter protein-like   |
| HMEL006576g1.t1 | early endosome antigen 1  |
| HMEL004916g1.t1 | neuropathy target esterase sws isoform X3   |
| HMEL013901g1.t1 | 3-phosphoinositide-dependent protein kinase 1 isoform X1                          |

|                 |   |
|-----------------|---|
| HMEL016094g1.t1 | protein ABHD18  |
| HMEL002519g1.t1 | succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial |
| HMEL011355g1.t1 | spindle pole body component 110 isoform X1                      |
| HMEL010106g1.t1 | pancreatic lipase-related protein 2                             |
| HMEL013620g2.t1 | Actin, muscle   |
| HMEL011923g1.t1 | nanos-like protein  |
| HMEL003398g1.t2 | irregular chiasm C-roughest protein-like isoform X1             |
| HMEL013584g2.t1 | leucine-rich repeat-containing protein 57 isoform X1            |
| HMEL009569g1.t1 | circadian clock-controlled protein-like                         |
| HMEL036108g1.t1 | hypothetical protein KGM_210950                                 |
| HMEL014363g1.t1 | zinc finger CCCH domain-containing protein 13 isoform X1        |
| HmCSP25         | chemosensory protein  |
| HMEL030467g1.t1 | organic cation transporter protein-like                         |
| HMEL036535g1.t1 | serine protease snake-like                                      |
| HMEL004332g1.t1 | putative Insulin receptor precursor                             |
| HMEL018081g1.t1 | hyaluronidase PH-20-like isoform X1                             |
| HMEL016978g1.t1 | Type I inositol-1,4,5-trisphosphate 5-phosphatase               |
| HMEL006484g1.t1 | ankyrin-3-like isoform X2                                       |
| HMEL006799g1.t1 | protein 60A   |
| HMEL032058g1.t1 | uncharacterized protein ZK1073.1 isoform X3                     |
| HMEL009312g1.t1 | protein Im not dead yet   |
| HMEL035053g1.t1 | patched domain-containing protein 3                             |
| HMEL034424g1.t1 | facilitated trehalose transporter Tret1-2 homolog               |
| HMEL033041g1.t1 | C-type lectin 27kD  |
| HMEL010460g1.t1 | glucose dehydrogenase [FAD, quinone]-like                       |
| HMEL014452g1.t3 | annexin B9 isoform X4   |
| HMEL015754g1.t1 | versican core protein   |
| HMEL009805g1.t1 | uncharacterized protein LOC113404204, partial                   |
| HMEL005816g1.t1 | uncharacterized protein LOC117987429 isoform X2                 |
| HMEL006583g1.t1 | muscle-specific protein 20-like                                 |
| HMEL011631g1.t1 | homocysteine S-methyltransferase 2-like                         |
| HMEL012654g1.t1 | mitochondrial genome maintenance exonuclease 1-like             |
| HMEL013231g1.t1 | ---NA---  |
| HMEL015094g1.t1 | histone-lysine N-methyltransferase SMYD3                        |
| HMEL031931g1.t1 | endocuticle structural glycoprotein SgAbd-2-like                |
| HMEL003998g1.t1 | calcium-binding protein P-like                                  |
| HMEL035254g1.t2 | paxillin isoform X1   |
| HMEL034773g1.t2 | Tyrosine-protein phosphatase non-receptor type 13               |
| HMEL007743g1.t1 | dihydropyrimidine dehydrogenase [NADP(+)]                       |
| HMEL017435g2.t1 | retinol dehydrogenase 13-like                                   |
| HMEL017044g1.t2 | E3 ubiquitin-protein ligase HECW2 isoform X1                    |
| HMEL034512g1.t2 | potassium voltage-gated channel protein Shal isoform X2         |
| HMEL015971g1.t1 | farnesoic acid O-methyltransferase                              |
| HMEL006035g1.t1 | putative Multiple pdz domain protein                            |

|                 |   |
|-----------------|---|
| HMEL030671g1.t1 | DNA gyrase subunit B                                      |
| HMEL031058g1.t2 | nuclear receptor coactivator 7 isoform X1                 |
| HMEL013304g1.t1 | long-chain-fatty-acid--CoA ligase ACSBG2 isoform X2       |
| HMEL014810g1.t1 | titin-like isoform X1                                     |
| HMEL012591g1.t1 | protein yippee-like CG15309 isoform X1                    |
| HMEL008369g3.t1 | probable serine/threonine-protein kinase dyrk2 isoform X2 |
| HMEL013678g1.t3 | potassium voltage-gated channel protein Shab isoform X1   |
| HMEL009417g1.t1 | pupal cuticle protein-like                                |
| HMEL037926g1.t1 | hypoxia-inducible factor 1-alpha-like isoform X1          |
| HMEL009312g4.t1 | protein Im not dead yet                                   |
| HMEL012438g1.t1 | zinc transporter ZIP10                                    |
| HMEL013400g1.t1 | probable citrate synthase 2, mitochondrial                |
| HMEL005241g1.t1 | muscle-specific protein 20                                |
| HMEL008833g1.t1 | alpha-actinin, sarcomeric isoform X1                      |
| HMEL030675g1.t1 | chymotrypsin-like elastase family member 2A               |
| HMEL035298g1.t1 | ester hydrolase C11orf54 homolog isoform X1               |
| HMEL021174g1.t1 | zinc finger BED domain-containing protein 5-like          |
| HMEL008727g1.t1 | collagen alpha-1(IX) chain-like                           |
| HMEL013284g1.t1 | probable malate dehydrogenase, mitochondrial              |
| HMEL003247g1.t1 | organic cation transporter protein-like                   |
| HMEL016266g1.t1 | fumarylacetoacetase                                       |

---

**Upregulated genes in legs of *H. cydno* five-day-old females**

---

| ID               | Annotation   |
|------------------|--|
| HMEL032548g1.t1  | venom carboxylesterase-6-like                                |
| HMEL014881g1.t1  | fatty acyl-CoA reductase wat-like                            |
| HmelUGT33G1.mrna | UGT  |
| HMEL035444g1.t1  | unnamed protein product                                      |
| HMEL033769g1.t1  | mitochondrial inner membrane protease subunit 1              |
| HMEL014135g1.t1  | NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5 |
| HMEL011072g1.t1  | alpha-tocopherol transfer protein-like                       |
| HMEL030356g1.t1  | hypothetical protein B5X24_HaOG206241                        |
| HMEL035350g1.t1  | serine protease snake-like                                   |
| HMEL016015g4.t1  | fatty-acid amide hydrolase 2-like                            |
| HMEL011426g1.t1  | integrin beta pat-3-like                                     |
| HMEL031991g1.t1  | cytochrome P450 4c3-like                                     |
| HMEL035405g1.t1  | scavenger receptor class B member 1                          |
| HMEL031976g1.t1  | 39S ribosomal protein L55, mitochondrial                     |
| HMEL037150g1.t1  | moesin/ezrin/radixin homolog 1 isoform X2                    |
| HMEL005384g1.t1  | 28S ribosomal protein S7, mitochondrial                      |
| HMEL016015g5.t1  | fatty-acid amide hydrolase 2-like                            |
| HMEL013136g4.t1  | myrosinase 1-like  |
| HMEL030393g1.t1  | uncharacterized protein LOC113401667, partial                |
| HMEL013064g1.t1  | serine protease snake-like                                   |
| HMEL002271g1.t1  | hypothetical protein KGM_209237                              |

|                 |   |
|-----------------|---|
| HMEL010864g1.t1 | protein disulfide-isomerase   |
| HMEL013596g1.t1 | peptidyl-prolyl cis-trans isomerase FKBP2                                 |
| HMEL008333g1.t1 | ribosomal protein 63, mitochondrial                                       |
| HMEL016015g1.t1 | fatty-acid amide hydrolase 2-like   |
| HMEL030995g1.t1 | uncharacterized protein LOC116768575                                      |
| HMEL003312g1.t3 | inter-alpha-trypsin inhibitor heavy chain H4-like isoform X1              |
| HMEL006935g1.t1 | uncharacterized protein LOC113404389                                      |
| HMEL014623g1.t1 | protein transport protein Sec61 subunit alpha                             |
| HMEL008599g1.t1 | clavesin-1-like isoform X2  |
| HMEL011117g1.t1 | Pre-mRNA-splicing factor 38   |
| HMEL005408g1.t1 | ---NA---  |
| HMEL003357g1.t1 | Coiled-coil-helix-coiled-coil-helix domain-containing protein 1           |
| HMEL030086g1.t1 | prostamide/prostaglandin F synthase-like isoform X1                       |
| HMEL014845g1.t1 | probable 28S ribosomal protein S6, mitochondrial                          |
| HMEL002378g1.t1 | serine protease inhibitor dipetalogastin-like                             |
| HMEL034406g1.t1 | circadian clock-controlled protein-like                                   |
| HMEL017894g4.t1 | cGMP-dependent protein kinase, isozyme 2 forms cD5/T2-like isoform X1     |
| HMEL008459g1.t1 | facilitated trehalose transporter Tret1-like                              |
| HMEL011873g2.t1 | arylsulfatase B-like  |
| HmOBP45         | olfactory binding protein   |
| HMEL034667g1.t1 | cilia- and flagella-associated protein 206-like                           |
| HMEL013177g1.t1 | probable small nuclear ribonucleoprotein Sm D2                            |
| HMEL021415g1.t1 | endocuticle structural glycoprotein SgAbd-5-like                          |
| HMEL035167g1.t1 | trafficking kinesin-binding protein milt isoform X4                       |
| HMEL037403g1.t1 | phosphatidylinositol 4-phosphate 5-kinase type-1 gamma-like isoform X1    |
| HMEL031755g1.t1 | Probable RNA-directed DNA polymerase from transposon BS                   |
| HMEL037976g1.t1 | probable G-protein coupled receptor Mth-like 3                            |
| HMEL037877g1.t2 | papilin isoform X1  |
| HMEL006746g1.t1 | juvenile hormone binding protein an-0921 precursor                        |
| HMEL032137g1.t4 | cleavage and polyadenylation specificity factor subunit CG7185 isoform X1 |
| HMEL004809g1.t1 | succinate dehydrogenase assembly factor 2-B, mitochondrial-like           |
| HMEL031756g1.t1 | putative endonuclease and reverse transcriptase-like protein              |
| HMEL005922g1.t1 | Major facilitator superfamily domain-containing protein 6-A               |
| HMEL031902g1.t1 | protein THEM6-like  |
| HMEL031212g1.t1 | tctex1 domain-containing protein 2-like                                   |
| HMEL014850g1.t1 | insulin-like growth factor isoform X3                                     |
| HMEL031234g1.t2 | RNA-binding protein 1 isoform X1  |
| HMEL006610g1.t1 | endoplasmin isoform X1  |
| HMEL005973g1.t1 | facilitated trehalose transporter Tret1-like                              |
| HMEL008354g2.t1 | NAD kinase-like isoform X5  |
| HMEL034210g1.t2 | vacuolar protein sorting-associated protein 13A-like                      |

|                   |  |
|-------------------|--|
| HMEL014043g1.t1   | 39S ribosomal protein L18, mitochondrial                                 |
| HMEL006876g1.t2   | jmjC domain-containing histone demethylation protein 1 isoform X1        |
| HMEL005882g2.t1   | esterase E4-like   |
| HMEL011226g1.t1   | probable chitinase 2   |
| HMEL034031g1.t1   | ---NA---   |
| HMEL021853g1.t1   | ---NA---   |
| HmelGSTe6.mrna    | GST  |
| HMEL037138g1.t1   | ---NA---   |
| HMEL006546g1.t1   | anaphase-promoting complex subunit 15B-like                              |
| HMEL008776g1.t1   | 3-hydroxyacyl-CoA dehydrogenase type-2                                   |
| HMEL032659g1.t1   | macrophage mannose receptor 1-like                                       |
| HMEL033930g1.t3   | tenascin-like isoform X1   |
| HMEL006016g1.t1   | endocuticle structural glycoprotein ABD-5-like                           |
| HMEL015235g1.t1   | protein takeout  |
| HMEL013783g1.t1   | uncharacterized protein LOC113394807                                     |
| HMEL030683g1.t1   | active regulator of SIRT1-like   |
| HMEL034781g1.t1   | 39S ribosomal protein L46, mitochondrial                                 |
| HMEL030910g1.t1   | apolipoprotein D-like  |
| HMEL009055g1.t1   | ---NA---   |
| HMEL032188g1.t1   | hemicentin-1-like isoform X1   |
| HMEL006992g1.t1   | chromobox protein homolog 5-like   |
| HMEL008603g1.t1   | alpha-tocopherol transfer protein-like                                   |
| HMEL005091g2.t1   | adipocyte plasma membrane-associated protein-like                        |
| HMEL005879g1.t1   | 39S ribosomal protein L54, mitochondrial                                 |
| HMEL005553-RA     | cytochrome P450 4C1-like   |
| HmelUGT33AA2.mrna | UGT  |
| HMEL012878g2.t1   | organic cation transporter protein-like                                  |
| HMEL036519g1.t1   | ---NA---   |
| HMEL009597g1.t1   | seminal fluid protein HACP057  |
| HMEL035972g1.t1   | carboxypeptidase B-like  |
| HMEL032052g1.t1   | cuticular protein RR-3 motif 148 precursor                               |
| HMEL036246g1.t1   | uncharacterized protein LOC113402398                                     |
| HMEL016204g1.t1   | delta-1-pyrroline-5-carboxylate synthase isoform X1                      |
| HMEL005227g1.t1   | vesicle transport protein GOT1B  |
| HMEL012617g2.t1   | RNA-directed DNA polymerase from mobile element jockey                   |
| HMEL003326g3.t1   | esterase FE4-like  |
| HMEL015313g1.t1   | UNC93-like protein   |
| HMEL018028g1.t1   | high mobility group protein HMGI-C-like                                  |
| HMEL021635g1.t1   | FERM domain-containing protein 8   |
| HMEL015861g1.t1   | pupal cuticle protein PCP52-like   |
| HMEL013325g2.t1   | delta and Notch-like epidermal growth factor-related receptor isoform X1 |
| HMEL016763g1.t1   | putative carbonic anhydrase 3  |

|                 |  |
|-----------------|--|
| HMEL033640g1.t1 | probable 39S ribosomal protein L49, mitochondrial                            |
| HMEL005408g2.t1 | elongation of very long chain fatty acids protein AAEL008004-like isoform X1 |
| HMEL011325g1.t1 | mucin-5AC-like   |
| HMEL015963g1.t1 | 39S ribosomal protein L42, mitochondrial                                     |
| HMEL003326g2.t1 | esterase FE4-like  |
| HMEL022269g1.t1 | saccharopine dehydrogenase-like oxidoreductase                               |
| HMEL003819g1.t1 | glyoxalase domain-containing protein 4                                       |
| HMEL033327g1.t1 | alpha-tocopherol transfer protein-like                                       |
| HMEL011017g1.t1 | amino acid transporter AVT1D-like  |
| HMEL037992g1.t1 | senecionine N-oxygenase-like   |
| HMEL013171g1.t1 | probable 28S ribosomal protein S25, mitochondrial                            |
| HMEL015999g1.t2 | Ig-like and fibronectin type-III domain-containing protein 2 isoform X1      |
| HMEL033982g1.t1 | proton-coupled amino acid transporter-like protein pathetic                  |
| HMEL011032g1.t1 | cubilin-like   |
| HMEL005091g1.t1 | adipocyte plasma membrane-associated protein-like                            |
| HMEL015087g1.t1 | protein obstructor-E-like  |
| HMEL006003g1.t1 | putative cuticle protein   |
| HMEL034236g1.t1 | reverse transcriptase  |
| HMEL009544g1.t1 | SPARC  |
| HMEL002119g1.t1 | luciferin 4-monooxygenase-like   |
| HmCSP16         | chemosensory protein   |
| HMEL004426g1.t1 | pyridoxal phosphate phosphatase PHOSPHO2-like                                |
| HMEL034930g1.t1 | 28S ribosomal protein S21, mitochondrial                                     |
| HMEL033930g1.t1 | tenascin-like isoform X1   |
| HMEL003683g1.t1 | serine protease snake-like   |
| HmOBP11         | olfactory binding protein  |
| HMEL007135g1.t1 | ---NA---   |
| HMEL016318g1.t2 | ankyrin-1-like isoform X2  |
| HMEL037137g1.t1 | nimrod B precursor   |
| HMEL012656g1.t1 | connectin-like   |
| HMEL010349g1.t1 | protein obstructor-E-like  |
| HMEL006535g4.t1 | trans-1,2-dihydrobenzene-1,2-diol dehydrogenase-like                         |
| HMEL021033g2.t1 | androgen-induced gene 1 protein-like   |
| HMEL012569g1.t1 | integrin alpha-4-like  |
| HMEL013013g1.t1 | Gem-associated protein 7   |
| HmOBP8          | olfactory binding protein  |
| HMEL003281g1.t1 | uncharacterized protein LOC113397788   |
| HMEL005900g1.t1 | phospholipase ABHD3  |
| HMEL011066g2.t1 | alpha-tocopherol transfer protein-like                                       |
| HMEL002899-RA   | cuticular protein CPG24  |
| HMEL035227g1.t1 | 15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like                          |
| HMEL003599g1.t1 | circadian clock-controlled protein-like                                      |



|                 |  |
|-----------------|--|
| HMEL037953g1.t1 | cystathionine beta-synthase-like                             |
| HMEL004478g1.t1 | juvenile hormone esterase-like                               |
| HMEL015808g1.t1 | cuticle protein 19.8-like                                    |
| HMEL033034g1.t1 | long-chain fatty acid transport protein 4-like               |
| HMEL020720g1.t1 | cuticular protein RR-2 motif 125 precursor                   |
| HMEL008058g1.t1 | D-aspartate oxidase  |
| HMEL034762g1.t1 | Serine protease easter                                       |
| HMEL013185g1.t1 | facilitated trehalose transporter Tret1-like                 |
| HMEL016137g1.t2 | ras-related protein Rab-31                                   |
| HMEL011684g1.t1 | uncharacterized protein LOC113404648                         |
| HMEL009954g1.t1 | gamma-glutamyl hydrolase A-like isoform X1                   |
| HMEL011479g1.t1 | venom carboxylesterase-6-like                                |
| HMEL015430g1.t2 | homeobox protein extradenticle isoform X1                    |
| HMEL014531g4.t1 | uncharacterized protein LOC113392023                         |
| HMEL012805g1.t2 | prosaposin isoform X1  |
| HMEL031326g1.t1 | ---NA---   |
| HMEL009418g1.t1 | glucose dehydrogenase [FAD, quinone]-like                    |
| HMEL036865g1.t1 | protein msta-like isoform X1                                 |
| HMEL030029g1.t1 | Probable RNA-directed DNA polymerase from transposon BS      |
| HMEL034237g1.t1 | reverse transcriptase  |
| HMEL003055g1.t1 | small integral membrane protein 20                           |
| HMEL014120g4.t1 | protein rolling stone-like                                   |
| HMEL002092g1.t1 | protein yellow-like isoform X1                               |
| HMEL008820g1.t1 | D-3-phosphoglycerate dehydrogenase                           |
| HMEL002202g1.t1 | extensin-like isoform X2                                     |
| HMEL020420g1.t1 | unnamed protein product                                      |
| HMEL010201g2.t1 | uncharacterized protein LOC113395223 isoform X1              |
| HMEL016700g1.t1 | circadian clock-controlled protein-like                      |
| HMEL032519g1.t1 | ---NA---   |
| HMEL036015g1.t1 | glucose transporter type 1-like isoform X2                   |
| HMEL017867g1.t1 | solute carrier family 46 member 3-like                       |
| HMEL005413g1.t1 | chitin deacetylase 4   |
| HMEL017464-RA   | cytochrome P450 6k1-like                                     |
| HMEL013489g1.t1 | putative inactive cysteine synthase 2                        |
| HMEL010228-RA   | general odorant-binding protein 19d-like                     |
| HMEL011427g1.t1 | integrin beta pat-3-like                                     |
| HMEL014931g1.t1 | serine protease inhibitor dipetalogastin-like                |
| HMEL004430g1.t1 | GILT-like protein 1 isoform X2                               |
| HMEL005109g1.t1 | cadherin-23  |
| HMEL006748g1.t1 | odorant binding protein                                      |
| HMEL015572g1.t1 | saccharopine dehydrogenase-like oxidoreductase               |
| HMEL017304g1.t1 | seminal fluid protein HACP059                                |
| HMEL011561g1.t1 | uncharacterized LOC106109504 precursor                       |
| HMEL002783g1.t1 | class E vacuolar protein-sorting machinery protein HSE1-like |

|                 |  |
|-----------------|--|
| HMEL011427g2.t1 | integrin beta pat-3-like   |
| HMEL004857g1.t1 | uncharacterized protein LOC113398135                                   |
| HMEL003320g1.t2 | mediator of RNA polymerase II transcription subunit 12-like isoform X2 |
| HMEL032520g1.t1 | ---NA---   |
| HMEL013037g1.t1 | membrane-bound alkaline phosphatase-like isoform X1                    |
| HmOBP47         | olfactory binding protein  |
| HMEL037131g1.t2 | angiotensin-converting enzyme-like isoform X3                          |
| HMEL036374g1.t1 | uncharacterized protein LOC112045565 isoform X1                        |
| HMEL002124g1.t1 | fatty acid-binding protein, muscle-like                                |
| HMEL022206g1.t1 | proton-coupled amino acid transporter-like protein pathetic            |
| HMEL022269g2.t1 | saccharopine dehydrogenase-like oxidoreductase                         |
| HMEL030967g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL031425g1.t1 | reverse transcriptase  |
| HMEL006744g1.t1 | circadian clock-controlled protein-like                                |
| HMEL013158g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL036190g1.t1 | carboxylesterase 3   |
| HMEL016028g1.t1 | mitochondrial import receptor subunit TOM40 homolog                    |
| HMEL012038g1.t1 | glycine-rich protein DOT1-like   |
| HMEL004850g2.t1 | dopamine N-acetyltransferase-like                                      |
| HMEL014628g1.t1 | alpha-tocopherol transfer protein-like                                 |
| HMEL014452g2.t2 | ATP-binding cassette sub-family E member 1                             |
| HMEL014783g1.t1 | circadian clock-controlled protein-like                                |
| HMEL035982g1.t1 | peroxidase-like  |
| HMEL011266g1.t1 | nose resistant to fluoxetine protein 6-like                            |
| HMEL020648g1.t1 | carbonic anhydrase-related protein 10 isoform X2                       |
| HMEL006379g1.t1 | Neuronal pentraxin-2   |
| HMEL031826g1.t1 | protein FAM13A-like isoform X2   |
| HMEL010348g1.t1 | protein obstructor-E-like  |
| HMEL032434g1.t1 | hypothetical protein KGM_208333  |
| HMEL011374g1.t1 | venom acid phosphatase Acph-1-like                                     |
| HMEL022306g3.t1 | geranylgeranyl pyrophosphate synthase-like                             |
| HMEL009950g1.t1 | ---NA---   |
| HMEL016024g1.t1 | lysozyme 2-like  |
| HMEL014519-RA   | sensory neuron membrane protein 2                                      |
| HMEL008564g1.t2 | peptide methionine sulfoxide reductase                                 |
| HMEL008564g1.t1 | peptide methionine sulfoxide reductase                                 |
| HMEL035981g1.t1 | peroxidase-like  |
| HMEL036843g1.t1 | chymotrypsin inhibitor   |
| HMEL032327g1.t1 | beta-hexosaminidase subunit beta-like                                  |
| HMEL016262g1.t1 | inositol-3-phosphate synthase  |
| HMEL004446g1.t1 | uncharacterized protein LOC116768575                                   |
| HMEL009951g1.t1 | ---NA---   |

|                 |  |
|-----------------|--|
| HMEL014492g1.t1 | phospholipase A1-like                                  |
| HMEL010126g1.t1 | seminal fluid protein HACP059                          |
| HMEL010062g1.t1 | potassium channel subfamily K member 1-like isoform X1 |
| HMEL032637g1.t1 | hypothetical protein B5V51_2590                        |
| HMEL008541g1.t1 | protein app1-like                                      |
| HMEL003225g1.t1 | alpha-tocopherol transfer protein-like                 |
| HMEL010126g1.t3 | seminal fluid protein HACP059                          |
| HMEL003479g2.t1 | ---NA---   |
| HMEL015278g1.t1 | pancreatic triacylglycerol lipase-like                 |
| HMEL033323g1.t1 | alpha-tocopherol transfer protein-like                 |
| HMEL006576g1.t2 | early endosome antigen 1                               |
| HMEL030103g1.t1 | ommochrome-binding protein-like                        |
| HMEL011196g1.t1 | cuticle protein 1-like                                 |
| HMEL017149-RA   | Cytochrome P450 4V2                                    |
| HmCSP14         | chemosensory protein                                   |
| HMEL014782g1.t1 | protein takeout-like                                   |
| HmOBP50         | olfactory binding protein                              |
| HMEL011197g2.t1 | cuticle protein 1-like                                 |
| HMEL011197g1.t1 | cuticle protein 1                                      |

---

**Upregulated genes in mouthparts of *H. cydno* two-day-old females**

---

| ID              | Annotation   |
|-----------------|--|
| HMEL006020g1.t1 | protein lethal(3)malignant blood neoplasm 1        |
| HMEL031924g1.t1 | endocuticle structural glycoprotein SgAbd-8-like   |
| HMEL011701g1.t1 | cuticle protein 16.5-like                          |
| HmGr56          | gustatory receptor                                 |
| HMEL031927g1.t1 | endocuticle structural glycoprotein ABD-4-like     |
| HMEL002715g1.t1 | 4-hydroxyphenylpyruvate dioxygenase-like           |
| HMEL007986g1.t1 | pupal cuticle protein PCP52-like                   |
| HMEL007003g1.t1 | endocuticle structural glycoprotein ABD-4-like     |
| HMEL011699g1.t1 | uncharacterized protein LOC113394755               |
| HMEL011805g1.t1 | ---NA---   |
| HMEL003671g1.t1 | putative cuticle protein                           |
| HMEL036644g1.t2 | ---NA---   |
| HMEL004412g1.t1 | uncharacterized protein LOC113401620               |
| HMEL012521g1.t1 | troponin C-like                                    |
| HMEL015745g1.t1 | organic cation transporter protein-like isoform X1 |
| HMEL036644g1.t1 | ---NA---   |
| HmOBP31         | olfactory binding protein                          |
| HMEL005422g1.t1 | endocuticle structural glycoprotein ABD-4-like     |
| HMEL002722g1.t1 | glycine-rich cell wall structural protein          |
| HMEL030106g1.t1 | cuticle protein 7-like                             |
| HMEL003719g1.t1 | larval cuticle protein LCP-22-like                 |
| HMEL010460g1.t1 | glucose dehydrogenase [FAD, quinone]-like          |
| HMEL036512g1.t1 | organic cation transporter protein-like            |

|                 |   |
|-----------------|---|
| HMEL012523g1.t1 | troponin C-like                                   |
| HMEL007613-RA   | general odorant-binding protein 56a-like          |
| HMEL006733g4.t1 | cuticular protein hypothetical 12 precursor       |
| HMEL031921g1.t1 | larval cuticle protein 1-like                     |
| HMEL003429g1.t1 | homogentisate 1,2-dioxygenase                     |
| HMEL003835g1.t1 | endocuticle structural glycoprotein SgAbd-1-like  |
| HMEL006017g2.t1 | flexible cuticle protein 12-like                  |
| HMEL002369g1.t1 | nose resistant to fluoxetine protein 6-like       |
| HMEL004242g1.t1 | calcium-independent phospholipase A2-gamma-like   |
| HMEL003670g1.t1 | pupal cuticle protein G1A-like                    |
| HMEL007353g1.t1 | troponin I isoform X10                            |
| HMEL011924g1.t1 | uncharacterized protein LOC114362364              |
| HmCSP25         | chemosensory protein                              |
| HMEL037613g1.t1 | cuticular protein CPH                             |
| HMEL037601g1.t1 | ---NA---  |
| HMEL014926g2.t1 | monocarboxylate transporter 3                     |
| HMEL037996g1.t1 | nose resistant to fluoxetine protein 6-like       |
| HMEL016976g1.t1 | mycosubtilin synthase subunit C                   |
| HMEL021853g1.t1 | ---NA---  |
| HMEL032926g1.t1 | senecionine N-oxygenase isoform X1                |
| HMEL007137g1.t1 | seminal fluid protein HACP036                     |
| HMEL006689g1.t1 | myrosinase 1-like                                 |
| HMEL007002g1.t1 | larval cuticle protein 1-like                     |
| HMEL002505g1.t2 | inactive dipeptidyl peptidase 10                  |
| HMEL007536g1.t1 | uncharacterized peptidase C1-like protein F26E4.3 |
| HMEL031928g1.t1 | endocuticle structural glycoprotein SgAbd-2-like  |
| HMEL009297g1.t1 | skin secretory protein xP2-like                   |
| HMEL021221g1.t1 | yellow-c  |
| HMEL021483g2.t1 | ---NA---  |
| HMEL010636g1.t1 | alpha-tocopherol transfer protein-like            |
| HMEL031931g1.t1 | endocuticle structural glycoprotein SgAbd-2-like  |
| HMEL017127g1.t1 | myosin heavy chain, muscle isoform X19            |
| HMEL004893g1.t1 | adhesive plaque matrix protein-like isoform X1    |
| HMEL002552g1.t1 | cuticle protein CP14.6-like                       |
| HMEL002717g1.t1 | 4-hydroxyphenylpyruvate dioxygenase-like          |
| HMEL014555g1.t1 | monocarboxylate transporter 10-like isoform X1    |
| HMEL037608g1.t1 | cuticle protein LPCP-23-like                      |
| HMEL002569g1.t1 | monocarboxylate transporter 10-like isoform X2    |
| HMEL008949g1.t1 | cytochrome c                                      |
| HMEL010483g1.t1 | protein lethal(2)essential for life-like          |
| HMEL030675g1.t1 | chymotrypsin-like elastase family member 2A       |
| HMEL022179g1.t1 | peroxisomal membrane protein PEX13-like           |
| HMEL034288g1.t1 | circadian clock-controlled protein-like           |
| HMEL006533g1.t1 | mitochondrial enolase superfamily member 1-like   |

|                 |  |
|-----------------|--|
| HMEL002519g1.t1 | succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial              |
| HMEL007354g1.t1 | twitchin isoform X2  |
| HMEL033085g1.t1 | Signal peptide, CUB and EGF-like domain-containing protein 2                 |
| HMEL017192g1.t1 | SET domain-containing protein SmydA-8-like isoform X1                        |
| HMEL022129g1.t1 | uncharacterized protein LOC113394950   |
| HMEL008353g1.t1 | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1         |
| HMEL010106g1.t1 | pancreatic lipase-related protein 2  |
| HMEL003662g1.t1 | ---NA---   |
| HMEL033509g1.t1 | serine proteinase stubble  |
| HMEL003673g1.t2 | collagen and calcium-binding EGF domain-containing protein 1-like isoform X1 |
| HMEL010010g1.t1 | ecdysone-induced protein 74EF isoform X1                                     |
| HMEL008353g1.t2 | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1         |
| HMEL016247g1.t1 | eukaryotic translation initiation factor 4E-binding protein 2                |
| HMEL012251g1.t1 | uncharacterized protein LOC117991081   |
| HMEL013901g1.t1 | 3-phosphoinositide-dependent protein kinase 1 isoform X1                     |
| HMEL014094g1.t1 | insulin-like receptor  |
| HMEL030840g1.t1 | facilitated trehalose transporter Tret1-like isoform X1                      |
| HMEL037738g1.t2 | uncharacterized LOC106121242   |
| HMEL030866g1.t1 | myrosinase 1-like  |
| HMEL033281g1.t1 | pickpocket protein 28-like   |
| HMEL006811g1.t1 | chitin deacetylase 2   |
| HMEL008859g1.t1 | calcium-binding protein P-like   |
| HMEL034424g1.t1 | facilitated trehalose transporter Tret1-2 homolog                            |
| HMEL011299g1.t2 | uncharacterized protein LOC117994014 isoform X2                              |
| HMEL011227g1.t1 | cuticular protein analogous to peritrophins 1-D precursor                    |
| HMEL005056g1.t1 | phosphoglycolate phosphatase 1B, chloroplastic-like                          |
| HMEL014632g1.t1 | endochitinase-like isoform X2  |
| HMEL015321g1.t1 | phosphoserine phosphatase isoform X1   |
| HMEL031933g1.t1 | endocuticle structural glycoprotein ABD-5-like                               |
| HMEL012299g1.t1 | troponin C-like isoform X1   |
| HMEL016408g1.t1 | C-type lectin 4 precursor  |
| HMEL030671g1.t1 | DNA gyrase subunit B   |
| HMEL016032g1.t1 | aquaporin-11 isoform X2  |
| HMEL032824g1.t1 | heme peroxidase 2  |
| HMEL012304g1.t1 | myofilin variant A   |
| HMEL032062g1.t1 | basic proline-rich protein isoform X1  |
| HMEL013231g1.t1 | ---NA---   |
| HMEL012441g1.t1 | tyrosine aminotransferase  |
| HMEL036439g1.t1 | tigger transposable element-derived protein 4-like                           |
| HMEL037733g1.t1 | retinol dehydrogenase 11-like  |
| HMEL003142g1.t1 | uncharacterized protein LOC113400583   |

HMEL012064g1.t3 basement membrane-specific heparan sulfate proteoglycan core protein isoform X4  
 HMEL004510g1.t1 cuticle protein 3-like  
 HMEL015709g1.t1 bromodomain-containing protein DDB\_G0280777-like  
 HMEL002212g1.t1 chitin synthase chs-2 isoform X3  
 HMEL006697g1.t3 phosphatidate phosphatase LPIN3 isoform X1  
 HMEL006745g1.t1 circadian clock-controlled protein-like  
 HMEL016159g1.t3 serine/threonine-protein kinase tousled-like 2 isoform X4  
 HMEL008819g1.t1 mucin-5AC-like isoform X1  
 HMEL013284g1.t1 probable malate dehydrogenase, mitochondrial  
 HMEL034636g1.t1 uncharacterized protein LOC117993623  
 HMEL008837g1.t1 probable 4-coumarate--CoA ligase 1  
 HMEL008833g1.t1 alpha-actinin, sarcomeric isoform X1  
 HMEL013977g1.t1 ---NA---  
 HMEL010976g1.t1 pollen-specific leucine-rich repeat extensin-like protein 1  
 HMEL036545g1.t1 probable isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial isoform X3  
 HMEL011221g1.t1 angiotensin-converting enzyme-like  
 HMEL002923g1.t1 uncharacterized protein LOC113401355 isoform X1  
 HMEL037732g1.t1 retinol dehydrogenase 11-like  
 HMEL035749g1.t1 hypothetical protein KGM\_207397  
 HMEL016978g1.t1 Type I inositol-1,4,5-trisphosphate 5-phosphatase  
 HMEL014952g1.t1 flocculation protein FLO11-like  
 HMEL006697g2.t1 phosphatidate phosphatase LPIN3 isoform X1  
 HMEL004916g1.t1 neuropathy target esterase sws isoform X3  
 HMEL034453g1.t2 plasma membrane calcium-transporting ATPase 2 isoform X1  
 HMEL017210g1.t1 cytochrome b5-like  
 HMEL016985g1.t1 myosin light chain alkali isoform X2  
 HMEL021432g1.t1 Secreted protein member of chemokine factor super family  
 HMEL010373g1.t1 uncharacterized LOC106113675 precursor  
 HMEL036944g1.t1 ---NA---  
 HMEL021529g1.t2 chloride intracellular channel exc-4 isoform X2  
 HMEL015740g1.t1 juvenile hormone-binding protein-like  
 HMEL032058g1.t1 uncharacterized protein ZK1073.1 isoform X3  
 HMEL016094g1.t1 protein ABHD18  
 HMEL020353g1.t1 b(0,+)-type amino acid transporter 1-like isoform X1  
 HMEL009645g1.t1 arginine kinase isoform X1  
 HMEL015094g1.t1 histone-lysine N-methyltransferase SMYD3  
 HMEL003666g3.t1 ---NA---  
 HMEL012654g1.t1 mitochondrial genome maintenance exonuclease 1-like  
 HMEL017685g2.t1 glycine N-methyltransferase  
 HMEL036491g1.t1 tropomyosin-2 isoform X20  
 HMEL011355g1.t1 spindle pole body component 110 isoform X1  
 HMEL006484g1.t1 ankyrin-3-like isoform X2

| HMEL005861g5.t1  | proton-coupled amino acid transporter-like protein CG1139              |
|--|--|
| HMEL034896g1.t1  | carotenoid isomeroxygenase-like  |
| HMEL037501g1.t1  | cytochrome c1, heme protein, mitochondrial                             |
| HMEL035254g1.t2  | paxillin isoform X1  |
| HMEL034773g1.t2  | Tyrosine-protein phosphatase non-receptor type 13                      |
| HMEL036108g1.t1  | hypothetical protein KGM_210950  |
| HMEL017436g1.t1  | cuticular protein glycine-rich 20                                      |
| HMEL006014g1.t1  | endocuticle structural glycoprotein SgAbd-5-like                       |
| HMEL030470g1.t1  | pancreatic triacylglycerol lipase-like                                 |
| HMEL006308g1.t1  | cytochrome b-c1 complex subunit 2, mitochondrial                       |
| HmGr22   | gustatory receptor   |
| HMEL033041g1.t1  | C-type lectin 27kD   |
| HMEL007261g2.t1  | E3 ubiquitin-protein ligase ZNRF2 isoform X2                           |
| HMEL004332g1.t1  | putative Insulin receptor precursor                                    |
| HMEL007136g1.t1  | cuticle protein 1-like   |
| HMEL037950g1.t1  | RING finger protein 145  |
| HMEL018081g1.t1  | hyaluronidase PH-20-like isoform X1                                    |
| HMEL034253g1.t1  | uncharacterized LOC106121975 precursor                                 |
| HMEL015052g1.t1  | arylphorin subunit alpha-like  |
| HMEL011399g1.t1  | sodium- and chloride-dependent glycine transporter 1-like              |
| HMEL031459g1.t1  | tubulin beta-1 chain   |
| HMEL002405g1.t1  | ---NA---   |
| HMEL016386g1.t1  | protein 4.1 homolog isoform X4   |
| HMEL006811g2.t1  | chitin deacetylase 1   |
| HMEL009091g1.t1  | Major facilitator superfamily domain-containing protein 6              |
| HMEL005970g1.t1  | 1-acyl-sn-glycerol-3-phosphate acyltransferase alpha-like              |
| HMEL037845g1.t1  | b(0,+)-type amino acid transporter 1                                   |
| HMEL036494g1.t3  | synaptotagmin-4  |
| HMEL007479g3.t1  | serpin 100A  |
| HMEL030607g1.t1  | simila to CG34115  |
| HMEL014313g1.t2  | echinoderm microtubule-associated protein-like 2 isoform X1            |
| HMEL022065g1.t1  | deleted in malignant brain tumors 1 protein-like                       |
| HMEL009165g1.t1  | uncharacterized protein LOC113398198 isoform X2                        |
| HMEL011030g1.t1  | ---NA---   |
| <b>Upregulated genes in mouthparts of <i>H. cydno</i> five-day-old females</b> |  |
| <b>ID</b>  | <b>Annotation</b>  |
| HMEL005364g1.t1  | cytochrome b5-related protein-like                                     |
| HMEL009656g1.t1  | ras-related protein Rab6 isoform X2                                    |
| HMEL006533g2.t1  | cystathionine gamma-lyase  |
| HMEL032652g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like            |
| HMEL037464g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL017476g1.t1  | apolipoprotein D   |
| HMEL014309g1.t1  | 23 kDa integral membrane protein-like                                  |

|                 |   |
|-----------------|---|
| HMEL014628g1.t1 | alpha-tocopherol transfer protein-like                                  |
| HMEL006217g2.t1 | cocoonase 4   |
| HMEL034667g1.t1 | cilia- and flagella-associated protein 206-like                         |
| HMEL003312g1.t3 | inter-alpha-trypsin inhibitor heavy chain H4-like isoform X1            |
| HMEL016125g1.t1 | low density lipoprotein receptor adapter protein 1-A                    |
| HMEL030903g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like             |
| HMEL031098g1.t1 | multiple C2 and transmembrane domain-containing protein-like isoform X1 |
| HMEL037976g1.t1 | probable G-protein coupled receptor Mth-like 3                          |
| HMEL005258-RA   | MAM and LDL-receptor class A domain-containing protein 2-like           |
| HMEL022269g1.t1 | saccharopine dehydrogenase-like oxidoreductase                          |
| HMEL003531g1.t1 | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase isoform X1         |
| HMEL004522g1.t1 | inactive ubiquitin carboxyl-terminal hydrolase MINDY-4B isoform X1      |
| HMEL011706g1.t1 | uncharacterized protein LOC113394761                                    |
| HMEL011122g1.t1 | neuronal acetylcholine receptor subunit beta-3-like                     |
| HMEL003565g1.t1 | protein spinster homolog 1  |
| HMEL035990g1.t1 | Transposase-like protein  |
| HMEL015980g1.t1 | seroin transcript 2B  |
| HMEL008484g1.t1 | ---NA---  |
| HMEL009639g1.t1 | 17-beta-hydroxysteroid dehydrogenase 13-like isoform X1                 |
| HMEL034386g1.t1 | RNA-directed DNA polymerase from mobile element jockey                  |
| HMEL018039g1.t1 | CCR4-NOT transcription complex subunit 7-like isoform X1                |
| HMEL008705g1.t1 | uncharacterized protein LOC113394985                                    |
| HMEL014850g1.t2 | insulin-like growth factor II   |
| HMEL030017g1.t1 | ceramide phosphoethanolamine synthase                                   |
| HMEL005103g1.t1 | isopentenyl-diphosphate Delta-isomerase 1                               |
| HMEL014623g1.t1 | protein transport protein Sec61 subunit alpha                           |
| HMEL013489g1.t1 | putative inactive cysteine synthase 2                                   |
| HMEL010112g1.t2 | atlastin isoform X1   |
| HMEL005461-RA   | beta-1,3-glucan-binding protein-like                                    |
| HMEL013073g1.t1 | regulator of microtubule dynamics protein 1                             |
| HMEL005900g1.t1 | phospholipase ABHD3   |
| HMEL014924g1.t1 | uncharacterized protein LOC113402596 isoform X2                         |
| HMEL021635g1.t1 | FERM domain-containing protein 8  |
| HMEL016571g1.t1 | transmembrane protein 165 isoform X1                                    |
| HMEL008934g1.t1 | uncharacterized transporter slc-17.2-like                               |
| HMEL030678g1.t1 | Early 94 kDa protein  |
| HMEL006853g1.t1 | alpha-tocopherol transfer protein-like                                  |
| HMEL037063g1.t1 | uncharacterized protein LOC113401185 isoform X2                         |
| HMEL010437g1.t1 | protein tramtrack, beta isoform-like isoform X2                         |
| HMEL036443g1.t1 | hypothetical protein B5X24_HaOG202969, partial                          |
| HMEL011374g1.t1 | venom acid phosphatase Acph-1-like                                      |
| HMEL022544g1.t1 | L-dopachrome tautomerase yellow-f2-like                                 |



|                 |  |
|-----------------|--|
| HMEL013783g1.t1 | uncharacterized protein LOC113394807                                   |
| HMEL004896g1.t1 | elongation of very long chain fatty acids protein AAEL008004-like      |
| HMEL017350g1.t1 | 6-phosphogluconolactonase  |
| HMEL034320g1.t1 | putative glycerol-3-phosphate acyltransferase                          |
| HMEL033214g1.t1 | ectonucleoside triphosphate diphosphohydrolase 5 isoform X2            |
| HMEL015722g1.t1 | palmitoyltransferase ZDHHC15-like isoform X2                           |
| HMEL032434g1.t1 | hypothetical protein KGM_208333  |
| HMEL014060g2.t1 | juvenile hormone acid O-methyltransferase                              |
| HMEL012832g2.t1 | long-chain fatty acid transport protein 4-like                         |
| HMEL010801g3.t1 | Probable RNA-directed DNA polymerase from transposon X-element         |
| HMEL002874g1.t1 | lysozyme-like isoform X1   |
| HMEL022206g1.t1 | proton-coupled amino acid transporter-like protein pathetic            |
| HMEL016015g4.t1 | fatty-acid amide hydrolase 2-like                                      |
| HMEL013159g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL003285g1.t1 | short/branched chain specific acyl-CoA dehydrogenase, mitochondrial    |
| HMEL017873g1.t1 | protein split ends   |
| HMEL011226g1.t1 | probable chitinase 2   |
| HMEL011933g1.t1 | putative phospholipase B-like lamina ancestor                          |
| HMEL034780g1.t1 | juvenile hormone acid O-methyltransferase                              |
| HMEL017024g1.t1 | hemocytin  |
| HMEL003387g1.t1 | short/branched chain specific acyl-CoA dehydrogenase, mitochondrial    |
| HMEL016321g1.t1 | pyrroline-5-carboxylate reductase-like isoform X1                      |
| HMEL009544g1.t1 | SPARC  |
| HMEL011646g1.t1 | centrosomal protein of 164 kDa-like                                    |
| HMEL003683g1.t1 | serine protease snake-like   |
| HMEL035367g1.t1 | fatty acyl-CoA reductase wat-like                                      |
| HMEL010952g1.t1 | acyl-CoA-binding protein homolog                                       |
| HMEL021488g1.t1 | prostaglandin reductase 1-like   |
| HmCSP7          | chemosensory protein   |
| HMEL030967g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL033671g1.t1 | uncharacterized protein LOC112055534 isoform X1                        |
| HMEL016136g1.t1 | protein seele  |
| HMEL008165g1.t1 | phosphatidylglycerophosphatase and protein-tyrosine phosphatase 1      |
| HmOBP17         | olfactory binding protein  |
| HMEL009003g1.t2 | aminopeptidase N-like isoform X1                                       |
| HMEL013164g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL034644g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL032593g1.t1 | pupal cuticle protein 36-like  |
| HMEL033015g1.t1 | glycerophosphocholine phosphodiesterase GPCPD1 isoform X1              |
| HMEL037131g1.t2 | angiotensin-converting enzyme-like isoform X3                          |

|                 |   |
|-----------------|---|
| HMEL014355g1.t1 | phosphatidylinositol transfer protein alpha isoform                         |
| HMEL013008g1.t2 | zinc finger protein 271-like isoform X4                                     |
| HMEL020420g1.t1 | unnamed protein product   |
| HMEL008087g2.t1 | KRAB-A domain-containing protein 2-like                                     |
| HMEL009003g2.t1 | aminopeptidase N-like isoform X1  |
| HMEL003116-RA   | ejaculatory bulb-specific protein 3-like                                    |
| HMEL017894g2.t1 | cGMP-dependent protein kinase, isozyme 2 forms<br>cD4/T1/T3A/T3B isoform X3 |
| HMEL011674g1.t1 | Cuticle protein   |
| HMEL020720g1.t1 | cuticular protein RR-2 motif 125 precursor                                  |
| HMEL004525g1.t1 | carboxypeptidase inhibitor  |
| HMEL009864g1.t1 | putative fatty acyl-CoA reductase CG8306                                    |
| HMEL005451g1.t1 | hydroxymethylglutaryl-CoA synthase 1  |
| HMEL006098g1.t1 | transketolase-like protein 2  |
| HMEL035405g1.t1 | scavenger receptor class B member 1   |
| HMEL015572g1.t1 | saccharopine dehydrogenase-like oxidoreductase                              |
| HMEL013160g1.t1 | facilitated trehalose transporter Tret1-like                                |
| HMEL035350g1.t1 | serine protease snake-like  |
| HMEL016262g1.t1 | inositol-3-phosphate synthase   |
| HMEL004443g2.t1 | ecdysteroid 22-kinase   |
| HMEL032045g1.t1 | elongation of very long chain fatty acids protein 7-like                    |
| HMEL008879g2.t1 | putative inorganic phosphate cotransporter isoform X2                       |
| HMEL036015g1.t1 | glucose transporter type 1-like isoform X2                                  |
| HMEL010291g1.t1 | Bm8 interacting protein 2d-2  |
| HMEL018123-RA   | allergen Tha p 1-like   |
| HMEL010864g1.t1 | protein disulfide-isomerase   |
| HMEL036736g1.t1 | estradiol 17-beta-dehydrogenase 11-like                                     |
| HMEL014822g1.t1 | glycerol-3-phosphate acyltransferase 3 isoform X2                           |
| HMEL011017g1.t1 | amino acid transporter AVT1D-like   |
| HMEL015713-RA   | venom protease-like   |
| HMEL031425g1.t1 | reverse transcriptase   |
| HMEL032044g1.t1 | elongation of very long chain fatty acids protein 7-like                    |
| HMEL034889g1.t1 | facilitated trehalose transporter Tret1-like                                |
| HMEL006231g1.t1 | very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase hpo-8                    |
| HMEL030029g1.t1 | Probable RNA-directed DNA polymerase from transposon BS                     |
| HMEL031453g1.t1 | rhophilin-2 isoform X1  |
| HMEL002899-RA   | cuticular protein CPG24   |
| HMEL017415g1.t1 | putative carbonic anhydrase 5   |
| HMEL010062g1.t1 | potassium channel subfamily K member 1-like isoform X1                      |
| HMEL014782g1.t1 | protein takeout-like  |
| HMEL004160g1.t2 | aldehyde dehydrogenase, dimeric NADP-preferring isoform X1                  |
| HMEL012374g1.t1 | seminal fluid protein HACP057   |
| HMEL011074g1.t1 | very-long-chain 3-oxoacyl-CoA reductase                                     |
| HMEL020648g1.t1 | carbonic anhydrase-related protein 10 isoform X2                            |

|                 |  |
|-----------------|--|
| HMEL037658g1.t1 | ATP-binding cassette sub-family G member 1             |
| HMEL036190g1.t1 | carboxylesterase 3                                     |
| HMEL022269g2.t1 | saccharopine dehydrogenase-like oxidoreductase         |
| HMEL013766g1.t1 | cell wall protein DAN4-like                            |
| HMEL016024g1.t1 | lysozyme 2-like  |
| HMEL032637g1.t1 | hypothetical protein B5V51_2590                        |
| HMEL006535g4.t1 | trans-1,2-dihydrobenzene-1,2-diol dehydrogenase-like   |
| HMEL004963g1.t1 | ---NA---   |
| HMEL034887g1.t1 | facilitated trehalose transporter Tret1-like           |
| HMEL013887g1.t1 | putative fatty acyl-CoA reductase CG5065               |
| HMEL013249g1.t1 | ATP-citrate synthase                                   |
| HMEL035526g1.t1 | peptide transporter family 1 isoform X1                |
| HMEL003470g1.t1 | scavenger receptor class B member 1-like               |
| HMEL014145g1.t1 | neural/ectodermal development factor IMP-L2-like       |
| HMEL002823g1.t1 | acetyl-coenzyme A synthetase                           |
| HMEL031782g1.t1 | elongation of very long chain fatty acids protein 6    |
| HMEL004478g1.t1 | juvenile hormone esterase-like                         |
| HMEL034272g1.t1 | juvenile hormone binding protein an-0921 precursor     |
| HMEL016177g1.t1 | RNA-directed DNA polymerase from mobile element jockey |
| HMEL012150g1.t1 | solute carrier family 22 member 13-like                |
| HMEL015278g1.t1 | pancreatic triacylglycerol lipase-like                 |
| HmOBP18         | olfactory binding protein                              |
| HMEL003519g1.t1 | myrosinase 1-like                                      |
| HMEL005817g1.t1 | ---NA---   |
| HMEL030103g1.t1 | ommochrome-binding protein-like                        |
| HMEL003519g2.t1 | myrosinase 1-like                                      |
| HMEL003361g1.t1 | inactive pancreatic lipase-related protein 1-like      |
| HMEL003355g1.t1 | multidrug resistance-associated protein 4-like         |
| HMEL003355g2.t1 | multidrug resistance-associated protein 4-like         |
| HMEL011197g1.t1 | cuticle protein 1                                      |
| HmOBP50         | olfactory binding protein                              |
| HMEL011197g2.t1 | cuticle protein 1-like                                 |
| HMEL011196g1.t1 | cuticle protein 1-like                                 |
| HMEL015978g2.t1 | ---NA---   |
| HMEL006217g1.t1 | cocoonase 4  |
| HMEL036388g1.t1 | pancreatic lipase-related protein 2-like               |
| HMEL015978g1.t1 | ---NA---   |
| HMEL022638g5.t1 | pancreatic lipase-related protein 2-like               |
| HMEL022638g4.t1 | pancreatic lipase-related protein 2-like               |

**Supplementary Table 9. Gene annotation of upregulated genes when comparing five-day-old and two-day-old female antenna, leg, and mouthpart tissues in *H. melpomene*.**

| Upregulated genes in antennae of <i>H. melpomene</i> two-day-old females |  |
|--|--|
| ID   | Annotation   |
| HMEL003670g1.t1  | pupal cuticle protein G1A-like   |
| HMEL007002g1.t1  | larval cuticle protein 1-like  |
| HMEL037608g1.t1  | cuticle protein LPCP-23-like   |
| HmOBP5   | olfactory binding protein  |
| HmOBP42  | olfactory binding protein  |
| HMEL013908g1.t1  | cuticular protein CPH  |
| HMEL011699g1.t1  | uncharacterized protein LOC113394755                                   |
| HMEL013909g1.t1  | cuticular protein CPH  |
| HMEL022129g1.t1  | uncharacterized protein LOC113394950                                   |
| HMEL010373g1.t1  | uncharacterized LOC106113675 precursor                                 |
| HMEL003671g1.t1  | putative cuticle protein   |
| HMEL036491g1.t1  | tropomyosin-2 isoform X20  |
| HMEL008070g1.t1  | tetra-peptide repeat homeobox protein 1-like                           |
| HMEL006214g1.t1  | flocculation protein FLO11 isoform X1                                  |
| HmCSP28  | chemosensory protein   |
| HMEL016705-RA  | cytochrome P450 4g15   |
| HMEL031924g1.t1  | endocuticle structural glycoprotein SgAbd-8-like                       |
| HMEL038045g1.t1  | integumentary mucin C.1  |
| HMEL014774g1.t1  | uncharacterized protein LOC113395164                                   |
| HMEL032516g1.t1  | ---NA---   |
| HMEL030990g1.t1  | actin  |
| HMEL033453g1.t1  | ---NA---   |
| HMEL037611g1.t1  | putative cuticle protein   |
| HMEL030840g1.t1  | facilitated trehalose transporter Tret1-like isoform X1                |
| HMEL017435g2.t1  | retinol dehydrogenase 13-like  |
| HMEL032593g1.t1  | pupal cuticle protein 36-like  |
| HMEL031897g1.t2  | pancreatic triacylglycerol lipase-like isoform X1                      |
| HMEL021946g1.t2  | UNC93-like protein MFSD11  |
| HMEL007484g1.t1  | ralA-binding protein 1 isoform X1                                      |
| HMEL033281g1.t1  | pickpocket protein 28-like   |
| HMEL030728g1.t1  | LIX1-like protein  |
| HMEL005422g1.t1  | endocuticle structural glycoprotein ABD-4-like                         |
| HMEL002212g1.t2  | chitin synthase A  |
| HMEL009297g1.t1  | skin secretory protein xP2-like  |
| HMEL014632g1.t1  | endochitinase-like isoform X2  |
| HMEL011066g2.t1  | alpha-tocopherol transfer protein-like                                 |
| HMEL013908g2.t1  | cuticular protein CPH  |
| HMEL007743g1.t1  | dihydropyrimidine dehydrogenase [NADP(+)]                              |
| HMEL037224g1.t1  | solute carrier family 2, facilitated glucose transporter member 1-like |
| HMEL014104g1.t1  | uncharacterized protein LOC113401956 isoform X5                        |

HMEL032309g1.t1 esterase FE4-like  
 HMEL005816g1.t1 uncharacterized protein LOC117987429 isoform X2  
 HMEL013050g2.t1 protein NDRG3 isoform X1  
     HmCSP7 chemosensory protein  
 HMEL036377g1.t1 synaptic vesicle glycoprotein 2B-like  
 HMEL006740g3.t1 ---NA---  
 HMEL007151g1.t2 tropomyosin-2 isoform X8  
 HMEL002717g1.t1 4-hydroxyphenylpyruvate dioxygenase-like  
 HMEL015815g1.t2 protein spire isoform X4  
 HMEL033459g1.t1 zinc finger DNA binding protein  
 HMEL010010g1.t1 ecdysone-induced protein 74EF isoform X1  
 HMEL033108g1.t1 putative inactive cysteine synthase 2  
 HMEL032926g1.t1 senecionine N-oxygenase isoform X1  
 HMEL003116-RA ejaculatory bulb-specific protein 3-like  
 HMEL034483g1.t1 uncharacterized threonine-rich GPI-anchored glycoprotein PJ4664.02-like  
 HMEL011715g1.t1 ---NA---  
 HMEL009672g1.t1 chitinase A-like  
 HMEL036941g1.t1 terminal nucleotidyltransferase 5C isoform X2  
 HMEL014190g1.t1 ATP-dependent RNA helicase glh-1-like  
 HMEL038072g1.t1 putative serine carboxypeptidase CPVL  
 HMEL013037g3.t1 membrane-bound alkaline phosphatase-like  
 HMEL031257g1.t1 ecdysone-induced protein 74EF isoform X3  
 HMEL015171g2.t1 glutamine--fructose-6-phosphate aminotransferase [isomerizing] 1-like  
 HMEL013368g1.t1 uncharacterized protein LOC113393799 isoform X1  
     HmOBP31 olfactory binding protein  
 HMEL034253g1.t1 uncharacterized LOC106121975 precursor  
 HMEL010636g1.t1 alpha-tocopherol transfer protein-like  
 HMEL010409g1.t1 protein yellow-like  
 HMEL003074g1.t1 global transcription regulator sge1  
 HMEL011484g1.t1 uncharacterized protein LOC116769225 isoform X3  
 HMEL033261g1.t1 glucose dehydrogenase [FAD, quinone]-like  
 HMEL005930g1.t2 transcriptional coactivator YAP1 isoform X3  
 HMEL004962g1.t1 class A basic helix-loop-helix protein 15-like  
 HMEL032062g1.t1 basic proline-rich protein isoform X1  
 HMEL013037g2.t1 membrane-bound alkaline phosphatase-like  
 HMEL010347g1.t1 protein obstructor-E  
 HMEL036942g1.t1 terminal nucleotidyltransferase 5C isoform X2  
 HMEL020967g1.t1 probable chitinase 10  
 HMEL007153g2.t1 fructose-1,6-bisphosphatase 1  
 HMEL009805g1.t1 uncharacterized protein LOC113404204, partial  
 HMEL036006g1.t1 protein unc-13 homolog C-like  
 HMEL010409g2.t1 protein yellow-like  
 HMEL037115g1.t1 eukaryotic translation initiation factor 4 gamma-like  
 HMEL002880g1.t1 lysozyme-like

HMEL006811g2.t1 chitin deacetylase 1  
 HMEL034277g1.t1 circadian clock-controlled protein-like  
 HMEL010976g1.t1 pollen-specific leucine-rich repeat extensin-like protein 1  
 HMEL034795g1.t1 N-fatty-acyl-amino acid synthase/hydrolase PM20D1-like  
 HMEL015031g1.t1 putative fatty acyl-CoA reductase CG5065  
 HMEL014363g1.t1 zinc finger CCCH domain-containing protein 13 isoform X1  
 HMEL013096g1.t1 sodium/potassium-transporting ATPase subunit beta-2-like  
 HMEL015709g1.t1 bromodomain-containing protein DDB\_G0280777-like  
 HMEL007151g1.t3 Tropomyosin-1, isoforms 9A/A/B  
 HMEL006578g1.t1 unnamed protein product  
 HMEL010344g1.t1 protein obstructor-E isoform X1  
 HMEL004491g1.t1 protein borderless  
 HMEL006084g1.t1 uncharacterized protein LOC113391442  
 HMEL017189g1.t1 monocarboxylate transporter 12  
 HMEL009298g2.t1 pollen-specific leucine-rich repeat extensin-like protein 2  
 HMEL006799g1.t1 protein 60A  
 HMEL021221g1.t1 yellow-c  
 HMEL033890g1.t1 reverse transcriptase  
 HMEL002008g1.t1 probable chitinase 10  
 HMEL026005g1.t1 cytochrome P450 6B7-like  
 HMEL013423g1.t2 nucleobindin-2 isoform X1  
 HMEL004083g2.t1 uncharacterized protein LOC116779101 isoform X3  
 HMEL007866g1.t2 protein goliath isoform X1  
 HMEL032795g1.t1 uncharacterized protein LOC113394989 isoform X1  
 HMEL017418g1.t1 sorbitol dehydrogenase-like  
 HMEL005250g1.t1 hexokinase-2-like  
 HMEL035331g1.t1 uncharacterized LOC106124743 precursor  
 HMEL014074g1.t1 ecdysone-inducible protein E75 isoform X3  
 HMEL030772g1.t1 G-protein coupled receptor 64-like  
 HMEL017144g1.t1 Pancreatic lipase-related protein 1  
 HMEL004083g1.t1 simila to CG13188  
 HMEL011150g1.t1 D-beta-hydroxybutyrate dehydrogenase, mitochondrial  
 HMEL004233g1.t1 uncharacterized protein LOC117986261  
 HMEL002212g1.t1 chitin synthase chs-2 isoform X3  
 HMEL021442g1.t1 serine/threonine-protein kinase mTOR  
 HMEL033954g1.t1 nose resistant to fluoxetine protein 6-like  
 HMEL013360-RA protein spaetzle 5  
 HMEL004535g1.t1 skin secretory protein xP2-like  
 HMEL006085g2.t1 transcription factor SOX-11 isoform X1  
 HMEL004593g2.t2 trehalase-like isoform X1  
 HMEL035298g1.t1 ester hydrolase C11orf54 homolog isoform X1  
 HMEL009754g1.t1 hexokinase type 2 isoform X1  
 HMEL009088g1.t1 protein bunched, class 1/class 3/D/E isoforms isoform X4  
 HMEL033431g1.t1 uncharacterized protein LOC113393645 isoform X1

HMEL034493g1.t1 Cytochrome b  
 HMEL033952g1.t1 nose resistant to fluoxetine protein 6-like  
 HMEL015975g1.t1 uncharacterized LOC106124388 precursor  
 HMEL032592g1.t1 pupal cuticle protein 36-like  
 HMEL036829g1.t1 uncharacterized protein LOC113394809  
 HMEL008727g1.t1 collagen alpha-1(IX) chain-like  
 HMEL012803g1.t1 progesterin and adipoQ receptor family member 3  
 HMEL006580g2.t1 putative Headcase protein  
 HMEL037664g1.t1 protein extra-macrochaetae  
 HMEL016977g1.t2 epsilon-sarcoglycan isoform X1  
 HMEL015861g1.t1 pupal cuticle protein PCP52-like  
 HMEL033978g1.t1 serine-rich adhesin for platelets-like isoform X1  
 HMEL021388g1.t1 anther-specific proline-rich protein APG  
 HMEL031058g1.t2 nuclear receptor coactivator 7 isoform X1  
 HMEL003137g1.t1 glycerol kinase isoform X2  
 HMEL015887g1.t2 aldo-keto reductase AKR2E4-like  
 HMEL032520g1.t1 ---NA---  
 HMEL004916g3.t4 neuropathy target esterase sws isoform X4  
 HMEL025015g1.t1 heterogeneous nuclear ribonucleoprotein A1, A2/B1 homolog  
 HMEL008156g3.t1 mothers against decapentaplegic homolog 6  
 HMEL004893g1.t1 adhesive plaque matrix protein-like isoform X1  
 HMEL010416g1.t1 serine/threonine-protein phosphatase rdgC  
 HMEL008056g1.t1 phospholipase A1 member A-like  
 HMEL012199g2.t1 WD repeat-containing protein 47 isoform X2  
 HmOr7 olfactory receptor  
 HMEL033041g1.t1 C-type lectin 27kD  
 HMEL008353g1.t2 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1  
 HMEL038147g1.t1 ---NA---  
 HMEL010346g1.t1 protein obstructor-E-like  
 HMEL010106g1.t1 pancreatic lipase-related protein 2  
 HMEL015169g1.t1 ---NA---  
 HMEL033982g1.t1 proton-coupled amino acid transporter-like protein pathetic  
 HMEL004412g1.t1 uncharacterized protein LOC113401620  
 HMEL036492g1.t1 tropomyosin-2 isoform X5  
 HMEL002564-RA death-associated inhibitor of apoptosis 1-like isoform X2  
 HMEL025040g1.t2 sodium/potassium/calcium exchanger 4 isoform X2  
 HMEL036493g1.t1 tropomyosin-1, isoforms 9A/A/B isoform X17  
 HMEL004500g3.t1 reticulon-3-B isoform X4  
 HMEL031240g1.t1 xin actin-binding repeat-containing protein 2 isoform X1  
 HMEL008879g2.t1 putative inorganic phosphate cotransporter isoform X2  
 HMEL012642g2.t1 mucin-5AC isoform X2  
 HMEL015501g1.t1 mucin-17 isoform X1  
 HMEL031905g1.t1 collagen alpha-1(I) chain-like  
 HMEL006580g1.t1 headcase protein

**Upregulated genes in antennae of *H. melpomene* five-day-old females**

| <b>ID</b>       | <b>Annotation</b>  |
|-----------------|--|
| HMEL015299g2.t1 | intracellular protein transport protein USO1-like          |
| HMEL037131g1.t2 | angiotensin-converting enzyme-like isoform X3              |
| HMEL005534g1.t1 | Pacifastin-like protease inhibitor cvp4                    |
| HMEL014850g1.t2 | insulin-like growth factor II                              |
| HMEL033135g1.t1 | sodium/potassium-transporting ATPase subunit beta-1-like   |
| HMEL008795g1.t3 | chromatin complexes subunit BAP18-like isoform X3          |
| HMEL010062g1.t1 | potassium channel subfamily K member 1-like isoform X1     |
| HMEL037600g1.t1 | transmembrane protein 209-like                             |
| HMEL003796g1.t1 | regulation of enolase protein 1-like                       |
| HMEL011631g1.t1 | homocysteine S-methyltransferase 2-like                    |
| HMEL010631g2.t1 | alpha-tocopherol transfer protein-like                     |
| HMEL030682g1.t1 | dolichol phosphate-mannose biosynthesis regulatory protein |
| HMEL013737-RA   | cytochrome P450 9e2-like                                   |
| HMEL003260g1.t1 | probable salivary secreted peptide                         |
| HMEL009024g1.t1 | translocon-associated protein subunit beta                 |
| HMEL031498g1.t1 | cationic amino acid transporter 2-like                     |
| HMEL033667g1.t1 | xanthine dehydrogenase-like                                |
| HMEL032250g1.t1 | uncharacterized protein LOC112055290                       |
| HMEL036244g1.t1 | regucalcin-like  |
| HMEL010826g1.t1 | copper chaperone for superoxide dismutase                  |
| HMEL018123-RA   | allergen Tha p 1-like                                      |
| HMEL002376g2.t1 | serine protease inhibitor dipetalogastin-like isoform X2   |
| HMEL022619-RA   | UDP-glucuronosyltransferase 3A1-like                       |
| HMEL008220g1.t1 | lysozyme 2-like  |
| HMEL017464-RA   | cytochrome P450 6k1-like                                   |
| HMEL005392g2.t1 | RNA exonuclease 4  |
| HMEL034385g1.t1 | probable methylthioribulose-1-phosphate dehydratase        |
| HMEL034406g1.t1 | circadian clock-controlled protein-like                    |
| HMEL017621g1.t1 | microtubule-associated protein 1A isoform X2               |
| HMEL010126g1.t4 | seminal fluid protein HACP059                              |
| HMEL003683g1.t1 | serine protease snake-like                                 |
| HMEL003497g2.t1 | gamma-aminobutyric acid receptor subunit beta-like         |
| HMEL014623g1.t1 | protein transport protein Sec61 subunit alpha              |
| HMEL036946g1.t1 | 5-aminolevulinic synthase, nonspecific, mitochondrial      |
| HMEL016873g1.t1 | aminopeptidase N-like isoform X1                           |
| HMEL015324g1.t1 | Replication Protein A3                                     |
| HMEL010934-RA   | cytochrome P450 4C1-like                                   |
| HMEL016015g4.t1 | fatty-acid amide hydrolase 2-like                          |
| HMEL008530g1.t1 | HD domain-containing protein 2                             |
| HMEL005861g5.t1 | proton-coupled amino acid transporter-like protein CG1139  |
| HMEL008079g1.t1 | uncharacterized protein LOC112055532 isoform X1            |
| HMEL034892g1.t1 | facilitated trehalose transporter Tret1-like               |



HMEL004850g2.t1 dopamine N-acetyltransferase-like  
 HMEL034521g1.t1 unnamed protein product  
 HMEL002271g1.t1 hypothetical protein KGM\_209237  
 HMEL034722g1.t1 cytochrome P450 6B1-like  
 HMEL006260g1.t1 antichymotrypsin-2-like isoform X2  
 HMEL030563g1.t1 ---NA---  
 HMEL010310g2.t1 hypothetical protein KGM\_213858A, partial  
 HMEL021464g2.t1 prostaglandin reductase 1-like  
 HMEL005376g1.t1 D-arabinitol dehydrogenase 1-like  
 HMEL011210g1.t1 protein CDV3 homolog  
 HMEL010126g1.t2 seminal fluid protein HACP059  
 HMEL010338g1.t1 UPF0764 protein C16orf89 homolog  
 HMEL005362g1.t1 probable phosphoserine aminotransferase  
 HMEL034838g1.t1 stearyl-CoA desaturase 5-like isoform X2  
 HMEL002092g1.t1 protein yellow-like isoform X1  
 HMEL011192g1.t1 putative ammonium transporter 2  
 HMEL031325g1.t1 ---NA---  
 HMEL036645g1.t1 ---NA---  
 HMEL013834g1.t1 alcohol dehydrogenase class-3  
 HMEL017000g1.t1 peroxidase-like isoform X3  
 HMEL012931g1.t1 putative Y47D3B.4  
 HMEL015727g1.t1 uncharacterized protein LOC113395464  
 HMEL031326g1.t1 ---NA---  
 HMEL017000g2.t1 peroxidase-like isoform X1  
 HMEL015278g1.t1 pancreatic triacylglycerol lipase-like  
 HMEL017233g1.t1 Krueppel homolog 1-like  
 HMEL014233g1.t1 venom protease-like  
 HMEL020539g1.t1 cytochrome P450 6B1-like  
 HMEL016116g1.t1 uncharacterized protein LOC113395382  
 HMEL005392g3.t1 RNA exonuclease 4  
 HMEL010695g1.t2 facilitated trehalose transporter Tret1-like  
 HMEL003022g1.t1 xanthine dehydrogenase 1-like  
 HMEL010958g1.t1 modular serine protease-like  
 HmelUGT33X1.mrna UGT  
 HMEL037992g1.t1 senecionine N-oxygenase-like  
 HMEL005882g2.t1 esterase E4-like  
 HMEL010694g1.t1 facilitated trehalose transporter Tret1-like  
 HMEL037185g1.t1 gelsolin, cytoplasmic-like  
 HMEL006237g1.t1 serine protease inhibitor 88Ea-like  
 HMEL034896g1.t1 carotenoid isomeroxygenase-like  
 HMEL015572g1.t1 saccharopine dehydrogenase-like oxidoreductase  
 HMEL037186g1.t1 gelsolin, cytoplasmic-like  
 HMEL007637g1.t1 ecdysteroid-regulated 16 kDa protein-like  
 HMEL022259g3.t1 ---NA---

|                  |   |
|------------------|---|
| HMEL010126g1.t3  | seminal fluid protein HACP059   |
| HMEL016763g1.t1  | putative carbonic anhydrase 3   |
| HMEL014492g1.t1  | phospholipase A1-like   |
| HmelUGT40V3.mrna | UGT   |
| HMEL032052g1.t1  | cuticular protein RR-3 motif 148 precursor                              |
| HMEL003561g3.t1  | Ribonuclease H-like domain  |
| HmelGSTs9.mrna   | GST   |
| HMEL002163g1.t1  | venom carboxylesterase-6-like   |
| HMEL013405g1.t1  | sodium/potassium/calcium exchanger 4-like                               |
| HMEL017304g1.t1  | seminal fluid protein HACP059   |
| HMEL002925g1.t1  | formin-like protein 14  |
| HMEL013136g4.t1  | myrosinase 1-like   |
| HMEL003497g1.t1  | DUF4817 domain-containing protein                                       |
| HMEL032659g1.t1  | macrophage mannose receptor 1-like                                      |
| HMEL011919g1.t1  | protein hairy   |
| HMEL008541g1.t1  | protein app1-like   |
| HMEL016204g2.t1  | delta-1-pyrroline-5-carboxylate synthase isoform X2                     |
| HMEL036862g1.t1  | toll-like receptor 2  |
| HMEL016367g1.t1  | uridine 5-monophosphate synthase-like                                   |
| HMEL014308g1.t1  | urbain precursor  |
| HMEL005973g1.t1  | facilitated trehalose transporter Tret1-like                            |
| HMEL016237g1.t1  | circadian clock-controlled protein-like                                 |
| HmOBP47          | olfactory binding protein   |
| HmelUGT40V2.mrna | UGT   |
| HMEL006174g2.t1  | uncharacterized protein LOC113402709                                    |
| HMEL016204g1.t1  | delta-1-pyrroline-5-carboxylate synthase isoform X1                     |
| HMEL007905g1.t1  | glycogen-binding subunit 76A isoform X1                                 |
| HMEL015726g1.t1  | stearoyl-CoA desaturase 5-like  |
| HMEL020720g1.t1  | cuticular protein RR-2 motif 125 precursor                              |
| HMEL031902g1.t1  | protein THEM6-like  |
| HMEL035250g1.t1  | CD63 antigen-like   |
| HMEL005285g2.t1  | trace amine-associated receptor 1                                       |
| HmOBP50          | olfactory binding protein   |
| HMEL009671g1.t1  | putative protease inhibitor 4   |
| HMEL030086g1.t1  | prostamide/prostaglandin F synthase-like isoform X1                     |
| HMEL011130g1.t1  | SERAC1 protein  |
| HMEL021483g2.t2  | ---NA---  |
| HMEL013064g1.t1  | serine protease snake-like  |
| HMEL017107g1.t1  | transmembrane protease serine 9-like                                    |
| HMEL005773g1.t1  | pollen-specific leucine-rich repeat extensin-like protein 1             |
| HMEL022269g2.t1  | saccharopine dehydrogenase-like oxidoreductase                          |
| HMEL009081g1.t1  | protein scarlet-like  |
| HMEL005408g2.t2  | elongation of very long chain fatty acids protein AAEL008004 isoform X2 |
| HMEL006784g1.t1  | alpha,alpha-trehalose-phosphate synthase [UDP-forming]                  |

|                 |   |
|-----------------|---|
| HMEL034605g1.t2 | uncharacterized LOC106106657 precursor      |
| HMEL008807g1.t1 | tan protein                                 |
| HMEL005285g1.t1 | putative sporulation protein YqfD           |
| HMEL011873g2.t1 | arylsulfatase B-like                        |
| HMEL000006-RA   | trehalase 1a                                |
| HMEL012366g1.t1 | uncharacterized protein LOC113394873        |
| HMEL004446g1.t1 | uncharacterized protein LOC116768575        |
| HMEL008412g1.t1 | membrane alanyl aminopeptidase-like         |
| HMEL014225g1.t1 | protein phosphatase 1 regulatory subunit 3C |
| HMEL014821g1.t2 | aldose reductase-like isoform X2            |
| HMEL017149-RA   | Cytochrome P450 4V2                         |
| HMEL032765g1.t1 | ---NA---                                    |
| HMEL017154-RA   | cytochrome P450 6B2-like                    |
| HMEL005596-RA   | ejaculatory bulb-specific protein 3-like    |
| HMEL011374g1.t1 | venom acid phosphatase Acph-1-like          |
| HMEL013489g1.t1 | putative inactive cysteine synthase 2       |
| HMEL012374g1.t1 | seminal fluid protein HACP057               |
| HMEL004963g1.t1 | ---NA---                                    |

---

**Upregulated genes in legs of *H. melpomene* two-day-old females**

---

| ID              | Annotation  |
|-----------------|---|
| HMEL016141g1.t1 | uncharacterized LOC106128526                                    |
| HMEL032926g1.t1 | senecionine N-oxygenase isoform X1                              |
| HMEL007002g1.t1 | larval cuticle protein 1-like                                   |
| HMEL031927g1.t1 | endocuticle structural glycoprotein ABD-4-like                  |
| HMEL006214g1.t1 | flocculation protein FLO11 isoform X1                           |
| HMEL031928g1.t1 | endocuticle structural glycoprotein SgAbd-2-like                |
| HMEL013199g1.t2 | phosphoenolpyruvate carboxykinase [GTP]-like isoform X2         |
| HMEL011699g1.t1 | uncharacterized protein LOC113394755                            |
| HMEL036512g1.t1 | organic cation transporter protein-like                         |
| HMEL014632g1.t1 | endochitinase-like isoform X2                                   |
| HMEL011703g1.t1 | ---NA---  |
| HMEL030990g1.t1 | actin   |
| HMEL003998g1.t1 | calcium-binding protein P-like                                  |
| HMEL009417g1.t1 | pupal cuticle protein-like                                      |
| HMEL037608g1.t1 | cuticle protein LPCP-23-like                                    |
| HMEL013199g1.t1 | phosphoenolpyruvate carboxykinase [GTP]-like isoform X1         |
| HMEL015230g1.t1 | seminal fluid protein CSSFP066                                  |
| HMEL014926g2.t1 | monocarboxylate transporter 3                                   |
| HmOBP31         | olfactory binding protein                                       |
| HMEL013360-RA   | protein spatzle 5   |
| HMEL009672g1.t1 | chitinase A-like  |
| HMEL014774g1.t1 | uncharacterized protein LOC113395164                            |
| HMEL022129g1.t1 | uncharacterized protein LOC113394950                            |
| HMEL002519g1.t1 | succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial |

|                  |  |
|------------------|--|
| HMEL011066g2.t1  | alpha-tocopherol transfer protein-like   |
| HMEL010373g1.t1  | uncharacterized LOC106113675 precursor   |
| HMEL002880g1.t1  | lysozyme-like  |
| HMEL003835g1.t1  | endocuticle structural glycoprotein SgAbd-1-like   |
| HMEL013124g1.t1  | facilitated trehalose transporter Tret1-like   |
| HMEL003840g1.t1  | neural/ectodermal development factor IMP-L2-like   |
| HMEL007743g1.t1  | dihydropyrimidine dehydrogenase [NADP(+)]  |
| HMEL033459g1.t1  | zinc finger DNA binding protein  |
| HMEL031921g1.t1  | larval cuticle protein 1-like  |
| HMEL003757g2.t1  | putative fatty acyl-CoA reductase CG5065   |
| HMEL009569g1.t1  | circadian clock-controlled protein-like  |
| HMEL010636g1.t1  | alpha-tocopherol transfer protein-like   |
| HMEL007153g2.t1  | fructose-1,6-bisphosphatase 1  |
| HMEL007083g1.t1  | Valacyclovir hydrolase   |
| HMEL007991g2.t1  | histidine-rich glycoprotein-like   |
| HMEL004412g1.t1  | uncharacterized protein LOC113401620   |
| HMEL006304g1.t1  | purine nucleoside phosphorylase-like isoform X1  |
| HMEL011674g1.t1  | Cuticle protein  |
| HMEL034253g1.t1  | uncharacterized LOC106121975 precursor   |
| HMEL030772g1.t1  | G-protein coupled receptor 64-like   |
| HMEL007991g4.t1  | cuticle protein 7-like   |
| HMEL017189g1.t1  | monocarboxylate transporter 12   |
| HmelUGT40W2.mrna | UGT  |
| HmCSP10          | chemosensory protein   |
| HMEL007565g1.t1  | dual specificity protein phosphatase 14  |
| HMEL038058g1.t2  | probable glucosamine 6-phosphate N-acetyltransferase   |
| HMEL007986g1.t1  | pupal cuticle protein PCP52-like   |
| HMEL004510g1.t1  | cuticle protein 3-like   |
| HMEL034900g1.t1  | carotenoid isomeroxygenase-like  |
| HMEL003719g1.t1  | larval cuticle protein LCP-22-like   |
| HmelGSTs6.mrna   | -  |
| HMEL004243g1.t2  | Calcium-independent phospholipase A2-gamma   |
| HmCSP28          | chemosensory protein   |
| HMEL036189g1.t1  | conotoxin ArMKLT2-032-like   |
| HMEL014094g1.t1  | insulin-like receptor  |
| HMEL034493g1.t1  | Cytochrome b   |
| HMEL036006g1.t1  | protein unc-13 homolog C-like  |
| HMEL006799g1.t1  | protein 60A  |
| HMEL016920g2.t1  | lipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, mitochondrial |
| HMEL008727g1.t1  | collagen alpha-1(IX) chain-like  |
| HmCSP2           | chemosensory protein   |
| HMEL030106g1.t1  | cuticle protein 7-like   |
| HMEL032730g1.t1  | insulin-like growth factor-binding protein complex acid labile subunit isoform X1                          |

|                 |  |
|-----------------|--|
| HMEL034795g1.t1 | N-fatty-acyl-amino acid synthase/hydrolase PM20D1-like             |
| HMEL005422g1.t1 | endocuticle structural glycoprotein ABD-4-like                     |
| HMEL007739g1.t2 | caskin-2 isoform X2  |
| HMEL033041g1.t1 | C-type lectin 27kD   |
| HmCSP11         | chemosensory protein   |
| HMEL013901g1.t1 | 3-phosphoinositide-dependent protein kinase 1 isoform X1           |
| HMEL030728g1.t1 | LIX1-like protein  |
| HMEL002558g1.t1 | hypothetical protein KGM_203748                                    |
| HMEL032412g1.t2 | pleckstrin homology domain-containing family F member 2 isoform X2 |
| HMEL012438g1.t1 | zinc transporter ZIP10   |
| HMEL010740g1.t1 | C3 and PZP alpha-2-macroglobulin domain-containing protein 8       |
| HMEL008645g1.t1 | cuticle protein 19-like  |
| HMEL017435g2.t1 | retinol dehydrogenase 13-like                                      |
| HMEL022261g3.t1 | cAMP-specific 3,5-cyclic phosphodiesterase-like isoform X2         |
| HMEL009791g1.t2 | Protein PRRC2A   |
| HMEL004916g1.t1 | neuropathy target esterase sws isoform X3                          |
| HMEL014363g1.t1 | zinc finger CCCH domain-containing protein 13 isoform X1           |
| HMEL033193g1.t2 | homeobox protein cut isoform X2                                    |
| HMEL006689g1.t1 | myrosinase 1-like  |
| HMEL037321g1.t1 | larval cuticle protein LCP-17-like                                 |
| HMEL034272g1.t1 | juvenile hormone binding protein an-0921 precursor                 |
| HMEL008976g1.t1 | S-adenosylmethionine synthase isoform X1                           |
| HMEL012421g2.t1 | ---NA---   |
| HMEL015977g1.t1 | nucleoporin nup189-like  |
| HMEL011232g1.t1 | histidine decarboxylase  |
| HMEL017044g1.t2 | E3 ubiquitin-protein ligase HECW2 isoform X1                       |
| HMEL017127g1.t7 | myosin heavy chain, muscle isoform X24                             |
| HMEL015313g3.t1 | UNC93-like protein   |
| HMEL010547g1.t1 | UNC93-like protein   |
| HMEL022333g1.t1 | nose resistant to fluoxetine protein 6-like                        |
| HMEL033890g1.t1 | reverse transcriptase  |

---

**Upregulated genes in legs of *H. melpomene* five-day-old females**

---

| ID              | Annotation   |
|-----------------|--|
| HMEL008770-RA   | cytochrome P450 4C1-like   |
| HMEL005377g1.t1 | calreticulin   |
| HMEL016763g1.t1 | putative carbonic anhydrase 3  |
| HMEL006610g3.t1 | heat shock protein 90 cognate  |
| HMEL003056g2.t1 | lipase 3-like  |
| HMEL005408g2.t1 | elongation of very long chain fatty acids protein AAEL008004-like isoform X1 |
| HMEL011723g1.t1 | Hypothetical predicted protein   |
| HMEL011226g1.t1 | probable chitinase 2   |
| HMEL011299g1.t2 | uncharacterized protein LOC117994014 isoform X2                              |
| HMEL017507g1.t1 | nose resistant to fluoxetine protein 6-like                                  |
| HMEL013783g1.t1 | uncharacterized protein LOC113394807   |

|                 |  |
|-----------------|--|
| HMEL017252g1.t2 | glycerol-3-phosphate dehydrogenase, mitochondrial isoform X2           |
| HMEL003056g1.t1 | gastric triacylglycerol lipase-like                                    |
| HmelGSTd1.mrna  | GST  |
| HMEL009671g1.t1 | putative protease inhibitor 4  |
| HMEL005376g1.t1 | D-arabinitol dehydrogenase 1-like                                      |
| HMEL037963g1.t1 | uncharacterized protein LOC113399326                                   |
| HMEL014628g1.t1 | alpha-tocopherol transfer protein-like                                 |
| HMEL014531g3.t1 | uncharacterized protein LOC112056399                                   |
| HMEL014233g1.t1 | venom protease-like  |
| HMEL017127g1.t9 | Myosin heavy chain, muscle   |
| HMEL010169g1.t1 | aldose reductase-like  |
| HMEL000028-RA   | mesencephalic astrocyte-derived neurotrophic factor homolog            |
| HMEL031326g1.t1 | ---NA---   |
| HMEL002202g1.t1 | extensin-like isoform X2   |
| HMEL008736g1.t1 | far upstream element-binding protein 3 isoform X1                      |
| HMEL030086g1.t1 | prostamide/prostaglandin F synthase-like isoform X1                    |
| HMEL004430g1.t1 | GILT-like protein 1 isoform X2   |
| HMEL005109g1.t1 | cadherin-23  |
| HMEL032659g1.t1 | macrophage mannose receptor 1-like                                     |
| HMEL032434g1.t1 | hypothetical protein KGM_208333  |
| HMEL017601g1.t2 | SWI/SNF complex subunit SMARCC2 isoform X1                             |
| HMEL031247g1.t1 | Heat shock 70 kDa protein cognate 3                                    |
| HMEL016262g1.t1 | inositol-3-phosphate synthase  |
| HMEL005392g3.t1 | RNA exonuclease 4  |
| HMEL034126g1.t1 | uncharacterized protein LOC112053984                                   |
| HMEL033323g1.t1 | alpha-tocopherol transfer protein-like                                 |
| HMEL013164g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL037600g1.t1 | transmembrane protein 209-like   |
| HMEL030510g1.t1 | disks large-associated protein 5 isoform X2                            |
| HMEL009106-RA   | transcription factor kayak isoform X3                                  |
| HMEL005773g1.t1 | pollen-specific leucine-rich repeat extensin-like protein 1            |
| HMEL034521g1.t1 | unnamed protein product  |
| HMEL006793g1.t1 | sodium/hydrogen exchanger 9B2-like isoform X1                          |
| HMEL011561g1.t1 | uncharacterized LOC106109504 precursor                                 |
| HMEL035526g1.t1 | peptide transporter family 1 isoform X1                                |
| HMEL013672g1.t1 | juvenile hormone epoxide hydrolase-like                                |
| HMEL016787g1.t2 | pollen-specific leucine-rich repeat extensin-like protein 3 isoform X1 |
| HMEL003326g2.t1 | esterase FE4-like  |
| HMEL014519-RA   | sensory neuron membrane protein 2                                      |
| HMEL037992g1.t1 | senecionine N-oxygenase-like   |
| HMEL012546g3.t1 | sulfotransferase 1C4-like  |
| HMEL036865g1.t1 | protein msta-like isoform X1   |
| HMEL006610g1.t1 | endoplasmic isoform X1   |
| HMEL014225g1.t1 | protein phosphatase 1 regulatory subunit 3C                            |

|                  |   |
|------------------|---|
| HMEL034898g1.t1  | carotenoid isomeroxygenase-like   |
| HMEL032503g1.t1  | tctex1 domain-containing protein 1-A-like                                     |
| HMEL017304g1.t1  | seminal fluid protein HACP059   |
| HMEL009950g1.t1  | ---NA---  |
| HMEL002378g1.t1  | serine protease inhibitor dipetalogastin-like                                 |
| HMEL013064g1.t1  | serine protease snake-like  |
| HMEL015404g1.t1  | la1-like protein 15 isoform X4  |
| HMEL000006-RA    | trehalase 1a  |
| HMEL010126g1.t3  | seminal fluid protein HACP059   |
| HMEL036519g1.t1  | ---NA---  |
| HMEL015861g1.t1  | pupal cuticle protein PCP52-like  |
| HMEL006016g1.t1  | endocuticle structural glycoprotein ABD-5-like                                |
| HMEL035136g1.t1  | sodium-coupled monocarboxylate transporter 1                                  |
| HMEL015278g1.t1  | pancreatic triacylglycerol lipase-like  |
| HMEL010228-RA    | general odorant-binding protein 19d-like                                      |
| HmOBP11          | olfactory binding protein   |
| HMEL006231g1.t1  | very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase hpo-8                      |
| HMEL013136g4.t1  | myrosinase 1-like   |
| HMEL031826g1.t1  | protein FAM13A-like isoform X2  |
| HMEL037131g1.t2  | angiotensin-converting enzyme-like isoform X3                                 |
| HMEL010126g1.t2  | seminal fluid protein HACP059   |
| HmelUGT46E1.mrna | UGT   |
| HMEL009597g1.t1  | seminal fluid protein HACP057   |
| HMEL014492g1.t1  | phospholipase A1-like   |
| HMEL010062g1.t1  | potassium channel subfamily K member 1-like isoform X1                        |
| HMEL013943g1.t1  | pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16                     |
| HMEL032052g1.t1  | cuticular protein RR-3 motif 148 precursor                                    |
| HMEL005973g1.t1  | facilitated trehalose transporter Tret1-like                                  |
| HMEL033367g1.t1  | uncharacterized protein LOC113396892  |
| HMEL020720g1.t1  | cuticular protein RR-2 motif 125 precursor                                    |
| HMEL003326g3.t1  | esterase FE4-like   |
| HMEL030103g1.t1  | ommochrome-binding protein-like   |
| HMEL003479g2.t1  | ---NA---  |
| HmelUGT33X2.mrna | UGT   |
| HMEL017148-RA    | cytochrome P450 4c3-like  |
| HMEL009951g1.t1  | ---NA---  |
| HMEL003562g1.t2  | phosphorylase b kinase gamma catalytic chain, liver/testis isoform isoform X2 |
| HMEL014615g2.t1  | methyltransferase-like protein 23   |
| HMEL003561g3.t1  | Ribonuclease H-like domain  |
| HMEL017233g1.t1  | Krueppel homolog 1-like   |
| HMEL013158g1.t1  | facilitated trehalose transporter Tret1-like                                  |
| HMEL011374g1.t1  | venom acid phosphatase Acph-1-like  |
| HMEL018084g1.t1  | allergen Api m 6-like   |
| HMEL004446g1.t1  | uncharacterized protein LOC116768575  |

|                  |  |
|------------------|--|
| HmelUGT33X1.mrna | UGT  |
| HMEL014782g1.t1  | protein takeout-like                         |
| HMEL013159g1.t1  | facilitated trehalose transporter Tret1-like |
| HMEL017149-RA    | Cytochrome P450 4V2                          |
| HMEL014821g1.t2  | aldose reductase-like isoform X2             |
| HMEL008541g1.t1  | protein app1-like                            |
| HMEL005596-RA    | ejaculatory bulb-specific protein 3-like     |
| HMEL011196g1.t1  | cuticle protein 1-like                       |
| HMEL003661g1.t1  | ---NA---                                     |
| HMEL011197g2.t1  | cuticle protein 1-like                       |
| HmOBP50          | olfactory binding protein                    |
| HMEL011197g1.t1  | cuticle protein 1                            |

---

**Upregulated genes in mouthparts of *H. melpomene* two-day-old females**

---

| ID              | Annotation  |
|-----------------|---|
| HMEL031924g1.t1 | endocuticle structural glycoprotein SgAbd-8-like        |
| HMEL006020g1.t1 | protein lethal(3)malignant blood neoplasm 1             |
| HMEL011701g1.t1 | cuticle protein 16.5-like                               |
| HMEL031921g1.t1 | larval cuticle protein 1-like                           |
| HMEL011699g1.t1 | uncharacterized protein LOC113394755                    |
| HMEL031920g1.t1 | larval cuticle protein 1-like                           |
| HMEL031927g1.t1 | endocuticle structural glycoprotein ABD-4-like          |
| HMEL031922g1.t1 | larval cuticle protein 1-like                           |
| HMEL011715g1.t1 | ---NA---  |
| HMEL007003g1.t1 | endocuticle structural glycoprotein ABD-4-like          |
| HMEL032516g1.t1 | ---NA---  |
| HMEL003670g1.t1 | pupal cuticle protein G1A-like                          |
| HMEL003671g1.t1 | putative cuticle protein                                |
| HMEL014783g1.t1 | circadian clock-controlled protein-like                 |
| HMEL007002g1.t1 | larval cuticle protein 1-like                           |
| HMEL017436g1.t1 | cuticular protein glycine-rich 20                       |
| HMEL004412g1.t1 | uncharacterized protein LOC113401620                    |
| HMEL032926g1.t1 | senecionine N-oxygenase isoform X1                      |
| HMEL014632g1.t1 | endochitinase-like isoform X2                           |
| HMEL016976g1.t1 | mycosubtilin synthase subunit C                         |
| HMEL009417g1.t1 | pupal cuticle protein-like                              |
| HMEL003835g1.t1 | endocuticle structural glycoprotein SgAbd-1-like        |
| HMEL036512g1.t1 | organic cation transporter protein-like                 |
| HMEL009569g1.t1 | circadian clock-controlled protein-like                 |
| HMEL007536g1.t1 | uncharacterized peptidase C1-like protein F26E4.3       |
| HMEL030106g1.t1 | cuticle protein 7-like                                  |
| HMEL010636g1.t1 | alpha-tocopherol transfer protein-like                  |
| HMEL013199g1.t1 | phosphoenolpyruvate carboxykinase [GTP]-like isoform X1 |
| HmOBP31         | olfactory binding protein                               |
| HMEL008859g1.t1 | calcium-binding protein P-like                          |



HMEL002552g1.t1 cuticle protein CP14.6-like  
 HMEL006740g3.t1 ---NA---  
 HMEL033281g1.t1 pickpocket protein 28-like  
 HMEL011924g1.t1 uncharacterized protein LOC114362364  
 HMEL016408g1.t1 C-type lectin 4 precursor  
 HMEL013247g1.t1 endocuticle structural glycoprotein ABD-4-like  
 HMEL032062g1.t1 basic proline-rich protein isoform X1  
 HMEL012299g1.t1 troponin C-like isoform X1  
 HMEL015804g1.t1 larval/pupal rigid cuticle protein 66-like  
 HMEL036076g1.t5 protein held out wings isoform X1  
 HMEL002383g1.t1 craniofacial development protein 2-like  
 HMEL006689g1.t1 myrosinase 1-like  
 HMEL014926g2.t1 monocarboxylate transporter 3  
 HMEL030990g1.t1 actin  
 HMEL010010g1.t1 ecdysone-induced protein 74EF isoform X1  
 HMEL005422g1.t1 endocuticle structural glycoprotein ABD-4-like  
 HMEL003074g1.t1 global transcription regulator sge1  
 HMEL007950g1.t1 esterase FE4-like  
 HMEL005816g1.t1 uncharacterized protein LOC117987429 isoform X2  
 HMEL002880g1.t1 lysozyme-like  
 HMEL002212g1.t1 chitin synthase chs-2 isoform X3  
 HMEL006811g1.t1 chitin deacetylase 2  
 HMEL037608g1.t1 cuticle protein LPCP-23-like  
 HMEL020967g1.t1 probable chitinase 10  
 HMEL009297g1.t1 skin secretory protein xP2-like  
 HMEL032446g1.t1 hypothetical protein B5V51\_9188  
 HMEL007991g7.t1 cuticle protein 8-like  
 HMEL010373g1.t1 uncharacterized LOC106113675 precursor  
 HMEL009298g2.t1 pollen-specific leucine-rich repeat extensin-like protein 2  
 HMEL006811g1.t3 chitin binding protein  
 HMEL012523g1.t1 troponin C-like  
 HMEL003719g1.t1 larval cuticle protein LCP-22-like  
 HMEL032824g1.t1 heme peroxidase 2  
 HMEL007136g1.t1 cuticle protein 1-like  
 HMEL010805g3.t1 leishmanolysin-like peptidase isoform X2  
 HMEL011805g1.t1 ---NA---  
 HMEL010106g1.t1 pancreatic lipase-related protein 2  
 HMEL012685g1.t1 uncharacterized LOC106108503 precursor  
 HMEL002008g1.t1 probable chitinase 10  
 HMEL004893g1.t1 adhesive plaque matrix protein-like isoform X1  
 HMEL030866g1.t1 myrosinase 1-like  
 HMEL007285g1.t1 golgin subfamily A member 6-like protein 22  
 HMEL021415g1.t1 endocuticle structural glycoprotein SgAbd-5-like  
 HMEL008325g1.t1 5-AMP-activated protein kinase catalytic subunit alpha-2 isoform X2

|                 |   |
|-----------------|---|
| HMEL006011g1.t1 | endocuticle structural protein SgAbd-6-like                                     |
| HMEL010976g1.t1 | pollen-specific leucine-rich repeat extensin-like protein 1                     |
| HMEL013908g2.t1 | cuticular protein CPH   |
| HmCSP10         | chemosensory protein  |
| HMEL003666g1.t1 | cuticle protein 16.5-like   |
| HMEL033509g1.t1 | serine proteinase stubble   |
| HMEL033982g1.t1 | proton-coupled amino acid transporter-like protein pathetic                     |
| HMEL032797g1.t1 | heme peroxidase 2   |
| HMEL016396g1.t1 | phospholipase A2 like protein   |
| HMEL008727g1.t1 | collagen alpha-1(IX) chain-like   |
| HMEL021946g1.t2 | UNC93-like protein MFSD11   |
| HMEL034179g1.t1 | ---NA---  |
| HMEL015878g1.t1 | substance-K receptor-like isoform X1  |
| HMEL006017g2.t1 | flexible cuticle protein 12-like  |
| HMEL021221g1.t1 | yellow-c  |
| HMEL016977g1.t2 | epsilon-sarcoglycan isoform X1  |
| HmCSP25         | chemosensory protein  |
| HMEL014104g1.t1 | uncharacterized protein LOC113401956 isoform X5                                 |
| HMEL002519g1.t1 | succinyl-CoA:3-ketoacid coenzyme A transferase 1, mitochondrial                 |
| HMEL009296g1.t1 | activating signal cointegrator 1 complex subunit 2 homolog                      |
| HMEL033041g1.t1 | C-type lectin 27kD  |
| HMEL007134g1.t1 | pupal cuticle protein PCP52-like  |
| HMEL033978g1.t1 | serine-rich adhesin for platelets-like isoform X1                               |
| HMEL007986g1.t1 | pupal cuticle protein PCP52-like  |
| HMEL036941g1.t1 | terminal nucleotidyltransferase 5C isoform X2                                   |
| HMEL007667g2.t1 | uncharacterized protein LOC114365618  |
| HMEL010460g1.t1 | glucose dehydrogenase [FAD, quinone]-like                                       |
| HMEL036393g1.t1 | alpha-tocopherol transfer protein-like  |
| HMEL031257g1.t1 | ecdysone-induced protein 74EF isoform X3  |
| HMEL006811g2.t1 | chitin deacetylase 1  |
| HMEL011227g1.t1 | cuticular protein analogous to peritrophins 1-D precursor                       |
| HMEL035331g1.t1 | uncharacterized LOC106124743 precursor  |
| HMEL004083g1.t1 | simila to CG13188   |
| HMEL009320g1.t1 | LIM and SH3 domain protein Lasp isoform X1                                      |
| HMEL034253g1.t1 | uncharacterized LOC106121975 precursor  |
| HMEL012064g1.t3 | basement membrane-specific heparan sulfate proteoglycan core protein isoform X4 |
| HMEL010633g1.t1 | alpha-tocopherol transfer protein-like  |
| HMEL004083g2.t1 | uncharacterized protein LOC116779101 isoform X3                                 |
| HMEL014555g1.t1 | monocarboxylate transporter 10-like isoform X1                                  |
| HMEL013907g1.t1 | cuticle protein 16.5-like   |
| HMEL031741g1.t1 | ---NA---  |
| HMEL012669g1.t2 | Rho guanine nucleotide exchange factor 10                                       |
| HMEL015313g3.t1 | UNC93-like protein  |
| HMEL008833g1.t1 | alpha-actinin, sarcomeric isoform X1  |

HMEL009672g1.t1 chitinase A-like  
 HMEL035254g1.t2 paxillin isoform X1  
 HMEL008353g1.t2 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1  
 HMEL005192g1.t1 defense protein 2  
 HMEL033108g1.t1 putative inactive cysteine synthase 2  
 HMEL009232g1.t1 fructose-bisphosphate aldolase-like  
 HMEL008837g1.t1 probable 4-coumarate--CoA ligase 1  
 HMEL014452g1.t1 annexin B9 isoform X3  
 HMEL003999g1.t1 hypothetical protein KGM\_211381  
 HMEL017189g1.t1 monocarboxylate transporter 12  
 HMEL005468g1.t1 uncharacterized LOC106124634 precursor  
 HMEL003976g1.t1 flightin isoform X1  
 HMEL002505g1.t2 inactive dipeptidyl peptidase 10  
 HMEL032592g1.t1 pupal cuticle protein 36-like  
 HMEL030296g1.t1 endonuclease-reverse transcriptase HmRTE-e01  
 HMEL004744g1.t1 uncharacterized protein LOC112047711 isoform X1  
 HMEL016032g1.t1 aquaporin-11 isoform X2  
 HMEL017029g1.t1 hemocytin  
 HMEL002569g1.t1 monocarboxylate transporter 10-like isoform X2  
 HMEL014952g1.t1 flocculation protein FLO11-like  
 HMEL031928g1.t1 endocuticle structural glycoprotein SgAbd-2-like  
 HMEL008353g1.t1 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1  
 HMEL017127g1.t7 myosin heavy chain, muscle isoform X24  
 HMEL003979g1.t3 period circadian protein isoform X8  
 HMEL033459g1.t1 zinc finger DNA binding protein  
 HMEL013662g1.t1 uncharacterized protein LOC113397681  
 HMEL017435g2.t1 retinol dehydrogenase 13-like  
 HmelUGT45B1.mrna UGT  
 HMEL012304g1.t1 myofilin variant A  
 HMEL005235g1.t1 G1/S-specific cyclin-D2-like  
 HMEL006796g1.t1 sodium/hydrogen exchanger 9B2-like isoform X3  
 HMEL016123g1.t1 proteoglycan 4-like  
 HMEL034906g1.t1 endonuclease-reverse transcriptase HmRTE-e01  
 HMEL032307g1.t2 ran-binding protein 9 isoform X2  
 HMEL016093g1.t1 neurogenic locus notch homolog protein 1  
 HMEL015501g1.t1 mucin-17 isoform X1  
 HMEL014040g1.t1 putative eukaryotic translation initiation factor 3 theta subunit  
 HMEL030658g1.t1 venom protease-like  
 HMEL014531g1.t1 GTP cyclohydrolase 1 isoform X1  
 HMEL017820g1.t1 thrombospondin type-1 domain-containing protein 4-like  
 HMEL030607g1.t1 simila to CG34115  
 HMEL032904g1.t1 ---NA---  
 HMEL031058g1.t2 nuclear receptor coactivator 7 isoform X1  
 HMEL008822g2.t1 myosin-1 precursor

HMEL034877g1.t1 ---NA---  
 HMEL002212g1.t2 chitin synthase A  
 HMEL017090g2.t1 N-myc downstream regulated  
 HMEL014491g1.t1 carbonyl reductase [NADPH] 1-like  
 HMEL007565g1.t1 dual specificity protein phosphatase 14  
 HMEL017090g1.t1 N-myc downstream regulated  
 HMEL037224g1.t1 solute carrier family 2, facilitated glucose transporter member 1-like  
 HMEL012765-RA cryptochrome-1  
 HMEL032184g1.t1 alpha-N-acetylgalactosaminidase isoform X2  
 HMEL005230g1.t1 acyl-CoA Delta(11) desaturase-like  
 HMEL034812g1.t1 uridine phosphorylase 1 isoform X1  
 HMEL025038g2.t2 voltage-gated potassium channel subunit beta-2 isoform X5  
 HMEL007254g1.t1 prisilkin-39-like  
 HMEL010344g1.t2 protein obstructor-E isoform X2  
 HMEL012251g1.t1 uncharacterized protein LOC117991081  
 HMEL008722g5.t1 ---NA---  
 HMEL003987g1.t1 mucin-5AC  
 HMEL033739g1.t1 nephrin-like isoform X1  
 HMEL033819g1.t1 pericentriolar material 1 protein-like isoform X1  
 HMEL017189g2.t1 ---NA---  
 HMEL003238g1.t1 fibulin-2-like isoform X1  
 HMEL005861g5.t1 proton-coupled amino acid transporter-like protein CG1139  
 HMEL030675g1.t1 chymotrypsin-like elastase family member 2A  
 HMEL006799g1.t1 protein 60A  
 HMEL013901g1.t1 3-phosphoinositide-dependent protein kinase 1 isoform X1  
 HMEL013657g1.t1 LHFPL tetraspan subfamily member 3 protein  
 HMEL005738g1.t1 cuticle protein 8-like  
 HMEL008565g3.t1 protein Skeletor, isoforms B/C isoform X3  
 HMEL034795g1.t1 N-fatty-acyl-amino acid synthase/hydrolase PM20D1-like  
 HMEL009791g1.t2 Protein PRRC2A  
 HMEL016701g1.t1 TWiK family of potassium channels protein 9-like  
 HMEL010346g1.t1 protein obstructor-E-like  
 HMEL037996g1.t1 nose resistant to fluoxetine protein 6-like  
 HMEL030728g1.t1 LIX1-like protein  
 HMEL008565g1.t1 protein Skeletor, isoforms D/E-like  
 HMEL002369g1.t1 nose resistant to fluoxetine protein 6-like  
 HMEL010735g1.t1 BCL2/adenovirus E1B 19 kDa protein-interacting protein 3 isoform X2  
 HMEL037664g1.t1 protein extra-macrochaetae  
 HMEL002924g1.t1 actin cytoskeleton-regulatory complex protein PAN1-like  
 HMEL034453g1.t2 plasma membrane calcium-transporting ATPase 2 isoform X1  
 HMEL016782g2.t1 alanine--glyoxylate aminotransferase 2-like  
 HMEL008352g1.t1 PI-PLC X domain-containing protein 3 isoform X2  
 HMEL013908g1.t1 cuticular protein CPH  
 HMEL011768g1.t1 uncharacterized protein LOC113392929

HMEL015709g1.t1 bromodomain-containing protein DDB\_G0280777-like  
 HMEL013974g1.t1 Phage tape measure minor tail protein  
 HMEL017841g1.t1 uncharacterized protein LOC112058059 isoform X2  
 HMEL005325g2.t1 bifunctional heparan sulfate N-deacetylase/N-sulfotransferase  
 HMEL020280g1.t1 alpha-N-acetylgalactosaminidase isoform X1  
 HMEL034493g1.t1 Cytochrome b  
 HMEL006003g1.t1 putative cuticle protein  
 HMEL004514g1.t1 uncharacterized protein LOC113393602 isoform X1  
 HMEL034424g1.t1 facilitated trehalose transporter Tret1-2 homolog  
 HMEL037388g1.t1 probable serine/threonine-protein kinase DDB\_G0278901  
 HMEL006404g1.t1 apoptosis-stimulating of p53 protein 1 isoform X3  
 HMEL009165g1.t1 uncharacterized protein LOC113398198 isoform X2  
 HMEL002923g1.t1 uncharacterized protein LOC113401355 isoform X1  
 HMEL010947g1.t1 23 kDa integral membrane protein-like  
 HMEL003998g1.t1 calcium-binding protein P-like  
 HMEL032882g1.t1 putative K06A9.1b  
 HMEL003233g1.t1 superoxide dismutase 6  
 HmelGSTd2.mrna GST  
 HMEL037252g1.t1 uncharacterized protein LOC112049536 isoform X2  
 HMEL014689g1.t2 protein sickie isoform X1  
 HMEL008985g1.t2 FK506-binding protein 5 isoform X4  
 HMEL013202g1.t1 WAP, Kazal, immunoglobulin, Kunitz and NTR domain-containing protein  
 HMEL009462g2.t1 E3 ubiquitin-protein ligase HECW2  
 HMEL002199g1.t1 probable serine/threonine-protein kinase kinX isoform X1  
 HMEL010221g1.t1 tubulin-specific chaperone cofactor E-like protein  
 HMEL032128g1.t1 myosin light chain kinase, smooth muscle-like  
 HMEL036492g1.t1 tropomyosin-2 isoform X5  
 HMEL035856g1.t1 ---NA---  
 HMEL007353g1.t1 troponin I isoform X10  
 HMEL030862g1.t1 C-C chemokine receptor type 7-like  
 HMEL012421g1.t1 ubiquitin-conjugating enzyme E2Q-like protein CG4502  
 HMEL031933g1.t1 endocuticle structural glycoprotein ABD-5-like  
 HMEL002124g1.t1 fatty acid-binding protein, muscle-like  
 HMEL005413g1.t1 chitin deacetylase 4  
 HMEL008976g1.t1 S-adenosylmethionine synthase isoform X1  
 HMEL009482g1.t1 larval cuticle protein A2B-like  
 HMEL034496g1.t1 filamin-A isoform X1  
 HMEL007083g1.t1 Valacyclovir hydrolase  
 HMEL016221g2.t1 organic cation transporter protein-like  
 HMEL036794g1.t1 reversion-inducing cysteine-rich protein with Kazal motifs  
 HMEL036164g1.t1 tetraspanin-5 isoform X1  
 HMEL011747g1.t1 aquaporin AQPAe.a  
 HMEL011207g1.t1 uridine phosphorylase 1-like  
 HMEL009009g1.t2 zinc transporter 2-like isoform X1

|                 |   |
|-----------------|---|
| HMEL008258g1.t1 | cysteine sulfinic acid decarboxylase              |
| HMEL011826g1.t1 | sarcoplasmic calcium-binding protein 1 isoform X1 |
| HMEL013806g1.t1 | chromobox protein homolog 1-like                  |
| HMEL032702g1.t3 | uncharacterized LOC106119066                      |
| HMEL035298g1.t1 | ester hydrolase C11orf54 homolog isoform X1       |
| HMEL005948g1.t1 | putative PDZ domain containing 3                  |
| HMEL003663g1.t1 | ---NA---  |
| HMEL012250g1.t1 | uncharacterized oxidoreductase TM_0325-like       |
| HMEL006296g1.t1 | neutral ceramidase                                |
| HMEL020979g1.t2 | probable ribonuclease ZC3H12B isoform X2          |
| HMEL034200g1.t1 | thymosin beta isoform X2                          |
| HMEL034328g1.t1 | organic cation transporter-like protein           |
| HMEL009383g1.t1 | cysteine-rich venom protein TEL1-like             |
| HMEL017127g1.t6 | myosin heavy chain, muscle isoform X5             |
| HMEL007151g1.t3 | Tropomyosin-1, isoforms 9A/A/B                    |
| HMEL032821g1.t2 | cytohesin-1 isoform X1                            |
| HMEL006578g1.t1 | unnamed protein product                           |
| HMEL015582g1.t1 | monocarboxylate transporter 13 isoform X1         |
| HMEL013913g1.t1 | ras association domain-containing protein 10      |
| HMEL009440g1.t2 | E3 ubiquitin-protein ligase TRIM37-like           |

**Upregulated genes in mouthparts of *H. melpomene* five-day-old females**

| ID              | Annotation  |
|-----------------|---|
| HMEL030925g1.t1 | protein disulfide-isomerase A6 homolog                    |
| HMEL030086g1.t1 | prostamide/prostaglandin F synthase-like isoform X1       |
| HMEL012378g1.t1 | coiled-coil domain-containing protein 43                  |
| HMEL032678g1.t1 | putative ATP-binding protein                              |
| HMEL006639g3.t1 | 2-iminobutanoate/2-iminopropanoate deaminase-like         |
| HMEL015724g1.t1 | acyl-CoA Delta(11) desaturase                             |
| HMEL031754g1.t1 | uncharacterized protein LOC115446869                      |
| HMEL005817g1.t1 | ---NA---  |
| HMEL036612g1.t1 | RNA-binding protein lark                                  |
| HMEL014926g1.t1 | dehydrodolichyl diphosphate synthase complex subunit Nus1 |
| HMEL002378g1.t1 | serine protease inhibitor dipetalogastin-like             |
| HMEL005349g1.t1 | uncharacterized protein LOC113401228                      |
| HMEL006553g1.t1 | zinc finger protein GLIS2-like                            |
| HMEL000006-RA   | trehalase 1a  |
| HMEL004443g2.t1 | ecdysteroid 22-kinase                                     |
| HMEL004986g1.t1 | ---NA---  |
| HMEL013596g1.t1 | peptidyl-prolyl cis-trans isomerase FKBP2                 |
| HMEL017402g1.t1 | uncharacterized protein LOC113401483                      |
| HMEL031234g1.t1 | RNA-binding protein 1 isoform X1                          |
| HMEL009425g1.t1 | peptidoglycan-recognition protein LB-like                 |
| HMEL031453g1.t1 | rhopilin-2 isoform X1                                     |
| HMEL013943g1.t1 | pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16 |

|                  |   |
|------------------|---|
| HMEL033780g1.t1  | epoxide hydrolase 4-like                                  |
| HmelUGT40V1.mrna | UGT   |
| HMEL010483g1.t1  | protein lethal(2)essential for life-like                  |
| HMEL010228-RA    | general odorant-binding protein 19d-like                  |
| HMEL010624g1.t1  | glycine-rich cell wall structural protein-like isoform X2 |
| HMEL012929g1.t1  | transmembrane protein 258                                 |
| HMEL018123-RA    | allergen Tha p 1-like                                     |
| HMEL010805g3.t2  | leishmanolysin-like peptidase isoform X2                  |
| HMEL006610g1.t1  | endoplasmin isoform X1                                    |
| HMEL006610g3.t1  | heat shock protein 90 cognate                             |
| HMEL005377g1.t1  | calreticulin  |
| HMEL013783g1.t1  | uncharacterized protein LOC113394807                      |
| HMEL033930g1.t1  | tenascin-like isoform X1                                  |
| HMEL016024g1.t1  | lysozyme 2-like   |
| HMEL016136g1.t1  | protein seele   |
| HMEL016743g1.t1  | cathepsin B   |
| HMEL034417g1.t1  | hypothetical protein RR46_02196                           |
| HMEL005364g1.t1  | cytochrome b5-related protein-like                        |
| HMEL033819g1.t2  | pericentriolar material 1 protein-like isoform X2         |
| HMEL033248g1.t1  | 15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like       |
| HMEL006116g2.t1  | clavesin-1  |
| HMEL031782g1.t1  | elongation of very long chain fatty acids protein 6       |
| HMEL016058g1.t1  | seminal fluid protein HACP044                             |
| HMEL014782g1.t1  | protein takeout-like                                      |
| HMEL031247g1.t1  | Heat shock 70 kDa protein cognate 3                       |
| HMEL005451g1.t1  | hydroxymethylglutaryl-CoA synthase 1                      |
| HMEL017233g1.t1  | Krueppel homolog 1-like                                   |
| HMEL033305g1.t1  | endoplasmic reticulum resident protein 29                 |
| HMEL033367g1.t1  | uncharacterized protein LOC113396892                      |
| HMEL015278g1.t1  | pancreatic triacylglycerol lipase-like                    |
| HMEL006853g1.t1  | alpha-tocopherol transfer protein-like                    |
| HMEL013160g1.t1  | facilitated trehalose transporter Tret1-like              |
| HMEL006231g1.t1  | very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase hpo-8  |
| HMEL016050g1.t1  | seminal fluid protein HACP044                             |
| HmOBP18          | olfactory binding protein                                 |
| HMEL013887g1.t1  | putative fatty acyl-CoA reductase CG5065                  |
| HMEL009950g1.t1  | ---NA---  |
| HMEL016237g1.t1  | circadian clock-controlled protein-like                   |
| HMEL011374g1.t1  | venom acid phosphatase Acph-1-like                        |
| HMEL005392g3.t1  | RNA exonuclease 4   |
| HMEL031991g1.t1  | cytochrome P450 4c3-like                                  |
| HmCSP23          | chemosensory protein                                      |
| HmelUGT33X2.mrna | UGT   |
| HMEL006217g1.t1  | cocoonase 4   |

|                  |   |
|------------------|---|
| HMEL005701g1.t1  | ---NA---  |
| HMEL016051g1.t1  | seminal fluid protein HACP044                       |
| HMEL010953g3.t1  | superoxide dismutase [Cu-Zn]-like                   |
| HMEL020720g1.t1  | cuticular protein RR-2 motif 125 precursor          |
| HMEL036651g1.t1  | seminal fluid protein HACP044                       |
| HMEL003599g1.t1  | circadian clock-controlled protein-like             |
| HMEL014821g1.t2  | aldose reductase-like isoform X2                    |
| HMEL004963g1.t1  | ---NA---  |
| HMEL022638g5.t1  | pancreatic lipase-related protein 2-like            |
| HMEL022638g4.t1  | pancreatic lipase-related protein 2-like            |
| HMEL011197g2.t1  | cuticle protein 1-like                              |
| HMEL013743g1.t1  | 15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like |
| HMEL036388g1.t1  | pancreatic lipase-related protein 2-like            |
| HMEL011197g1.t1  | cuticle protein 1                                   |
| HmelUGT33X1.mrna | UGT   |
| HMEL002554g1.t1  | hypothetical protein B5X24_HaOG204795               |

---



**Supplementary Table 10. Gene annotation of upregulated genes when comparing female and male antenna, leg, and mouthpart tissues in *H. cydno*.**

| Upregulated genes in antennae of <i>H. cydno</i> females |  |
|--|--|
| ID   | Annotation   |
| HMEL030967g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL031425g1.t1  | reverse transcriptase  |
| HMEL006748g1.t1  | odorant binding protein  |
| HMEL037919g1.t1  | uncharacterized protein LOC117989496                                   |
| HMEL003132g1.t2  | homeodomain-interacting protein kinase 2 isoform X1                    |
| HmOBP52  | olfactory binding protein  |
| HMEL005900g1.t1  | phospholipase ABHD3  |
| HMEL037464g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL009627g2.t1  | fibrinogen silencer-binding protein-like                               |
| HMEL012617g2.t1  | RNA-directed DNA polymerase from mobile element jockey                 |
| HMEL011715g1.t1  | ---NA---   |
| HMEL022241g1.t1  | fibrinogen silencer-binding protein-like                               |
| HMEL013052g1.t1  | mitochondrial 2-oxoglutarate/malate carrier protein-like               |
| HMEL015808g1.t1  | cuticle protein 19.8-like  |
| HMEL008898g2.t1  | retinal dehydrogenase 1-like   |
| HMEL017779g1.t2  | endonuclease-reverse transcriptase HmRTE-e01                           |
| HMEL015174g1.t2  | E3 ubiquitin-protein ligase UBR5 isoform X4                            |
| HMEL011210g1.t2  | protein CDV3 homolog   |
| HMEL006560g2.t1  | kynurenine formamidase isoform X2                                      |
| HMEL036861g1.t1  | hypothetical protein evm_011137  |
| HmelGSTs2.mrna   | GST  |
| HMEL010801g3.t1  | Probable RNA-directed DNA polymerase from transposon X-element         |
| HMEL034236g1.t1  | reverse transcriptase  |
| HMEL004422g1.t1  | synapse-associated protein of 47 kDa isoform X2                        |
| HMEL020420g2.t1  | RNA-directed DNA polymerase from mobile element jockey                 |
| HmOr5  | olfactory receptor   |
| HMEL015393g1.t1  | venom allergen 5-like  |
| HMEL013444g1.t1  | zinc finger protein 33B-like   |
| HMEL032637g1.t1  | hypothetical protein B5V51_2590  |
| HMEL008087g2.t1  | KRAB-A domain-containing protein 2-like                                |
| HMEL005852g1.t1  | solute carrier family 41 member 1-like isoform X1                      |
| HMEL016273g1.t2  | espin isoform X1   |
| HMEL031240g1.t1  | xin actin-binding repeat-containing protein 2 isoform X1               |
| HMEL008250g1.t1  | ribonucleoside-diphosphate reductase large chain-like                  |
| HMEL034121g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL010190g3.t1  | glucose dehydrogenase [FAD, quinone]                                   |
| HMEL035917g1.t1  | hypothetical protein evm_013800, partial                               |
| HMEL010658g1.t1  | uncharacterized protein LOC113398111 isoform X2                        |
| HMEL010190g2.t1  | glucose dehydrogenase [FAD, quinone]                                   |
| HMEL017144g1.t2  | Pancreatic lipase-related protein 1                                    |

|                 |  |
|-----------------|--|
| HMEL017092g1.t1 | esterase B1-like   |
| HMEL014190g1.t1 | ATP-dependent RNA helicase glh-1-like                                  |
| HMEL010189g1.t1 | glucose dehydrogenase [FAD, quinone]                                   |
| HMEL009816g1.t1 | BTB/POZ domain-containing protein KCTD1                                |
| HMEL006560g1.t1 | kynurenine formamidase isoform X2                                      |
| HMEL002212g1.t2 | chitin synthase A  |
| HMEL013444g2.t1 | zinc finger protein 37 homolog   |
| HMEL004850g2.t1 | dopamine N-acetyltransferase-like                                      |
| HMEL008902g1.t1 | PHD finger protein 14 isoform X1                                       |
| HMEL007679g1.t1 | Heterogeneous nuclear ribonucleoprotein K                              |
| HMEL030660g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like isoform X2 |
| HmelGSTs10.mrna | GST  |
| HmOBP16         | olfactory binding protein  |
| HMEL017139g2.t1 | RNA-directed DNA polymerase from mobile element jockey                 |
| HMEL036825g1.t1 | slowpoke-binding protein   |
| HMEL035792g1.t1 | Endonuclease-reverse transcriptase                                     |
| HMEL013527g1.t2 | calpain-C isoform X1   |
| HMEL014531g5.t1 | uncharacterized protein LOC113392023                                   |

---

**Upregulated genes in antennae of *H. cydno* males**

---

| ID              | Annotation  |
|-----------------|---|
| HMEL015230g1.t1 | seminal fluid protein CSSFP066  |
| HMEL017165g1.t2 | myb protein isoform X2  |
| HMEL022129g1.t2 | uncharacterized protein LOC113394950                                  |
| HMEL036487g1.t1 | aldehyde dehydrogenase, mitochondrial                                 |
| HMEL020557g3.t1 | lipopolysaccharide-induced tumor necrosis factor-alpha factor homolog |
| HMEL005501g1.t1 | ---NA---  |
| HMEL038071g1.t1 | PREDICTED: uncharacterized protein LOC106721535                       |
| HMEL003625g1.t1 | AGAP009955-PA-like protein  |
| HMEL006118g1.t1 | ---NA---  |
| HMEL033670g1.t1 | hypothetical protein KGM_205462                                       |
| HMEL033263g1.t1 | glucose dehydrogenase [FAD, quinone]-like                             |
| HMEL010199g1.t2 | ubiquitin-conjugating enzyme E2 G1                                    |
| HMEL004081g1.t3 | kinesin-like protein KIF13B isoform X6                                |
| HMEL002971g2.t1 | calpain-A-like isoform X2   |
| HMEL035526g1.t1 | peptide transporter family 1 isoform X1                               |
| HMEL008320g2.t1 | protein PFC0760c-like   |
| HMEL004422g1.t3 | synapse-associated protein of 47 kDa isoform X4                       |
| HMEL030213g1.t1 | alpha-tocopherol transfer protein-like isoform X2                     |
| HMEL033668g1.t1 | lysosomal-associated transmembrane protein 4A-like                    |
| HMEL036603g1.t1 | uncharacterized protein LOC110384334                                  |
| HMEL036439g1.t1 | tigger transposable element-derived protein 4-like                    |
| HMEL036651g1.t1 | seminal fluid protein HACP044   |
| HmOr59          | olfactory receptor  |
| HMEL011184g1.t1 | RYamide neuropeptides-like  |

| HmOr11  | olfactory receptor   |
|---|--|
| HmOr43  | olfactory receptor   |
| <b>Upregulated genes in legs of <i>H. cydno</i> females</b> |  |
| <b>ID</b>   | <b>Annotation</b>  |
| HMEL030967g1.t1   | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HMEL034733g1.t1   | odorant binding protein  |
| HMEL031425g1.t1   | reverse transcriptase  |
| HMEL037919g1.t1   | uncharacterized protein LOC117989496                                   |
| HMEL005900g1.t1   | phospholipase ABHD3  |
| HMEL012617g2.t1   | RNA-directed DNA polymerase from mobile element jockey                 |
| HMEL006576g1.t2   | early endosome antigen 1   |
| HMEL013052g1.t1   | mitochondrial 2-oxoglutarate/malate carrier protein-like               |
| HMEL037464g1.t1   | RNA-directed DNA polymerase from mobile element jockey-like isoform X1 |
| HmelGSTs2.mrna  | -  |
| HMEL022604-RA   | UDP-glucuronosyltransferase 2B15-like isoform X2                       |
| HMEL010624g1.t1   | glycine-rich cell wall structural protein-like isoform X2              |
| HMEL022241g1.t1   | fibrinogen silencer-binding protein-like                               |
| HMEL036861g1.t1   | hypothetical protein evm_011137  |
| HMEL035792g1.t1   | Endonuclease-reverse transcriptase                                     |
| HMEL009627g2.t1   | fibrinogen silencer-binding protein-like                               |
| HMEL030564g1.t1   | Microprocessor complex subunit DGCR8                                   |
| HMEL015808g1.t1   | cuticle protein 19.8-like  |
| HMEL007404g1.t1   | transmembrane protein 53-like  |
| HMEL013444g1.t1   | zinc finger protein 33B-like   |
| HmelUGT33AA2.mrna   | UGT  |
| HMEL016088g1.t1   | spermine oxidase-like  |
| HMEL030660g1.t1   | RNA-directed DNA polymerase from mobile element jockey-like isoform X2 |
| HmelGSTs10.mrna   | GST  |
| HMEL006748g1.t1   | odorant binding protein  |
| HMEL009816g1.t1   | BTB/POZ domain-containing protein KCTD1                                |
| HMEL013527g1.t1   | calpain-C isoform X1   |
| HMEL035524g1.t2   | ankyrin repeat domain-containing protein 11 isoform X2                 |
| HMEL012250g1.t1   | uncharacterized oxidoreductase TM_0325-like                            |
| HMEL011924g1.t1   | uncharacterized protein LOC114362364                                   |
| HMEL020420g2.t1   | RNA-directed DNA polymerase from mobile element jockey                 |
| HMEL030995g1.t1   | uncharacterized protein LOC116768575                                   |
| HMEL006341-RA   | scavenger receptor class B member 1-like isoform X1                    |
| HMEL008087g2.t1   | KRAB-A domain-containing protein 2-like                                |
| HMEL003156g1.t1   | alpha-tocopherol transfer protein-like                                 |
| HMEL032637g1.t1   | hypothetical protein B5V51_2590  |
| HMEL003179g1.t1   | ---NA---   |
| HMEL010801g3.t1   | Probable RNA-directed DNA polymerase from transposon X-element         |
| HMEL021415g1.t1   | endocuticle structural glycoprotein SgAbd-5-like                       |
| HMEL008564g1.t1   | peptide methionine sulfoxide reductase                                 |

| HMEL008564g1.t2   | peptide methionine sulfoxide reductase   |
|---|--|
| HMEL011561g1.t1   | uncharacterized LOC106109504 precursor   |
| HMEL011017g1.t1   | amino acid transporter AVT1D-like  |
| HMEL008039g1.t1   | solute carrier family 25 member 40-like isoform X1                             |
| HMEL030047g1.t1   | EF-hand calcium-binding domain-containing protein 2 isoform X1                 |
| HMEL006014g1.t1   | endocuticle structural glycoprotein SgAbd-5-like                               |
| HMEL030601g1.t1   | uncharacterized protein LOC112048264   |
| <b>Upregulated genes in legs of <i>H. cydno</i> males</b>         |  |
| ID  | Annotation   |
| HMEL020557g2.t1   | lipopolysaccharide-induced tumor necrosis factor-alpha factor homolog          |
| HMEL006484g1.t1   | ankyrin-3-like isoform X2  |
| HMEL006576g1.t1   | early endosome antigen 1   |
| HMEL002505g1.t1   | inactive dipeptidyl peptidase 10   |
| HMEL004713g3.t1   | methyltransferase-like protein 13  |
| HMEL003068g1.t2   | uncharacterized protein LOC113400921 isoform X2                                |
| HMEL014817g2.t2   | double-stranded RNA-specific editase Adar isoform X1                           |
| HMEL013638g1.t1   | flocculation protein FLO11   |
| HMEL031464g1.t1   | pancreatic triacylglycerol lipase-like   |
| HMEL014452g1.t1   | annexin B9 isoform X3  |
| HMEL012065g1.t1   | 4-aminobutyraldehyde dehydrogenase   |
| HMEL013584g2.t1   | leucine-rich repeat-containing protein 57 isoform X1                           |
| HMEL036603g1.t1   | uncharacterized protein LOC110384334   |
| HMEL035524g1.t1   | ankyrin repeat domain-containing protein 11 isoform X1                         |
| HMEL015940g1.t1   | arfGAP with SH3 domain, ANK repeat and PH domain-containing protein isoform X1 |
| HMEL013073g1.t2   | regulator of microtubule dynamics protein 1                                    |
| HMEL005501g1.t1   | ---NA---   |
| HMEL021035g1.t1   | ankyrin repeat and SAM domain-containing protein 1A-like isoform X1            |
| HMEL003388g2.t1   | hypothetical protein KGM_208401  |
| HMEL037987g1.t1   | ---NA---   |
| HMEL031830g1.t1   | folliculin-interacting protein 2 isoform X2                                    |
| HMEL033668g1.t1   | lysosomal-associated transmembrane protein 4A-like                             |
| <b>Upregulated genes in mouthparts of <i>H. cydno</i> females</b> |  |
| ID  | Annotation   |
| HMEL030967g1.t1   | RNA-directed DNA polymerase from mobile element jockey-like isoform X1         |
| HMEL031425g1.t1   | reverse transcriptase  |
| HMEL037919g1.t1   | uncharacterized protein LOC117989496   |
| HMEL005900g1.t1   | phospholipase ABHD3  |
| HMEL037464g1.t1   | RNA-directed DNA polymerase from mobile element jockey-like isoform X1         |
| HMEL032593g1.t1   | pupal cuticle protein 36-like  |
| HMEL011715g1.t1   | ---NA---   |
| HMEL037136g1.t1   | skin secretory protein xP2-like  |
| HMEL031734g1.t1   | ---NA---   |
| HMEL012617g2.t1   | RNA-directed DNA polymerase from mobile element jockey                         |

|                 |   |
|-----------------|---|
| HMEL013458g1.t1 | hemolin-like  |
| HMEL009627g2.t1 | fibrinogen silencer-binding protein-like  |
| HMEL013052g1.t1 | mitochondrial 2-oxoglutarate/malate carrier protein-like                          |
| HMEL003599g1.t1 | circadian clock-controlled protein-like   |
| HMEL003519g1.t1 | myrosinase 1-like   |
| HMEL010291g1.t1 | Bm8 interacting protein 2d-2  |
| HmelGSTs2.mrna  | GST   |
| HMEL014783g1.t1 | circadian clock-controlled protein-like   |
| HMEL030564g1.t1 | Microprocessor complex subunit DGCR8  |
| HMEL017436g1.t1 | cuticular protein glycine-rich 20   |
| HMEL036843g1.t1 | chymotrypsin inhibitor  |
| HMEL003519g2.t1 | myrosinase 1-like   |
| HMEL006748g1.t1 | odorant binding protein   |
| HMEL037614g1.t1 | cuticular protein CPH   |
| HMEL031921g1.t1 | larval cuticle protein 1-like   |
| HMEL007254g1.t1 | prisilkin-39-like   |
| HMEL034644g1.t1 | facilitated trehalose transporter Tret1-like                                      |
| HMEL035792g1.t1 | Endonuclease-reverse transcriptase  |
| HMEL010801g3.t1 | Probable RNA-directed DNA polymerase from transposon X-element                    |
| HMEL030660g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like isoform X2            |
| HMEL003835g1.t1 | endocuticle structural glycoprotein SgAbd-1-like                                  |
| HMEL020420g2.t1 | RNA-directed DNA polymerase from mobile element jockey                            |
| HMEL022241g1.t1 | fibrinogen silencer-binding protein-like  |
| HMEL011477g1.t1 | dynactin subunit 2  |
| HMEL013444g1.t1 | zinc finger protein 33B-like  |
| HMEL007354g1.t1 | twitchin isoform X2   |
| HMEL017037g1.t2 | solute carrier family 2, facilitated glucose transporter member 1-like isoform X1 |
| HMEL008087g2.t1 | KRAB-A domain-containing protein 2-like   |
| HMEL012685g1.t1 | uncharacterized LOC106108503 precursor  |
| HMEL007002g1.t1 | larval cuticle protein 1-like   |
| HMEL021488g1.t1 | prostaglandin reductase 1-like  |
| HMEL013184g2.t2 | coatomer subunit alpha isoform X2   |
| HMEL008178g1.t1 | flavin reductase (NADPH)  |
| HMEL009296g1.t1 | activating signal cointegrator 1 complex subunit 2 homolog                        |
| HmelGSTs1.mrna  | GST   |
| HMEL036861g1.t1 | hypothetical protein evm_011137   |
| HMEL035902g1.t1 | ---NA---  |
| HMEL012150g1.t1 | solute carrier family 22 member 13-like   |
| HMEL002899-RA   | cuticular protein CPG24   |
| HMEL013164g1.t1 | facilitated trehalose transporter Tret1-like                                      |
| HmelGSTs10.mrna | GST   |
| HMEL030029g1.t1 | Probable RNA-directed DNA polymerase from transposon BS                           |
| HMEL002648g1.t1 | complex III assembly factor LYRM7   |

| HMEL035990g1.t1   | Transposase-like protein  |
|---|---|
| HMEL011646g1.t1   | centrosomal protein of 164 kDa-like                                 |
| HMEL010373g1.t1   | uncharacterized LOC106113675 precursor                              |
| HMEL021415g1.t1   | endocuticle structural glycoprotein SgAbd-5-like                    |
| HMEL007347g1.t1   | transcriptional enhancer factor TEF-1 isoform X1                    |
| HMEL037483g1.t1   | phosphotriesterase-related protein                                  |
| HMEL003179g1.t1   | ---NA---  |
| HMEL016408g1.t1   | C-type lectin 4 precursor   |
| HMEL031240g1.t1   | xin actin-binding repeat-containing protein 2 isoform X1            |
| HMEL002685g1.t1   | chromatin assembly factor 1 subunit B                               |
| HMEL010801g2.t1   | Nucleic-acid-binding protein from transposon X-element              |
| HMEL017435g2.t1   | retinol dehydrogenase 13-like                                       |
| HMEL009816g1.t1   | BTB/POZ domain-containing protein KCTD1                             |
| <b>Upregulated genes in mouthparts of <i>H. cydno</i> males</b> |   |
| ID  | Annotation  |
| HMEL036487g1.t1   | aldehyde dehydrogenase, mitochondrial                               |
| HMEL035821g1.t1   | zinc finger CCCH domain-containing protein 10                       |
| HMEL035526g1.t2   | peptide transporter family 1 isoform X2                             |
| HMEL034406g1.t1   | circadian clock-controlled protein-like                             |
| HMEL034439g1.t3   | calcium-dependent secretion activator isoform X1                    |
| HMEL011221g1.t1   | angiotensin-converting enzyme-like                                  |
| HMEL012065g1.t1   | 4-aminobutyraldehyde dehydrogenase                                  |
| HMEL038072g1.t1   | putative serine carboxypeptidase CPVL                               |
| HMEL038041g1.t1   | 4-coumarate--CoA ligase 1-like                                      |
| HMEL005629g1.t1   | probable cytochrome P450 9f2  |
| HMEL015981g1.t1   | uncharacterized protein LOC113401061                                |
| HMEL032427g1.t1   | ---NA---  |
| HMEL030213g1.t1   | alpha-tocopherol transfer protein-like isoform X2                   |
| HMEL011026g1.t1   | protein cycle isoform X2  |
| HMEL032925g1.t1   | probable cytochrome P450 9f2  |
| HMEL008325g1.t2   | 5-AMP-activated protein kinase catalytic subunit alpha-2 isoform X1 |
| HMEL003979g1.t3   | period circadian protein isoform X8                                 |
| HMEL021035g1.t1   | ankyrin repeat and SAM domain-containing protein 1A-like isoform X1 |
| HMEL036644g1.t1   | ---NA---  |
| HMEL036644g1.t2   | ---NA---  |
| HMEL022669-RA   | UDP-glucuronosyltransferase 2B17-like                               |
| HMEL013184g2.t1   | coatamer subunit alpha isoform X1                                   |

**Supplementary Table 11. Gene annotation of upregulated genes when comparing female and male antenna, leg, and mouthpart tissues in *H. melpomene*.**

| Upregulated genes in antennae of <i>H. melpomene</i> females |   |
|--|---|
| ID   | Annotation  |
| HMEL034101g1.t1  | uncharacterized protein K02A2.6-like isoform X1             |
| HMEL034176g1.t1  | PREDICTED: uncharacterized protein K02A2.6-like isoform X1  |
| HMEL004446g1.t1  | uncharacterized protein LOC116768575                        |
| HMEL014308g1.t1  | urbain precursor  |
| HMEL031808g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like |
| HMEL006748g1.t1  | odorant binding protein                                     |
| HMEL037493g1.t1  | lipase member H-A-like                                      |
| HMEL005285g1.t1  | putative sporulation protein YqfD                           |
| HMEL003209g1.t2  | putative sodium-dependent multivitamin transporter          |
| HMEL007059g7.t1  | 3-oxoacyl-[acyl-carrier-protein] reductase FabG-like        |
| HMEL011873g2.t1  | arylsulfatase B-like  |
| HMEL034126g1.t1  | uncharacterized protein LOC112053984                        |
| HMEL005285g2.t1  | trace amine-associated receptor 1                           |
| HMEL011355g1.t1  | spindle pole body component 110 isoform X1                  |
| HMEL015526g1.t1  | dentin sialophosphoprotein                                  |
| HMEL004535g1.t1  | skin secretory protein xP2-like                             |
| HMEL009710g1.t1  | alpha-tocopherol transfer protein-like                      |
| HMEL008412g1.t1  | membrane alanyl aminopeptidase-like                         |
| HMEL004850g2.t1  | dopamine N-acetyltransferase-like                           |
| HMEL007135g1.t1  | ---NA---  |
| HmelGSTs9.mrna   | GST   |
| HMEL002722g1.t1  | glycine-rich cell wall structural protein                   |
| HMEL036862g1.t1  | toll-like receptor 2  |
| HMEL033978g1.t1  | serine-rich adhesin for platelets-like isoform X1           |
| HMEL022537g1.t1  | glucose dehydrogenase [FAD, quinone]                        |
| HMEL003022g1.t1  | xanthine dehydrogenase 1-like                               |
| HMEL005780g1.t1  | lipase member H-A-like                                      |
| HMEL020539g1.t1  | cytochrome P450 6B1-like                                    |
| HMEL034861g1.t1  | androgen-dependent TFPI-regulating protein-like             |
| HMEL011130g1.t1  | SERAC1 protein  |
| HMEL032765g1.t1  | ---NA---  |
| HMEL012366g1.t1  | uncharacterized protein LOC113394873                        |
| HMEL016237g1.t1  | circadian clock-controlled protein-like                     |
| HMEL014821g1.t2  | aldose reductase-like isoform X2                            |
| HMEL034605g1.t2  | uncharacterized LOC106106657 precursor                      |
| HMEL003671g1.t1  | putative cuticle protein                                    |
| HMEL011192g1.t1  | putative ammonium transporter 2                             |
| HMEL014492g1.t1  | phospholipase A1-like                                       |
| HMEL009816g1.t1  | BTB/POZ domain-containing protein KCTD1                     |
| HMEL017107g1.t1  | transmembrane protease serine 9-like                        |

|                  |  |
|------------------|--|
| HMEL017144g1.t1  | Pancreatic lipase-related protein 1                      |
| HMEL022259g3.t1  | ---NA---   |
| HMEL013136g4.t1  | myrosinase 1-like  |
| HMEL006174g2.t1  | uncharacterized protein LOC113402709                     |
| HMEL014628g1.t1  | alpha-tocopherol transfer protein-like                   |
| HMEL034521g1.t1  | unnamed protein product                                  |
| HMEL016015g1.t1  | fatty-acid amide hydrolase 2-like                        |
| HMEL018039g1.t1  | CCR4-NOT transcription complex subunit 7-like isoform X1 |
| HMEL010344g1.t1  | protein obstructor-E isoform X1                          |
| HmOBP39          | olfactory binding protein                                |
| HMEL010953g3.t1  | superoxide dismutase [Cu-Zn]-like                        |
| HMEL032483g1.t1  | endonuclease-reverse transcriptase                       |
| HMEL002212g1.t2  | chitin synthase A  |
| HMEL013908g2.t1  | cuticular protein CPH                                    |
| HMEL016015g4.t1  | fatty-acid amide hydrolase 2-like                        |
| HMEL010348g1.t1  | protein obstructor-E-like                                |
| HmelUGT40V3.mrna | UGT  |
| HMEL012250g1.t1  | uncharacterized oxidoreductase TM_0325-like              |
| HMEL006003g1.t1  | putative cuticle protein                                 |
| HMEL003835g1.t1  | endocuticle structural glycoprotein SgAbd-1-like         |
| HmelGSTe3.mrna   | GST  |

---

**Upregulated genes in antennae of *H. melpomene* males**

---

| ID              | Annotation  |
|-----------------|---|
| HMEL002739g1.t1 | cuticle protein 16.5  |
| HMEL006578g1.t1 | unnamed protein product   |
| HMEL008072g1.t1 | uncharacterized protein LOC113398429                                    |
| HMEL002108g1.t1 | glucose-dependent insulinotropic receptor-like isoform X1               |
| HMEL032619g1.t1 | ecdysteroid 22-kinase   |
| HMEL015999g1.t2 | Ig-like and fibronectin type-III domain-containing protein 2 isoform X1 |
| HMEL031830g1.t2 | folliculin-interacting protein 2 isoform X1                             |
| HMEL004916g1.t1 | neuropathy target esterase sws isoform X3                               |
| HMEL034595g1.t1 | zinc transporter ZIP13 homolog  |
| HMEL036941g1.t1 | terminal nucleotidyltransferase 5C isoform X2                           |
| HMEL037738g1.t1 | uncharacterized LOC106121242  |
| HMEL033388g1.t1 | uncharacterized protein LOC113394141 isoform X2                         |
| HMEL007866g1.t2 | protein goliath isoform X1  |
| HMEL012587-RA   | probable cytochrome P450 49a1   |
| HMEL008241g1.t1 | serine/threonine-protein kinase minibrain isoform X1                    |
| HMEL037660g1.t1 | arf-GAP with dual PH domain-containing protein 1-like isoform X1        |
| HMEL031464g1.t1 | pancreatic triacylglycerol lipase-like                                  |
| HMEL034439g1.t3 | calcium-dependent secretion activator isoform X1                        |
| HMEL007308g1.t1 | low-density lipoprotein receptor-like isoform X2                        |
| HMEL032925g1.t2 | probable cytochrome P450 9f2  |
| HMEL033910g1.t1 | cyclic AMP response element-binding protein A isoform X1                |



|                  |   |
|------------------|---|
| HMEL017189g2.t1  | ---NA---  |
| HMEL010735g1.t2  | BCL2/adenovirus E1B 19 kDa protein-interacting protein 3 isoform X1 |
| HMEL004608g2.t1  | probable cytochrome P450 49a1                                       |
| HMEL017061g2.t1  | hypothetical protein RR46_04165                                     |
| HMEL007773g2.t1  | neuronal calcium sensor 2   |
| HMEL013424g1.t1  | transcription initiation factor TFIID subunit 7-like                |
| HMEL009754g1.t1  | hexokinase type 2 isoform X1  |
| HMEL003217g1.t1  | molybdenum cofactor sulfurase                                       |
| HMEL015100g2.t1  | suppressor of cytokine signaling 2-like isoform X1                  |
| HMEL025038g2.t2  | voltage-gated potassium channel subunit beta-2 isoform X5           |
| HMEL015482g1.t3  | calcium-activated potassium channel slowpoke isoform X22            |
| HMEL015497g1.t1  | myocyte-specific enhancer factor 2 isoform X1                       |
| HMEL013370g2.t1  | myc proto-oncogene protein  |
| HMEL013901g1.t1  | 3-phosphoinositide-dependent protein kinase 1 isoform X1            |
| HMEL012199g2.t1  | WD repeat-containing protein 47 isoform X2                          |
| HMEL017189g1.t1  | monocarboxylate transporter 12                                      |
| HmelUGT40W2.mrna | UGT   |
| HMEL004332g1.t1  | putative Insulin receptor precursor                                 |
| HMEL032925g1.t1  | probable cytochrome P450 9f2  |
| HMEL015174g1.t4  | E3 ubiquitin-protein ligase UBR5 isoform X4                         |
| HMEL036619g1.t1  | sialin  |
| HMEL012649g1.t1  | putative secreted peptide 30  |
| HMEL005250g1.t1  | hexokinase-2-like   |
| HMEL004243g1.t2  | Calcium-independent phospholipase A2-gamma                          |
| HMEL003209g1.t1  | putative sodium-dependent multivitamin transporter                  |
| HMEL014774g1.t1  | uncharacterized protein LOC113395164                                |
| HMEL014094g1.t1  | insulin-like receptor   |
| HMEL032926g1.t1  | senecionine N-oxygenase isoform X1                                  |

**Upregulated genes in legs of *H. melpomene* females**

| ID              | Annotation  |
|-----------------|---|
| HMEL034101g1.t1 | uncharacterized protein K02A2.6-like isoform X1             |
| HMEL034176g1.t1 | PREDICTED: uncharacterized protein K02A2.6-like isoform X1  |
| HMEL004446g1.t1 | uncharacterized protein LOC116768575                        |
| HMEL031808g1.t1 | RNA-directed DNA polymerase from mobile element jockey-like |
| HMEL003661g1.t1 | ---NA---  |
| HMEL005596-RA   | ejaculatory bulb-specific protein 3-like                    |
| HMEL017148-RA   | cytochrome P450 4c3-like                                    |
| HMEL031926g1.t1 | endocuticle structural glycoprotein SgAbd-8-like            |
| HMEL009710g1.t1 | alpha-tocopherol transfer protein-like                      |
| HMEL010953g3.t1 | superoxide dismutase [Cu-Zn]-like                           |
| HMEL002186g1.t1 | putative protease inhibitor 4                               |
| HMEL007404g1.t1 | transmembrane protein 53-like                               |
| HMEL014492g1.t1 | phospholipase A1-like                                       |
| HMEL007135g1.t1 | ---NA---  |

|                  |  |
|------------------|--|
| HMEL010344g1.t1  | protein obstructor-E isoform X1  |
| HMEL006744g1.t1  | circadian clock-controlled protein-like                                  |
| HMEL013159g1.t1  | facilitated trehalose transporter Tret1-like                             |
| HMEL006379g1.t1  | Neuronal pentraxin-2   |
| HMEL006231g1.t1  | very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase hpo-8                 |
| HMEL004850g2.t1  | dopamine N-acetyltransferase-like  |
| HMEL014531g11.t1 | uncharacterized protein LOC113392023                                     |
| HMEL033734g1.t1  | ---NA---   |
| HMEL002001g1.t1  | hypothetical protein B5V51_7220  |
| HMEL015171g2.t1  | glutamine--fructose-6-phosphate aminotransferase [isomerizing] 1-like    |
| HmelGSTd1.mrna   | GST  |
| HMEL030667g1.t1  | nose resistant to fluoxetine protein 6-like                              |
| HMEL013672g1.t1  | juvenile hormone epoxide hydrolase-like                                  |
| HMEL034126g1.t1  | uncharacterized protein LOC112053984                                     |
| HMEL008541g1.t1  | protein app1-like  |
| HMEL012250g1.t1  | uncharacterized oxidoreductase TM_0325-like                              |
| HMEL033930g1.t1  | tenascin-like isoform X1   |
| HMEL036393g1.t1  | alpha-tocopherol transfer protein-like                                   |
| HMEL036865g1.t1  | protein msta-like isoform X1   |
| HMEL005413g1.t1  | chitin deacetylase 4   |
| HMEL011340g2.t1  | SET domain-containing protein SmydA-8-like                               |
| HMEL008325g1.t2  | 5-AMP-activated protein kinase catalytic subunit alpha-2 isoform X1      |
| HMEL013469g3.t1  | tryptase beta-2-like   |
| HMEL012499-RA    | Serine proteinase stubble  |
| HMEL010201g2.t1  | uncharacterized protein LOC113395223 isoform X1                          |
| HMEL006214g1.t1  | flocculation protein FLO11 isoform X1                                    |
| HMEL015404g1.t1  | la1-like protein 15 isoform X4   |
| HMEL032503g1.t1  | tctex1 domain-containing protein 1-A-like                                |
| HMEL005468g1.t1  | uncharacterized LOC106124634 precursor                                   |
| HMEL017583g1.t2  | integrin alpha-PS1 isoform X2  |
| HMEL006014g1.t1  | endocuticle structural glycoprotein SgAbd-5-like                         |
| HmelGSTe3.mrna   | GST  |
| HMEL034521g1.t1  | unnamed protein product  |
| HMEL032158g1.t1  | uncharacterized protein LOC113398144                                     |
| HmelGSTs9.mrna   | GST  |
| HMEL005109g1.t1  | cadherin-23  |
| HMEL008386g1.t1  | G kinase-anchoring protein 1-like isoform X1                             |
| HMEL035928g1.t1  | unnamed protein product  |
| HMEL033494g1.t1  | spectrin beta chain isoform X3   |
| HMEL017435g2.t1  | retinol dehydrogenase 13-like  |
| HMEL017436g1.t1  | cuticular protein glycine-rich 20  |
| HMEL011032g1.t1  | cubilin-like   |
| HMEL010826g2.t1  | titin-like isoform X2  |
| HMEL013325g2.t1  | delta and Notch-like epidermal growth factor-related receptor isoform X1 |

| HMEL017127g1.t9   | Myosin heavy chain, muscle   |
|---|--|
| HMEL009671g1.t1   | putative protease inhibitor 4  |
| HMEL014628g1.t1   | alpha-tocopherol transfer protein-like   |
| HMEL032615g1.t1   | nose resistant to fluoxetine protein 6-like  |
| HMEL015526g1.t1   | dentin sialophosphoprotein   |
| HMEL016204g1.t1   | delta-1-pyrroline-5-carboxylate synthase isoform X1  |
| HMEL031263g1.t3   | uncharacterized protein LOC116775225 isoform X6  |
| HMEL003114-RA   | ejaculatory bulb-specific protein 3-like   |
| HMEL036246g1.t1   | uncharacterized protein LOC113402398   |
| HMEL036554g1.t1   | uncharacterized protein LOC117989496   |
| HMEL030922g1.t1   | probable peroxisomal acyl-coenzyme A oxidase 1   |
| HMEL005741g2.t3   | cyclin-dependent kinase 11B isoform X1   |
| HMEL012546g3.t1   | sulfotransferase 1C4-like  |
| HMEL002369g1.t1   | nose resistant to fluoxetine protein 6-like  |
| HMEL013116g1.t1   | glucose dehydrogenase [FAD, quinone]-like  |
| HMEL033982g1.t1   | proton-coupled amino acid transporter-like protein pathetic                                |
| HMEL007261g2.t1   | E3 ubiquitin-protein ligase ZNRF2 isoform X2   |
| <b>Upregulated genes in legs of <i>H. melpomene</i> males</b> |  |
| ID  | Annotation   |
| HMEL002564-RA   | death-associated inhibitor of apoptosis 1-like isoform X2                                  |
| HMEL009791g1.t2   | Protein PRRC2A   |
| HMEL004713g1.t1   | SUN domain-containing ossification factor isoform X2                                       |
| HMEL016113g1.t2   | ATP-dependent zinc metalloprotease YME1 homolog isoform X3                                 |
| HMEL002053g1.t1   | hypothetical protein   |
| HMEL006500g1.t1   | protein CREBRF homolog   |
| HMEL021955g1.t1   | transmembrane protease serine 9-like   |
| HMEL032805g1.t1   | G protein-activated inward rectifier potassium channel 3-like isoform X2                   |
| HMEL037110g1.t1   | calcium-activated potassium channel slowpoke isoform X13                                   |
| HMEL003909g1.t1   | nuclear receptor-binding protein homolog   |
| HMEL003212g1.t2   | uncharacterized protein LOC113401289 isoform X9  |
| HMEL032925g1.t2   | probable cytochrome P450 9f2   |
| HMEL030920g1.t1   | U4/U6 small nuclear ribonucleoprotein Prp31  |
| HMEL033910g1.t1   | cyclic AMP response element-binding protein A isoform X1                                   |
| HMEL012199g1.t1   | WD repeat-containing protein 47 isoform X3   |
| HMEL017805g1.t1   | myb-like protein D   |
| HMEL008455g1.t1   | amyloid beta A4 precursor protein-binding family B member 1-interacting protein isoform X1 |
| HMEL008976g1.t2   | S-adenosylmethionine synthase  |
| HMEL035507g1.t1   | proton-coupled amino acid transporter-like protein pathetic                                |
| HMEL015545g1.t1   | putative tricarboxylate transport protein, mitochondrial                                   |
| HMEL037092g1.t2   | histone-lysine N-methyltransferase 2C-like   |
| HMEL032805g1.t3   | G protein-activated inward rectifier potassium channel 3-like isoform X3                   |
| HMEL006630g1.t1   | proton-coupled amino acid transporter-like protein pathetic                                |
| HMEL005250g1.t1   | hexokinase-2-like  |

HMEL006797g1.t1 probable G-protein coupled receptor Mth-like 3 isoform X1  
 HMEL006578g1.t1 unnamed protein product  
 HMEL034424g1.t1 facilitated trehalose transporter Tret1-2 homolog  
 HMEL010947g1.t1 23 kDa integral membrane protein-like  
 HMEL036941g1.t1 terminal nucleotidyltransferase 5C isoform X2  
 HMEL004608g1.t1 probable cytochrome P450 49a1  
 HMEL009744g1.t1 PI-PLC X domain-containing protein 3-like isoform X2  
 HMEL030293g1.t1 hypothetical protein evm\_013452  
 HMEL012587-RA probable cytochrome P450 49a1  
 HMEL017127g1.t7 myosin heavy chain, muscle isoform X24  
 HMEL015859g1.t1 proteoglycan 4  
 HMEL002163g1.t1 venom carboxylesterase-6-like  
 HMEL003351g1.t2 multidrug resistance-associated protein 4-like isoform X1  
 HMEL021096g1.t1 protein lifeguard 1-like isoform X2  
 HMEL030677g1.t1 P94 protein  
 HMEL031464g1.t1 pancreatic triacylglycerol lipase-like  
 HmelUGT40W2.mrna UGT  
 HMEL003365g1.t1 alpha-tocopherol transfer protein-like  
 HMEL013370g2.t1 myc proto-oncogene protein  
 HmelGSTo7.mrna GST  
 HMEL016920g2.t1 lipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, mitochondrial  
 HMEL034512g1.t2 potassium voltage-gated channel protein Shal isoform X2  
 HMEL012199g2.t1 WD repeat-containing protein 47 isoform X2  
 HMEL013584g2.t1 leucine-rich repeat-containing protein 57 isoform X1  
 HMEL011922g1.t1 arf-GAP with coiled-coil, ANK repeat and PH domain-containing protein 2 isoform X1  
 HMEL005230g1.t1 acyl-CoA Delta(11) desaturase-like  
 HMEL015482g1.t3 calcium-activated potassium channel slowpoke isoform X22  
 HMEL005408g2.t2 elongation of very long chain fatty acids protein AAEL008004 isoform X2  
 HMEL003351g1.t1 multidrug resistance-associated protein 4-like isoform X2  
 HMEL012674g4.t1 exonuclease GOR-like isoform X1  
 HMEL004628g1.t1 ---NA---  
 HMEL009658g1.t2 beta-arrestin-1  
 HMEL017687g1.t1 neprilysin-4-like isoform X1  
 HMEL004608g2.t1 probable cytochrome P450 49a1  
 HMEL003131g1.t1 cyclin-dependent kinase inhibitor 1-like  
 HMEL006484g1.t1 ankyrin-3-like isoform X2  
 HMEL032663g1.t1 forkhead box protein K1  
 HMEL013124g1.t1 facilitated trehalose transporter Tret1-like  
 HMEL009754g1.t1 hexokinase type 2 isoform X1  
 HMEL017583g1.t1 integrin alpha-PS1 isoform X1  
 HMEL020979g1.t2 probable ribonuclease ZC3H12B isoform X2  
 HMEL020073g1.t1 adiponectin receptor protein

|                 |   |
|-----------------|---|
| HMEL036619g1.t1 | sialin  |
| HMEL003398g1.t2 | irregular chiasm C-roughest protein-like isoform X1                 |
| HMEL002108g1.t1 | glucose-dependent insulinotropic receptor-like isoform X1           |
| HMEL017189g2.t1 | ---NA---  |
| HMEL030678g1.t1 | Early 94 kDa protein  |
| HMEL008241g1.t1 | serine/threonine-protein kinase minibrain isoform X1                |
| HMEL014249g1.t1 | ion transport peptide-like isoform X1                               |
| HMEL005933-RA   | cytochrome P450 4C1-like  |
| HMEL031830g1.t1 | folliculin-interacting protein 2 isoform X2                         |
| HMEL008860g1.t1 | UPF0518 protein GH13096 isoform X1                                  |
| HMEL016978g1.t1 | Type I inositol-1,4,5-trisphosphate 5-phosphatase                   |
| HMEL015100g2.t1 | suppressor of cytokine signaling 2-like isoform X1                  |
| HMEL017044g1.t2 | E3 ubiquitin-protein ligase HECW2 isoform X1                        |
| HMEL015321g1.t1 | phosphoserine phosphatase isoform X1                                |
| HMEL013901g1.t1 | 3-phosphoinositide-dependent protein kinase 1 isoform X1            |
| HMEL004332g1.t1 | putative Insulin receptor precursor                                 |
| HMEL008325g1.t1 | 5-AMP-activated protein kinase catalytic subunit alpha-2 isoform X2 |
| HMEL009290-RA   | protein peste-like  |
| HMEL017709g1.t2 | adipose triglyceride lipase   |
| HMEL030990g1.t1 | actin   |
| HMEL012649g1.t1 | putative secreted peptide 30  |
| HMEL014094g1.t1 | insulin-like receptor   |
| HMEL010735g1.t1 | BCL2/adenovirus E1B 19 kDa protein-interacting protein 3 isoform X2 |

#### Upregulated genes in mouthparts of *H. melpomene* females

| ID               | Annotation  |
|------------------|---|
| HMEL034101g1.t1  | uncharacterized protein K02A2.6-like isoform X1             |
| HMEL034176g1.t1  | PREDICTED: uncharacterized protein K02A2.6-like isoform X1  |
| HMEL031808g1.t1  | RNA-directed DNA polymerase from mobile element jockey-like |
| HMEL022638g5.t1  | pancreatic lipase-related protein 2-like                    |
| HMEL006850g1.t2  | NADH-cytochrome b5 reductase 2 isoform X1                   |
| HMEL036651g1.t1  | seminal fluid protein HACP044                               |
| HMEL006748g1.t1  | odorant binding protein                                     |
| HmelUGT40V1.mrna | UGT   |
| HMEL010953g3.t1  | superoxide dismutase [Cu-Zn]-like                           |
| HMEL003599g1.t1  | circadian clock-controlled protein-like                     |
| HMEL033367g1.t1  | uncharacterized protein LOC113396892                        |
| HMEL016051g1.t1  | seminal fluid protein HACP044                               |
| HMEL011032g1.t1  | cubilin-like  |
| HMEL004525g1.t1  | carboxypeptidase inhibitor                                  |
| HMEL031443g1.t1  | myrosinase 1-like   |
| HMEL011062g1.t1  | alpha-tocopherol transfer protein-like                      |
| HMEL035254g1.t3  | paxillin isoform X2   |
| HmelGSTe3.mrna   | GST   |
| HMEL014483g1.t1  | myrosinase 1-like   |

|                 |  |
|-----------------|--|
| HMEL037186g1.t1 | gelsolin, cytoplasmic-like                               |
| HmelGSTs9.mrna  | GST  |
| HMEL013469g3.t1 | tryptase beta-2-like                                     |
| HMEL004395g1.t1 | cation channel sperm-associated protein 1                |
| HMEL008770-RA   | cytochrome P450 4C1-like                                 |
| HMEL036873g1.t1 | integrin beta-nu   |
| HMEL011741g1.t1 | Uncharacterized protein OBRU01_06617                     |
| HMEL006231g1.t1 | very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase hpo-8 |
| HMEL036246g1.t1 | uncharacterized protein LOC113402398                     |
| HMEL034417g1.t1 | hypothetical protein RR46_02196                          |
| HMEL033780g1.t1 | epoxide hydrolase 4-like                                 |
| HMEL008599g1.t1 | clavesin-1-like isoform X2                               |
| HMEL017484g1.t1 | acetyl-CoA acetyltransferase, mitochondrial isoform X1   |
| HMEL009440g1.t1 | E3 ubiquitin-protein ligase TRIM37-like                  |
| HmelGSTs1.mrna  | GST  |
| HMEL008809g1.t1 | rhythmically expressed gene 2 protein-like               |

---

**Upregulated genes in mouthparts of *H. melpomene* males**

---

| ID              | Annotation  |
|-----------------|---|
| HMEL017437g1.t1 | chondroitin sulfate synthase 1                                      |
| HMEL030919g1.t1 | Uncharacterized protein OBRU01_02090                                |
| HMEL004113g1.t1 | ornithine decarboxylase 1-like                                      |
| HMEL008824g1.t2 | 5-AMP-activated protein kinase subunit gamma-2-like isoform X1      |
| HMEL034383g1.t1 | DNL-type zinc finger protein-like                                   |
| HMEL006500g1.t1 | protein CREBRF homolog  |
| HMEL006157g5.t1 | ---NA---  |
| HMEL006690g2.t1 | sodium/hydrogen exchanger 7 isoform X3                              |
| HMEL017093g2.t1 | esterase B1-like  |
| HMEL013424g1.t1 | transcription initiation factor TFIID subunit 7-like                |
| HMEL020797g1.t1 | Vacuolar H <sup>+</sup> ATPase 100kD subunit 1                      |
| HMEL010947g1.t1 | 23 kDa integral membrane protein-like                               |
| HMEL030865g1.t3 | sodium/hydrogen exchanger 7 isoform X3                              |
| HMEL006799g1.t1 | protein 60A   |
| HMEL005934g1.t1 | glutaminase liver isoform, mitochondrial isoform X1                 |
| HMEL004113g2.t1 | ---NA---  |
| HMEL012221g1.t2 | large proline-rich protein bag6-like isoform X2                     |
| HMEL003131g1.t1 | cyclin-dependent kinase inhibitor 1-like                            |
| HMEL037514g1.t1 | cyclin-dependent kinase 14 isoform X2                               |
| HMEL034764g1.t1 | mitogen-activated protein kinase kinase kinase 15 isoform X1        |
| HMEL011418g1.t1 | putative myb transcription factor                                   |
| HMEL009677g1.t1 | cyclin J  |
| HMEL037352g1.t1 | paired amphipathic helix protein Sin3a isoform X1                   |
| HMEL034595g1.t1 | zinc transporter ZIP13 homolog                                      |
| HMEL010735g1.t2 | BCL2/adenovirus E1B 19 kDa protein-interacting protein 3 isoform X1 |
| HMEL005381g1.t2 | ubiquitin carboxyl-terminal hydrolase 31                            |

HMEL035809g1.t1 epidermal growth factor receptor isoform X1  
 HMEL036869g1.t2 early endosome antigen 1-like isoform X2  
 HMEL032824g1.t1 heme peroxidase 2  
 HMEL002163g1.t1 venom carboxylesterase-6-like  
 HMEL032216g1.t1 stromal interaction molecule homolog isoform X1  
 HMEL032242g1.t1 hypothetical protein KGM\_216114  
 HMEL009863g1.t1 MAP kinase-activated protein kinase 2  
 HMEL017127g1.t2 myosin heavy chain, muscle isoform X16  
 HMEL009703g1.t1 uncharacterized protein LOC113397363  
 HMEL005741g2.t2 cyclin-dependent kinase 11B  
 HMEL006157g1.t1 tribbles homolog 2-like  
 HMEL035328g1.t1 Protein phosphatase 1 regulatory subunit 15A  
 HMEL032516g1.t1 ---NA---  
 HMEL035821g1.t1 zinc finger CCCH domain-containing protein 10  
 HMEL030296g1.t1 endonuclease-reverse transcriptase HmRTE-e01  
 HMEL004608g1.t1 probable cytochrome P450 49a1  
 HMEL009440g1.t2 E3 ubiquitin-protein ligase TRIM37-like  
 HMEL003068g1.t1 uncharacterized protein LOC113400921 isoform X1  
 HMEL015321g1.t1 phosphoserine phosphatase isoform X1  
 HMEL015947g1.t1 protein windpipe  
 HMEL009754g1.t1 hexokinase type 2 isoform X1  
 HMEL037660g1.t1 arf-GAP with dual PH domain-containing protein 1-like isoform X1  
 HMEL015859g1.t1 proteoglycan 4  
 HMEL012199g2.t1 WD repeat-containing protein 47 isoform X2  
 HMEL008241g1.t1 serine/threonine-protein kinase minibrain isoform X1  
 HMEL005948g1.t1 putative PDZ domain containing 3  
 HMEL037110g1.t1 calcium-activated potassium channel slowpoke isoform X13  
 HMEL009312g4.t1 protein Im not dead yet  
 HMEL034862g1.t1 ATP-binding cassette sub-family G member 4  
 HMEL012587-RA probable cytochrome P450 49a1  
 HMEL009312g1.t1 protein Im not dead yet  
 HMEL008353g1.t1 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1  
 HMEL017724g1.t2 teneurin-m isoform X3  
 HMEL008824g1.t1 5-AMP-activated protein kinase subunit gamma-2-like isoform X1  
 HMEL016978g1.t1 Type I inositol-1,4,5-trisphosphate 5-phosphatase  
 HMEL017127g1.t7 myosin heavy chain, muscle isoform X24  
 HMEL006850g1.t1 NADH-cytochrome b5 reductase 2 isoform X2  
 HMEL004608g2.t1 probable cytochrome P450 49a1  
 HMEL009524g1.t1 PREDICTED: uncharacterized protein LOC106139693 isoform X1  
 HMEL032663g1.t1 forkhead box protein K1  
 HMEL008976g1.t1 S-adenosylmethionine synthase isoform X1  
 HMEL009320g1.t1 LIM and SH3 domain protein Lasp isoform X1  
 HMEL008156g3.t1 mothers against decapentaplegic homolog 6  
 HMEL008353g1.t2 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-like isoform X1

|                 |  |
|-----------------|--|
| HMEL011037g3.t3 | GRB10-interacting GYF protein 2 isoform X4                             |
| HMEL005325g2.t1 | bifunctional heparan sulfate N-deacetylase/N-sulfotransferase          |
| HMEL014850g1.t1 | insulin-like growth factor isoform X3                                  |
| HMEL017189g1.t1 | monocarboxylate transporter 12   |
| HMEL015100g2.t1 | suppressor of cytokine signaling 2-like isoform X1                     |
| HMEL005630g1.t1 | protein embryonic gonad-like   |
| HMEL011939g1.t1 | facilitated trehalose transporter Tret1-like                           |
| HMEL016976g1.t1 | mycosubtilin synthase subunit C  |
| HMEL014452g1.t1 | annexin B9 isoform X3  |
| HMEL016705-RA   | cytochrome P450 4g15   |
| HMEL036941g1.t1 | terminal nucleotidyltransferase 5C isoform X2                          |
| HMEL016977g1.t2 | epsilon-sarcoglycan isoform X1   |
| HMEL036619g1.t1 | sialin   |
| HMEL009791g1.t2 | Protein PRRC2A   |
| HMEL004332g1.t1 | putative Insulin receptor precursor                                    |
| HMEL005250g1.t1 | hexokinase-2-like  |
| HMEL013901g1.t1 | 3-phosphoinositide-dependent protein kinase 1 isoform X1               |
| HMEL009019g1.t1 | neuroglian isoform X1  |
| HMEL005930g1.t2 | transcriptional coactivator YAP1 isoform X3                            |
| HMEL011747g1.t1 | aquaporin AQPae.a  |
| HMEL021946g1.t2 | UNC93-like protein MFSD11  |
| HMEL014363g1.t2 | zinc finger CCCH domain-containing protein 13 isoform X1               |
| HMEL037224g1.t1 | solute carrier family 2, facilitated glucose transporter member 1-like |
| HMEL022129g1.t1 | uncharacterized protein LOC113394950                                   |
| HMEL012649g1.t1 | putative secreted peptide 30   |
| HMEL014926g2.t1 | monocarboxylate transporter 3  |
| HMEL013885g1.t1 | fatty acyl-CoA reductase 1   |

---



**Supplementary Table 12. Admixture levels of differentially expressed genes in chemosensory tissues.**

| Comparison                                | Species             | Tissue     | $f_d$<br>(median value) |
|---|---------------------|------------|-------------------------|
| male vs. female                           | <i>H. cydno</i>     | antennae   | 0.1821                  |
|   | <i>H. cydno</i>     | legs       | 0.1286                  |
|   | <i>H. cydno</i>     | mouthparts | 0.1921                  |
|   | <i>H. melpomene</i> | antennae   | 0.1954                  |
|   | <i>H. melpomene</i> | legs       | 0.1731                  |
|   | <i>H. melpomene</i> | mouthparts | 0.1244                  |
| day-five female<br>vs. day-two<br>female  | <i>H. cydno</i>     | antennae   | 0.1914                  |
|   | <i>H. cydno</i>     | legs       | 0.1994                  |
|   | <i>H. cydno</i>     | mouthparts | 0.2009                  |
| <i>H. cydno</i> vs. <i>H. melpomene</i> * | <i>H. melpomene</i> | antennae   | 0.1840                  |
|   | <i>H. melpomene</i> | legs       | 0.1910                  |
|   | <i>H. melpomene</i> | mouthparts | 0.2048                  |
| <i>H. cydno</i> vs. <i>H. melpomene</i> * |                     | antennae   | 0.1177                  |
|   |                     | legs       | 0.1196                  |
|   |                     | mouthparts | 0.1263                  |

\* indicates the admixture level of differentially expressed genes is significantly different from the genome-wide  $f_d$  (0.1869) calculated based on total 21,661 annotated genes with normal distribution  $P < 0.05$ .

**Supplementary Table 13. Non-random association between genomic divergence and differential expression of chemosensory tissues with the color pattern gene *optix* in *H. melpomene*.**

|                                       | LD values ( $r^2$ ) calculated in 50 kb windows |        |        |        |        |        |        |        |        |        | <i>P</i> |
|---------------------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
|                                       | 1   | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |          |
| Chr 18<br>( <i>optix</i> )            | 0.1695  | 0.1855 | 0.1779 | 0.1146 | 0.1804 | 0.1321 | 0.1437 | 0.1703 | 0.1784 | 0.1235 | NA       |
| Chr 1                                 | 0.0786  | 0.1151 | 0.0962 | 0.1441 | 0.0608 | 0.1155 | 0.1157 | 0.1245 | 0.0786 | 0.1317 | 0.0004   |
| Chr 12                                | 0.0788  | 0.0631 | 0.0980 | 0.1421 | 0.1538 | 0.0990 | 0.1437 | 0.0788 | 0.1341 | 0.1260 | 0.0027   |
| Chr 19                                | 0.1159  | 0.1733 | 0.1107 | 0.1431 | 0.1631 | 0.1833 | 0.1332 | 0.0785 | 0.1162 | 0.0965 | 0.0708   |
| Randomly<br>selected<br>(genome-wide) | 0.1102  | 0.1069 | 0.1099 | 0.1180 | 0.1074 | 0.1361 | 0.1119 | 0.1186 | 0.1208 | 0.1205 | 0.0002   |

Note:

The 50 kb windows are continuous regions on each chromosome (Chr 18, Chr 1, Chr 12 and Chr 19) from 0 to 500 Kb, except for randomly selected windows. *P* values indicate statistical differences from the mean LD value of the first 500 kb region on chromosome 18.

**Supplementary Table 14. Hub genes and the numbers of estimated edges.**

| <b>Hub genes in the three major clusters in <i>H. melpomene</i></b> |             |
|---|-------------|
| <b>ID</b>   | <b>edge</b> |
| HmOr2   | 441         |
| HmOBP6  | 428         |
| HMEL008320g2.t1   | 422         |
| HMEL011814g1.t1   | 419         |
| HmOBP1  | 418         |
| HmOBP38   | 417         |
| HmOBP3  | 415         |
| HMEL033848g1.t1   | 414         |
| HMEL015247g1.t1   | 413         |
| HMEL033611g1.t1   | 412         |
| HMEL011914g2.t1   | 411         |
| HMEL021639g1.t1   | 411         |
| HMEL008985g1.t2   | 410         |
| HMEL011804g1.t1   | 410         |
| HMEL014743g1.t1   | 410         |
| HmOBP2  | 410         |
| HmOBP20   | 410         |
| HMEL011869g2.t1   | 405         |
| HMEL035158g1.t1   | 404         |
| HMEL030379g1.t1   | 402         |
| HmOr57  | 401         |
| HMEL013351-RA   | 397         |
| HMEL033113g1.t1   | 396         |
| HMEL017528-RA   | 394         |
| HMEL034623g1.t1   | 392         |
| HMEL012304g1.t1   | 390         |
| HMEL015079g1.t1   | 387         |
| HMEL014794g1.t1   | 385         |
| HMEL035799g1.t1   | 385         |
| HMEL015053g1.t1   | 384         |
| HMEL012338g1.t1   | 383         |
| HMEL037810g1.t1   | 382         |
| HMEL016787g1.t1   | 381         |
| HMEL009162g1.t2   | 380         |
| HMEL033828g1.t1   | 380         |
| HMEL008472g1.t1   | 379         |
| HMEL017127g1.t7   | 379         |
| HMEL032063g1.t1   | 379         |
| HMEL011562g1.t1   | 378         |
| HmOr13  | 378         |
| HMEL017127g1.t3   | 377         |

|                 |     |
|-----------------|-----|
| HMEL021575g1.t1 | 377 |
| HMEL009162g1.t1 | 375 |
| HMEL009162g1.t3 | 375 |
| HMEL010966g1.t1 | 375 |
| HMEL011914g1.t1 | 375 |
| HmIR87a         | 375 |
| HMEL009421g1.t1 | 374 |
| HmIR75q1        | 374 |
| HMEL012304g1.t2 | 373 |
| HMEL011869g3.t1 | 372 |
| HMEL013040g3.t1 | 372 |
| HMEL006897g1.t1 | 371 |
| HMEL010272g1.t1 | 370 |
| HMEL033610g1.t1 | 370 |
| HmOr29          | 370 |
| HMEL007354g1.t3 | 369 |
| HMEL009462g1.t1 | 369 |
| HMEL013040g2.t1 | 368 |
| HMEL003232g1.t1 | 367 |
| HMEL017153-RA   | 367 |
| HMEL005232g1.t1 | 366 |
| HMEL017127g1.t2 | 366 |
| HmOr19          | 365 |
| HMEL007962g1.t1 | 364 |
| HMEL015651g1.t2 | 363 |
| HMEL010164g1.t1 | 362 |
| HMEL011562g6.t1 | 362 |
| HMEL016287g1.t1 | 362 |
| HMEL016594g1.t1 | 362 |
| HmOBP21         | 362 |
| HMEL010955g1.t1 | 361 |
| HMEL003975g1.t1 | 360 |
| HMEL036494g1.t2 | 360 |
| HMEL017154-RA   | 359 |
| HMEL037099g1.t1 | 359 |
| HMEL004701g1.t1 | 358 |
| HMEL009177g1.t1 | 358 |
| HMEL005541g1.t1 | 356 |
| HmOr64          | 356 |
| HMEL006583g1.t1 | 355 |
| HMEL016985g1.t2 | 355 |
| HMEL017692g1.t4 | 355 |
| HmCSP12         | 355 |
| HmIR31a         | 355 |

|                 |     |
|-----------------|-----|
| HMEL033309g1.t1 | 354 |
| HMEL010338g1.t1 | 353 |
| HMEL002199g1.t1 | 352 |
| HMEL011624g4.t1 | 351 |
| HMEL036493g1.t1 | 350 |
| HmOr58          | 350 |
| HMEL005774g1.t1 | 349 |
| HMEL013069g1.t1 | 347 |
| HMEL016609g1.t1 | 347 |
| HMEL034496g1.t1 | 346 |
| HmelGSTd1.mrna  | 345 |
| HMEL035263g1.t1 | 344 |
| HMEL016622g1.t1 | 343 |
| HMEL007353g1.t4 | 342 |
| HMEL016985g1.t1 | 342 |
| HMEL016032g1.t1 | 341 |
| HMEL006584g1.t1 | 340 |
| HmCSP11         | 339 |
| HMEL015202g1.t1 | 336 |
| HMEL015710g1.t1 | 336 |
| HMEL032509g1.t1 | 336 |
| HMEL035852g1.t1 | 336 |
| HMEL021303g1.t1 | 335 |
| HMEL006712g1.t1 | 333 |
| HMEL007233g1.t2 | 333 |
| HMEL009462g2.t1 | 333 |
| HMEL016603g1.t1 | 333 |
| HMEL036494g1.t1 | 331 |
| HMEL017127g1.t6 | 330 |
| HMEL034303g1.t1 | 330 |
| HMEL037956g1.t1 | 330 |
| HMEL002168g1.t1 | 329 |
| HMEL014389g1.t1 | 329 |
| HMEL036494g1.t3 | 329 |
| HMEL005572g1.t1 | 328 |
| HMEL009742g1.t1 | 328 |
| HMEL012949g1.t1 | 328 |
| HMEL015841g1.t1 | 327 |
| HMEL007353g1.t3 | 325 |
| HMEL017127g1.t1 | 324 |
| HMEL017235g1.t3 | 323 |
| HMEL002403g1.t1 | 322 |
| HMEL005241g1.t1 | 322 |
| HMEL016193g1.t1 | 322 |

|                 |     |
|-----------------|-----|
| HMEL013620g2.t1 | 321 |
| HMEL005015g1.t1 | 320 |
| HmIR76b         | 320 |
| HMEL003579g1.t1 | 319 |
| HMEL002202g1.t1 | 318 |
| HMEL005676g1.t1 | 316 |
| HMEL035157g1.t1 | 314 |
| HmOr71          | 314 |
| HMEL007496g1.t1 | 312 |
| HMEL031813g1.t1 | 312 |
| HMEL034622g1.t1 | 312 |
| HMEL013099g1.t1 | 311 |
| HmIR8a          | 311 |
| HMEL008044g1.t1 | 310 |
| HMEL012051g1.t1 | 310 |
| HMEL021313g1.t1 | 310 |
| HmOr22          | 309 |
| HMEL007233g1.t1 | 307 |
| HMEL021572g1.t1 | 307 |
| HMEL035979g1.t1 | 307 |
| HMEL011621g1.t1 | 306 |
| HMEL003764g1.t2 | 305 |
| HMEL004951g1.t1 | 305 |
| HMEL008423g1.t1 | 304 |
| HmOr41          | 304 |
| HMEL017127g1.t9 | 302 |
| HMEL032790g1.t1 | 302 |
| HMEL030950g1.t1 | 301 |
| HMEL033849g1.t1 | 300 |
| HMEL003142g1.t1 | 299 |
| HMEL034304g1.t1 | 299 |
| HMEL007353g1.t1 | 297 |
| HmOr49          | 297 |
| HMEL007151g1.t1 | 295 |
| HMEL010064g1.t1 | 295 |
| HMEL010825g1.t1 | 295 |
| HMEL031109g1.t1 | 295 |
| HMEL031781g1.t1 | 294 |
| HMEL007324g1.t1 | 293 |
| HMEL014608g1.t1 | 292 |
| HMEL032513g1.t1 | 292 |
| HMEL005010g1.t1 | 290 |
| HMEL012299g1.t1 | 290 |
| HMEL013089g1.t1 | 290 |

|                 |     |
|-----------------|-----|
| HMEL033955g1.t1 | 290 |
| HMEL004402g1.t1 | 288 |
| HMEL007396g2.t1 | 287 |
| HMEL012214g1.t1 | 287 |
| HMEL034053g1.t1 | 286 |
| HMEL035027g1.t1 | 285 |
| HMEL004586g2.t1 | 279 |
| HMEL009669g1.t1 | 278 |
| HMEL035431g1.t1 | 278 |
| HMEL016787g1.t2 | 277 |
| HMEL013867g1.t1 | 276 |
| HMEL011688g1.t1 | 275 |
| HMEL017603g1.t1 | 275 |
| HMEL013867g1.t2 | 274 |
| HMEL013933g1.t1 | 274 |
| HmIR75p2        | 274 |
| HmIR21a         | 272 |
| HMEL003265g1.t1 | 271 |
| HMEL035166g1.t1 | 271 |
| HMEL005352g1.t1 | 270 |
| HMEL008833g1.t1 | 270 |
| HMEL035254g1.t2 | 270 |
| HMEL006690g1.t1 | 269 |
| HMEL032689g1.t1 | 269 |
| HMEL003675g2.t1 | 268 |
| HMEL002665g1.t1 | 267 |
| HMEL009418g1.t1 | 267 |
| HMEL012516g1.t1 | 267 |
| HMEL016846g1.t1 | 266 |
| HMEL036569g1.t1 | 265 |
| HMEL015522g1.t1 | 264 |
| HMEL006306g1.t1 | 263 |
| HMEL012073g1.t1 | 262 |
| HMEL007754g1.t1 | 261 |
| HmOr14          | 261 |
| HMEL031995g1.t2 | 260 |
| HMEL011192g1.t1 | 258 |
| HMEL016911g1.t1 | 258 |
| HMEL017692g1.t3 | 258 |
| HMEL035356g1.t1 | 258 |
| HMEL034302g1.t1 | 257 |
| HMEL034821g1.t2 | 257 |
| HMEL006690g1.t3 | 256 |
| HMEL014810g1.t1 | 256 |

|   |             |
|---|-------------|
| HmIR41a   | 252         |
| HMEL005242g1.t1   | 251         |
| HMEL015932g1.t1   | 251         |
| HMEL005447g1.t2   | 248         |
| HMEL005601g1.t1   | 248         |
| HMEL004675g1.t1   | 247         |
| HMEL012531g1.t1   | 247         |
| HMEL007926g1.t1   | 245         |
| HMEL035474g1.t1   | 242         |
| HmOr3   | 242         |
| HMEL010362g1.t1   | 240         |
| <b>Hub genes in the three major clusters in <i>H. cydno</i></b> |             |
| <b>ID</b>   | <b>edge</b> |
| HMEL011814g1.t1   | 505         |
| HmOBP38   | 494         |
| HMEL033611g1.t1   | 493         |
| HmOr2   | 493         |
| HMEL011914g2.t1   | 488         |
| HMEL017127g1.t7   | 481         |
| HMEL011914g1.t1   | 480         |
| HMEL033848g1.t1   | 479         |
| HMEL034053g1.t1   | 479         |
| HMEL030379g1.t1   | 474         |
| HMEL011804g1.t1   | 470         |
| HmOBP3  | 468         |
| HMEL021575g1.t1   | 467         |
| HMEL008320g2.t1   | 466         |
| HMEL021572g1.t1   | 466         |
| HMEL008044g1.t1   | 464         |
| HMEL012304g1.t1   | 463         |
| HMEL021639g1.t1   | 463         |
| HMEL016594g1.t1   | 461         |
| HMEL017528-RA   | 460         |
| HmOBP6  | 460         |
| HMEL006712g1.t1   | 459         |
| HMEL007151g1.t1   | 456         |
| HMEL002199g1.t1   | 455         |
| HmIR8a  | 453         |
| HMEL011562g6.t1   | 450         |
| HMEL034496g1.t1   | 449         |
| HMEL030950g1.t1   | 448         |
| HMEL035263g1.t1   | 448         |
| HMEL002168g1.t1   | 446         |
| HMEL002202g1.t1   | 446         |



|                 |     |
|-----------------|-----|
| HMEL007354g1.t3 | 446 |
| HMEL011562g1.t1 | 446 |
| HMEL010272g1.t1 | 445 |
| HMEL009162g1.t3 | 444 |
| HMEL034623g1.t1 | 444 |
| HmOr14          | 444 |
| HMEL032063g1.t1 | 443 |
| HmOBP20         | 441 |
| HMEL016787g1.t1 | 440 |
| HmIR75q1        | 439 |
| HMEL015247g1.t1 | 438 |
| HMEL010966g1.t1 | 436 |
| HMEL016193g1.t1 | 436 |
| HMEL016032g1.t1 | 435 |
| HMEL013510g1.t1 | 434 |
| HMEL035254g1.t2 | 434 |
| HMEL035852g1.t1 | 434 |
| HMEL009177g1.t1 | 433 |
| HMEL009462g2.t1 | 433 |
| HMEL007233g1.t2 | 432 |
| HMEL007962g1.t1 | 431 |
| HMEL008472g1.t1 | 431 |
| HMEL009162g1.t2 | 431 |
| HMEL009421g1.t1 | 430 |
| HmOBP2          | 430 |
| HMEL007233g1.t1 | 429 |
| HMEL015651g1.t2 | 429 |
| HMEL003210g1.t1 | 428 |
| HmOBP1          | 428 |
| HMEL004701g1.t1 | 427 |
| HMEL011688g1.t1 | 427 |
| HmIR76b         | 427 |
| HMEL009462g1.t1 | 426 |
| HMEL031781g1.t1 | 426 |
| HMEL012299g1.t1 | 425 |
| HMEL014389g1.t1 | 424 |
| HMEL003764g1.t2 | 423 |
| HmelGSTd1.mrna  | 423 |
| HmOBP21         | 422 |
| HmOr22          | 422 |
| HMEL003232g1.t1 | 421 |
| HMEL010870g1.t1 | 420 |
| HMEL012949g1.t1 | 420 |
| HMEL035799g1.t1 | 420 |

|                 |     |
|-----------------|-----|
| HMEL036862g1.t1 | 420 |
| HMEL007353g1.t4 | 419 |
| HMEL013040g2.t1 | 419 |
| HMEL015053g1.t1 | 419 |
| HMEL021303g1.t1 | 419 |
| HMEL005242g1.t1 | 416 |
| HMEL010955g1.t1 | 416 |
| HMEL012304g1.t2 | 416 |
| HMEL013040g3.t1 | 416 |
| HmOr57          | 416 |
| HMEL014743g1.t1 | 415 |
| HMEL033113g1.t1 | 415 |
| HMEL037810g1.t1 | 414 |
| HMEL015710g1.t1 | 413 |
| HMEL016287g1.t1 | 413 |
| HMEL031109g1.t1 | 412 |
| HMEL013069g1.t1 | 410 |
| HMEL017127g1.t2 | 410 |
| HMEL034728g1.t1 | 410 |
| HMEL037956g1.t1 | 409 |
| HMEL033828g1.t1 | 407 |
| HMEL032513g1.t1 | 406 |
| HMEL017154-RA   | 405 |
| HMEL034303g1.t1 | 405 |
| HMEL036494g1.t3 | 405 |
| HMEL008471g6.t1 | 404 |
| HMEL017692g1.t4 | 404 |
| HMEL004675g1.t1 | 403 |
| HMEL016985g1.t2 | 403 |
| HMEL016985g1.t1 | 402 |
| HMEL006584g1.t1 | 401 |
| HMEL009162g1.t1 | 401 |
| HMEL013620g2.t1 | 401 |
| HMEL017235g1.t3 | 400 |
| HMEL009742g1.t1 | 399 |
| HMEL014608g1.t1 | 399 |
| HMEL035254g1.t3 | 399 |
| HMEL035158g1.t1 | 398 |
| HmCSP12         | 398 |
| HmOr58          | 398 |
| HMEL008104g1.t1 | 397 |
| HMEL035356g1.t1 | 397 |
| HMEL036494g1.t1 | 397 |
| HMEL009811g1.t1 | 396 |

|                 |     |
|-----------------|-----|
| HMEL010825g1.t1 | 396 |
| HMEL015776g1.t1 | 396 |
| HmIR87a         | 396 |
| HMEL002016g1.t1 | 395 |
| HMEL010575g1.t2 | 394 |
| HMEL016622g1.t1 | 394 |
| HMEL005241g1.t1 | 391 |
| HMEL005774g1.t1 | 391 |
| HMEL017127g1.t1 | 390 |
| HMEL034302g1.t1 | 390 |
| HMEL035027g1.t1 | 390 |
| HMEL013089g1.t1 | 389 |
| HMEL036494g1.t2 | 389 |
| HMEL003142g1.t1 | 388 |
| HMEL016603g1.t1 | 386 |
| HmOr28          | 386 |
| HMEL005010g1.t1 | 385 |
| HMEL035794g1.t1 | 385 |
| HMEL036493g1.t1 | 383 |
| HMEL005015g1.t1 | 382 |
| HMEL017520g1.t1 | 382 |
| HMEL017127g1.t9 | 381 |
| HMEL033955g1.t1 | 379 |
| HMEL006583g1.t1 | 378 |
| HMEL011869g2.t1 | 376 |
| HMEL007353g1.t5 | 375 |
| HMEL008833g1.t1 | 375 |
| HMEL032790g1.t1 | 374 |
| HMEL017127g1.t6 | 373 |
| HMEL010338g1.t1 | 372 |
| HMEL014736g1.t1 | 372 |
| HMEL016093g1.t1 | 372 |
| HmOr19          | 372 |
| HMEL015841g1.t1 | 370 |
| HMEL032473g1.t1 | 370 |
| HMEL008423g1.t1 | 369 |
| HMEL032509g1.t1 | 369 |
| HMEL014575g1.t1 | 368 |
| HMEL032607g1.t1 | 367 |
| HMEL034485g1.t1 | 366 |
| HMEL035166g1.t1 | 366 |
| HMEL037950g1.t1 | 366 |
| HMEL004586g1.t1 | 364 |
| HMEL002403g1.t1 | 363 |

|                 |     |
|-----------------|-----|
| HMEL003579g1.t1 | 363 |
| HMEL013041g1.t1 | 363 |
| HMEL021778g1.t1 | 363 |
| HMEL031995g1.t1 | 363 |
| HmOr69          | 362 |
| HMEL031604g1.t1 | 360 |
| HMEL003751g1.t1 | 359 |
| HMEL002148g1.t1 | 357 |
| HMEL017153-RA   | 357 |
| HMEL003212g2.t2 | 356 |
| HMEL006897g1.t1 | 356 |
| HMEL012531g1.t1 | 356 |
| HMEL031813g1.t1 | 354 |
| HMEL034622g1.t1 | 354 |
| HmCSP11         | 353 |
| HMEL003675g2.t1 | 351 |
| HMEL009174g1.t1 | 351 |
| HMEL010071g1.t1 | 351 |
| HMEL035979g1.t1 | 350 |
| HmOr50          | 350 |
| HMEL004058g2.t1 | 349 |
| HMEL017127g1.t3 | 347 |
| HMEL003975g1.t1 | 346 |
| HMEL005631g1.t1 | 346 |
| HMEL005541g1.t1 | 345 |
| HMEL011473g1.t1 | 344 |
| HMEL007396g1.t4 | 343 |
| HMEL036569g1.t1 | 343 |
| HMEL007353g1.t3 | 341 |
| HMEL032158g1.t1 | 341 |
| HMEL035793g1.t1 | 341 |
| HMEL031767g1.t1 | 339 |
| HMEL006690g1.t1 | 338 |
| HmOr44          | 338 |
| HMEL031979g1.t1 | 336 |
| HMEL007353g1.t1 | 335 |
| HMEL015079g1.t1 | 333 |
| HMEL012484g2.t1 | 332 |
| HMEL036054g1.t1 | 332 |
| HMEL005447g1.t2 | 326 |
| HMEL011192g1.t1 | 325 |
| HMEL033849g1.t1 | 325 |
| HMEL015522g1.t1 | 322 |
| HMEL017624g1.t1 | 322 |

|                 |     |
|-----------------|-----|
| HMEL033309g1.t1 | 320 |
| HMEL002505g1.t2 | 319 |
| HMEL003497g2.t1 | 319 |
| HMEL015202g1.t1 | 319 |
| HMEL034737g1.t1 | 319 |
| HmOr41          | 318 |
| HMEL003338g1.t1 | 317 |
| HMEL015647g2.t1 | 316 |
| HMEL003497g3.t1 | 315 |

---

Note. Top 5% nodes were defined as hub genes.

**Supplementary Table 15. *OBP20* and its adjacent nodes.**

| <i>OBP20</i> and its adjacency nodes in <i>H. melpomene</i> |               |               |                  |
|---|---------------|---------------|------------------|
| <b>fromNode</b>   | <b>toNode</b> | <b>weight</b> | <b>direction</b> |
| HmOBP20   | HmOr74        | 0.720226692   | undirected       |
| HmOBP20   | HmOr71        | 0.853592549   | undirected       |
| HmOBP20   | HmOr69        | 0.712047425   | undirected       |
| HmOBP20   | HmOr67        | 0.725793005   | undirected       |
| HmOBP20   | HmOr64        | 0.895962059   | undirected       |
| HmOBP20   | HmOr63        | 0.738420999   | undirected       |
| HmOBP20   | HmOr61        | 0.758970779   | undirected       |
| HmOBP20   | HmOr59        | 0.777722254   | undirected       |
| HmOBP20   | HmOr58        | 0.886767281   | undirected       |
| HmOBP20   | HmOr57        | 0.948402406   | undirected       |
| HmOBP20   | HmOr56        | 0.802633483   | undirected       |
| HmOBP20   | HmOr54        | 0.766377856   | undirected       |
| HmOBP20   | HmOr53        | 0.791640072   | undirected       |
| HmOBP20   | HmOr51        | 0.777056703   | undirected       |
| HmOBP20   | HmOr49        | 0.847929579   | undirected       |
| HmOBP20   | HmOr45        | 0.745505528   | undirected       |
| HmOBP20   | HmOr44        | 0.700730706   | undirected       |
| HmOBP20   | HmOr41        | 0.850747907   | undirected       |
| HmOBP20   | HmOr32        | 0.786034932   | undirected       |
| HmOBP20   | HmOr30        | 0.799490978   | undirected       |
| HmOBP20   | HmOr3         | 0.831808308   | undirected       |
| HmOBP20   | HmOr29        | 0.911430673   | undirected       |
| HmOBP20   | HmOr28        | 0.718708868   | undirected       |
| HmOBP20   | HmOr24        | 0.788862936   | undirected       |
| HmOBP20   | HmOr23        | 0.806324934   | undirected       |
| HmOBP20   | HmOr22        | 0.861485321   | undirected       |
| HmOBP20   | HmOr2         | 0.970225051   | undirected       |
| HmOBP20   | HmOr19        | 0.920236223   | undirected       |
| HmOBP20   | HmOr14        | 0.831672664   | undirected       |
| HmOBP20   | HmOr13        | 0.912182106   | undirected       |
| HmOBP20   | HmOr12        | 0.81085266    | undirected       |
| HmOBP20   | HmOr10        | 0.703511725   | undirected       |
| HmOBP20   | HmOBP6        | 0.98669448    | undirected       |
| HmOBP20   | HmOBP51       | 0.704522091   | undirected       |
| HmOBP20   | HmOBP47       | 0.804685829   | undirected       |
| HmOBP20   | HmOBP38       | 0.979058187   | undirected       |
| HmOBP20   | HmOBP3        | 0.973442141   | undirected       |
| HmOBP20   | HmOBP21       | 0.930495265   | undirected       |
| HmOBP2  | HmOBP20       | 0.972150702   | undirected       |
| HmOBP10   | HmOBP20       | 0.736713756   | undirected       |
| HmOBP1  | HmOBP20       | 0.983970019   | undirected       |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HmIR93a         | HmOBP20 | 0.746177189 | undirected |
| HmIR8a          | HmOBP20 | 0.837630118 | undirected |
| HmIR87a         | HmOBP20 | 0.903586879 | undirected |
| HmIR76b         | HmOBP20 | 0.838487615 | undirected |
| HmIR75q1        | HmOBP20 | 0.919922998 | undirected |
| HmIR75p2        | HmOBP20 | 0.810741799 | undirected |
| HmIR64a         | HmOBP20 | 0.738452334 | undirected |
| HmIR41a         | HmOBP20 | 0.827999241 | undirected |
| HmIR31a         | HmOBP20 | 0.881311792 | undirected |
| HmIR25a         | HmOBP20 | 0.811251866 | undirected |
| HmIR21a         | HmOBP20 | 0.829526426 | undirected |
| HmIR1           | HmOBP20 | 0.782612523 | undirected |
| HmelGSTd1.mrna  | HmOBP20 | 0.897566084 | undirected |
| HMEL038025g1.t1 | HmOBP20 | 0.791299195 | undirected |
| HMEL037956g1.t1 | HmOBP20 | 0.86676199  | undirected |
| HMEL037810g1.t1 | HmOBP20 | 0.938508047 | undirected |
| HMEL037671g1.t1 | HmOBP20 | 0.804479702 | undirected |
| HMEL037669g1.t1 | HmOBP20 | 0.775074286 | undirected |
| HMEL037396g1.t1 | HmOBP20 | 0.776611538 | undirected |
| HMEL037099g1.t1 | HmOBP20 | 0.923860343 | undirected |
| HMEL036569g1.t1 | HmOBP20 | 0.854941108 | undirected |
| HMEL036494g1.t3 | HmOBP20 | 0.850251899 | undirected |
| HMEL036494g1.t2 | HmOBP20 | 0.86167149  | undirected |
| HMEL036494g1.t1 | HmOBP20 | 0.877215047 | undirected |
| HMEL036493g1.t1 | HmOBP20 | 0.85646649  | undirected |
| HMEL036394g1.t1 | HmOBP20 | 0.721835339 | undirected |
| HMEL036105g1.t1 | HmOBP20 | 0.766212807 | undirected |
| HMEL036071g1.t1 | HmOBP20 | 0.833055296 | undirected |
| HMEL036054g1.t1 | HmOBP20 | 0.787893993 | undirected |
| HMEL035979g1.t1 | HmOBP20 | 0.816186997 | undirected |
| HMEL035852g1.t1 | HmOBP20 | 0.817879534 | undirected |
| HMEL035799g1.t1 | HmOBP20 | 0.91394269  | undirected |
| HMEL035793g1.t1 | HmOBP20 | 0.794074455 | undirected |
| HMEL035771g1.t1 | HmOBP20 | 0.73575978  | undirected |
| HMEL035431g1.t1 | HmOBP20 | 0.836675183 | undirected |
| HMEL035356g1.t1 | HmOBP20 | 0.838778986 | undirected |
| HMEL035263g1.t1 | HmOBP20 | 0.909783327 | undirected |
| HMEL035254g1.t3 | HmOBP20 | 0.727309542 | undirected |
| HMEL035254g1.t2 | HmOBP20 | 0.814241366 | undirected |
| HMEL035166g1.t1 | HmOBP20 | 0.861489885 | undirected |
| HMEL035158g1.t1 | HmOBP20 | 0.926844413 | undirected |
| HMEL035157g1.t1 | HmOBP20 | 0.857365587 | undirected |
| HMEL035156g1.t1 | HmOBP20 | 0.700599271 | undirected |
| HMEL035065g1.t1 | HmOBP20 | 0.764287646 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL035027g1.t1 | HmOBP20 | 0.734215116 | undirected |
| HMEL034821g1.t2 | HmOBP20 | 0.816052208 | undirected |
| HMEL034623g1.t1 | HmOBP20 | 0.898494129 | undirected |
| HMEL034622g1.t1 | HmOBP20 | 0.885726398 | undirected |
| HMEL034604g1.t1 | HmOBP20 | 0.820975736 | undirected |
| HMEL034496g1.t1 | HmOBP20 | 0.796529421 | undirected |
| HMEL034406g1.t1 | HmOBP20 | 0.721164174 | undirected |
| HMEL034304g1.t1 | HmOBP20 | 0.789022512 | undirected |
| HMEL034303g1.t1 | HmOBP20 | 0.814519703 | undirected |
| HMEL034302g1.t1 | HmOBP20 | 0.844510975 | undirected |
| HMEL034053g1.t1 | HmOBP20 | 0.82675715  | undirected |
| HMEL033955g1.t1 | HmOBP20 | 0.735220896 | undirected |
| HMEL033947g1.t1 | HmOBP20 | 0.807318283 | undirected |
| HMEL033876g1.t1 | HmOBP20 | 0.807098662 | undirected |
| HMEL033849g1.t1 | HmOBP20 | 0.916545455 | undirected |
| HMEL033848g1.t1 | HmOBP20 | 0.980598137 | undirected |
| HMEL033828g1.t1 | HmOBP20 | 0.887097166 | undirected |
| HMEL033611g1.t1 | HmOBP20 | 0.974501729 | undirected |
| HMEL033610g1.t1 | HmOBP20 | 0.931687593 | undirected |
| HMEL033492g1.t1 | HmOBP20 | 0.721056587 | undirected |
| HMEL033309g1.t1 | HmOBP20 | 0.914527478 | undirected |
| HMEL033113g1.t1 | HmOBP20 | 0.933125858 | undirected |
| HMEL033043g1.t1 | HmOBP20 | 0.765556258 | undirected |
| HMEL032790g1.t1 | HmOBP20 | 0.862801296 | undirected |
| HMEL032689g1.t1 | HmOBP20 | 0.85463382  | undirected |
| HMEL032656g1.t1 | HmOBP20 | 0.713925154 | undirected |
| HMEL032559g1.t1 | HmOBP20 | 0.799896075 | undirected |
| HMEL032513g1.t1 | HmOBP20 | 0.767297564 | undirected |
| HMEL032509g1.t1 | HmOBP20 | 0.922762142 | undirected |
| HMEL032473g1.t1 | HmOBP20 | 0.771738935 | undirected |
| HMEL032468g1.t1 | HmOBP20 | 0.769724279 | undirected |
| HMEL032397g1.t1 | HmOBP20 | 0.780157543 | undirected |
| HMEL032158g1.t1 | HmOBP20 | 0.790709149 | undirected |
| HMEL032127g1.t1 | HmOBP20 | 0.707074062 | undirected |
| HMEL032063g1.t1 | HmOBP20 | 0.969656984 | undirected |
| HMEL032060g1.t1 | HmOBP20 | 0.771569012 | undirected |
| HMEL031995g1.t2 | HmOBP20 | 0.743990112 | undirected |
| HMEL031813g1.t1 | HmOBP20 | 0.869331813 | undirected |
| HMEL031781g1.t1 | HmOBP20 | 0.765251842 | undirected |
| HMEL031767g1.t1 | HmOBP20 | 0.815486037 | undirected |
| HMEL031680g1.t1 | HmOBP20 | 0.703258916 | undirected |
| HMEL031626g1.t1 | HmOBP20 | 0.762842205 | undirected |
| HMEL031604g1.t1 | HmOBP20 | 0.788101546 | undirected |
| HMEL031592g1.t1 | HmOBP20 | 0.745081444 | undirected |



|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL031109g1.t1 | HmOBP20 | 0.853342912 | undirected |
| HMEL031058g1.t5 | HmOBP20 | 0.788020116 | undirected |
| HMEL030985g1.t1 | HmOBP20 | 0.7367596   | undirected |
| HMEL030950g1.t1 | HmOBP20 | 0.831222269 | undirected |
| HMEL030796g1.t1 | HmOBP20 | 0.727651478 | undirected |
| HMEL030379g1.t1 | HmOBP20 | 0.959303587 | undirected |
| HMEL030249g1.t1 | HmOBP20 | 0.753569866 | undirected |
| HMEL030239g1.t1 | HmOBP20 | 0.73683311  | undirected |
| HMEL030014g1.t1 | HmOBP20 | 0.753496537 | undirected |
| HMEL025040g1.t1 | HmOBP20 | 0.787400121 | undirected |
| HMEL022591-RA   | HmOBP20 | 0.818162164 | undirected |
| HMEL022364g1.t3 | HmOBP20 | 0.731823305 | undirected |
| HMEL022364g1.t2 | HmOBP20 | 0.731823305 | undirected |
| HMEL022364g1.t1 | HmOBP20 | 0.731823305 | undirected |
| HMEL021778g1.t1 | HmOBP20 | 0.801799319 | undirected |
| HMEL021639g1.t1 | HmOBP20 | 0.959813083 | undirected |
| HMEL021575g1.t1 | HmOBP20 | 0.912502493 | undirected |
| HMEL021572g1.t1 | HmOBP20 | 0.869539797 | undirected |
| HMEL021313g1.t1 | HmOBP20 | 0.861746639 | undirected |
| HMEL021303g1.t1 | HmOBP20 | 0.862276992 | undirected |
| HMEL020376g1.t1 | HmOBP20 | 0.83898314  | undirected |
| HMEL018037g1.t1 | HmOBP20 | 0.702882831 | undirected |
| HMEL017906g1.t1 | HmOBP20 | 0.720613581 | undirected |
| HMEL017692g1.t4 | HmOBP20 | 0.919887903 | undirected |
| HMEL017692g1.t3 | HmOBP20 | 0.852040564 | undirected |
| HMEL017603g1.t1 | HmOBP20 | 0.838769227 | undirected |
| HMEL017532g1.t1 | HmOBP20 | 0.828236283 | undirected |
| HMEL017528-RA   | HmOBP20 | 0.938281319 | undirected |
| HMEL017261g1.t1 | HmOBP20 | 0.822851916 | undirected |
| HMEL017235g1.t3 | HmOBP20 | 0.788386159 | undirected |
| HMEL017212g3.t1 | HmOBP20 | 0.70881514  | undirected |
| HMEL017211g1.t1 | HmOBP20 | 0.749873124 | undirected |
| HMEL017154-RA   | HmOBP20 | 0.89699213  | undirected |
| HMEL017153-RA   | HmOBP20 | 0.888774643 | undirected |
| HMEL017127g1.t9 | HmOBP20 | 0.878431318 | undirected |
| HMEL017127g1.t7 | HmOBP20 | 0.905213777 | undirected |
| HMEL017127g1.t6 | HmOBP20 | 0.842455411 | undirected |
| HMEL017127g1.t3 | HmOBP20 | 0.931360078 | undirected |
| HMEL017127g1.t2 | HmOBP20 | 0.908463066 | undirected |
| HMEL017127g1.t1 | HmOBP20 | 0.853526732 | undirected |
| HMEL017031g1.t1 | HmOBP20 | 0.750559632 | undirected |
| HMEL016985g1.t2 | HmOBP20 | 0.90155228  | undirected |
| HMEL016985g1.t1 | HmOBP20 | 0.852766422 | undirected |
| HMEL016924g1.t1 | HmOBP20 | 0.759044775 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL016922g1.t1 | HmOBP20 | 0.797978213 | undirected |
| HMEL016911g1.t1 | HmOBP20 | 0.817511718 | undirected |
| HMEL016846g1.t1 | HmOBP20 | 0.834220448 | undirected |
| HMEL016807g1.t1 | HmOBP20 | 0.742032083 | undirected |
| HMEL016787g1.t2 | HmOBP20 | 0.776772754 | undirected |
| HMEL016787g1.t1 | HmOBP20 | 0.871825367 | undirected |
| HMEL016622g2.t1 | HmOBP20 | 0.782646136 | undirected |
| HMEL016622g1.t1 | HmOBP20 | 0.888882918 | undirected |
| HMEL016611g1.t1 | HmOBP20 | 0.773135175 | undirected |
| HMEL016609g1.t1 | HmOBP20 | 0.911245497 | undirected |
| HMEL016603g1.t1 | HmOBP20 | 0.890817234 | undirected |
| HMEL016594g1.t1 | HmOBP20 | 0.887351008 | undirected |
| HMEL016484g1.t1 | HmOBP20 | 0.743319866 | undirected |
| HMEL016354g1.t1 | HmOBP20 | 0.810940885 | undirected |
| HMEL016287g1.t1 | HmOBP20 | 0.871996905 | undirected |
| HMEL016193g1.t1 | HmOBP20 | 0.877525451 | undirected |
| HMEL016144g1.t1 | HmOBP20 | 0.758172135 | undirected |
| HMEL016130g1.t1 | HmOBP20 | 0.729600766 | undirected |
| HMEL016093g1.t1 | HmOBP20 | 0.775057478 | undirected |
| HMEL016032g1.t1 | HmOBP20 | 0.849205055 | undirected |
| HMEL015932g1.t1 | HmOBP20 | 0.8831139   | undirected |
| HMEL015931g4.t1 | HmOBP20 | 0.755238895 | undirected |
| HMEL015930g1.t1 | HmOBP20 | 0.704605114 | undirected |
| HMEL015879g1.t1 | HmOBP20 | 0.727251384 | undirected |
| HMEL015841g1.t1 | HmOBP20 | 0.898631172 | undirected |
| HMEL015776g1.t1 | HmOBP20 | 0.810261519 | undirected |
| HMEL015710g1.t1 | HmOBP20 | 0.905580557 | undirected |
| HMEL015651g1.t2 | HmOBP20 | 0.862328453 | undirected |
| HMEL015614g1.t1 | HmOBP20 | 0.765781258 | undirected |
| HMEL015522g1.t1 | HmOBP20 | 0.754757831 | undirected |
| HMEL015480g1.t1 | HmOBP20 | 0.843644559 | undirected |
| HMEL015247g1.t1 | HmOBP20 | 0.928820556 | undirected |
| HMEL015202g1.t1 | HmOBP20 | 0.827107973 | undirected |
| HMEL015097g1.t1 | HmOBP20 | 0.81348546  | undirected |
| HMEL015079g1.t1 | HmOBP20 | 0.925660258 | undirected |
| HMEL015071g2.t1 | HmOBP20 | 0.718169602 | undirected |
| HMEL015053g1.t1 | HmOBP20 | 0.914239038 | undirected |
| HMEL014864g1.t1 | HmOBP20 | 0.739465449 | undirected |
| HMEL014810g1.t1 | HmOBP20 | 0.739638266 | undirected |
| HMEL014794g1.t1 | HmOBP20 | 0.951167472 | undirected |
| HMEL014743g1.t1 | HmOBP20 | 0.966004934 | undirected |
| HMEL014736g1.t1 | HmOBP20 | 0.749671203 | undirected |
| HMEL014710g2.t1 | HmOBP20 | 0.720506915 | undirected |
| HMEL014608g1.t1 | HmOBP20 | 0.794569413 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL014575g1.t1 | HmOBP20 | 0.742929542 | undirected |
| HMEL014556g1.t1 | HmOBP20 | 0.717993648 | undirected |
| HMEL014506g1.t1 | HmOBP20 | 0.808295959 | undirected |
| HMEL014462g1.t1 | HmOBP20 | 0.806343994 | undirected |
| HMEL014389g1.t1 | HmOBP20 | 0.835697793 | undirected |
| HMEL014381g2.t1 | HmOBP20 | 0.714588004 | undirected |
| HMEL014380g2.t1 | HmOBP20 | 0.792893458 | undirected |
| HMEL013933g1.t1 | HmOBP20 | 0.819866287 | undirected |
| HMEL013873g1.t1 | HmOBP20 | 0.703479964 | undirected |
| HMEL013867g1.t2 | HmOBP20 | 0.817085082 | undirected |
| HMEL013867g1.t1 | HmOBP20 | 0.827243945 | undirected |
| HMEL013676g1.t1 | HmOBP20 | 0.772427527 | undirected |
| HMEL013620g2.t1 | HmOBP20 | 0.875701029 | undirected |
| HMEL013593g1.t1 | HmOBP20 | 0.739889061 | undirected |
| HMEL013510g1.t1 | HmOBP20 | 0.724519415 | undirected |
| HMEL013496g1.t1 | HmOBP20 | 0.773565134 | undirected |
| HMEL013495g1.t1 | HmOBP20 | 0.758549987 | undirected |
| HMEL013405g1.t1 | HmOBP20 | 0.787727741 | undirected |
| HMEL013351-RA   | HmOBP20 | 0.954664591 | undirected |
| HMEL013288g1.t1 | HmOBP20 | 0.792816    | undirected |
| HMEL013221g1.t1 | HmOBP20 | 0.784984449 | undirected |
| HMEL013099g1.t1 | HmOBP20 | 0.84636995  | undirected |
| HMEL013089g1.t1 | HmOBP20 | 0.855560469 | undirected |
| HMEL013069g1.t1 | HmOBP20 | 0.883550704 | undirected |
| HMEL013040g3.t1 | HmOBP20 | 0.905276086 | undirected |
| HMEL013040g2.t1 | HmOBP20 | 0.903968519 | undirected |
| HMEL013037g1.t1 | HmOBP20 | 0.732391609 | undirected |
| HMEL012949g1.t1 | HmOBP20 | 0.822729013 | undirected |
| HMEL012901g2.t1 | HmOBP20 | 0.708628346 | undirected |
| HMEL012516g1.t1 | HmOBP20 | 0.85271558  | undirected |
| HMEL012423g2.t1 | HmOBP20 | 0.751398676 | undirected |
| HMEL012359g1.t1 | HmOBP20 | 0.851267884 | undirected |
| HMEL012338g1.t1 | HmOBP20 | 0.911341325 | undirected |
| HMEL012319g1.t1 | HmOBP20 | 0.709922871 | undirected |
| HMEL012304g1.t2 | HmOBP20 | 0.904874562 | undirected |
| HMEL012304g1.t1 | HmOBP20 | 0.907805492 | undirected |
| HMEL012299g1.t1 | HmOBP20 | 0.816927245 | undirected |
| HMEL012268g1.t1 | HmOBP20 | 0.729097826 | undirected |
| HMEL012214g1.t1 | HmOBP20 | 0.867010244 | undirected |
| HMEL012073g1.t1 | HmOBP20 | 0.794962064 | undirected |
| HMEL012051g1.t1 | HmOBP20 | 0.851503617 | undirected |
| HMEL011914g2.t1 | HmOBP20 | 0.913810197 | undirected |
| HMEL011914g1.t1 | HmOBP20 | 0.87878799  | undirected |
| HMEL011869g3.t1 | HmOBP20 | 0.936071569 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL011869g2.t1 | HmOBP20 | 0.955142914 | undirected |
| HMEL011814g1.t1 | HmOBP20 | 0.948410045 | undirected |
| HMEL011807g1.t1 | HmOBP20 | 0.729689159 | undirected |
| HMEL011804g1.t1 | HmOBP20 | 0.94184186  | undirected |
| HMEL011688g1.t1 | HmOBP20 | 0.862865231 | undirected |
| HMEL011640g1.t1 | HmOBP20 | 0.740556396 | undirected |
| HMEL011624g4.t1 | HmOBP20 | 0.91542397  | undirected |
| HMEL011621g1.t1 | HmOBP20 | 0.819772259 | undirected |
| HMEL011562g6.t1 | HmOBP20 | 0.896521906 | undirected |
| HMEL011562g1.t1 | HmOBP20 | 0.890139264 | undirected |
| HMEL011417g1.t1 | HmOBP20 | 0.765172694 | undirected |
| HMEL011340g2.t1 | HmOBP20 | 0.754970081 | undirected |
| HMEL011239g1.t1 | HmOBP20 | 0.794534742 | undirected |
| HMEL011211g1.t1 | HmOBP20 | 0.751080958 | undirected |
| HMEL011192g1.t1 | HmOBP20 | 0.872276019 | undirected |
| HMEL011184g1.t1 | HmOBP20 | 0.759508132 | undirected |
| HMEL011130g1.t1 | HmOBP20 | 0.70409778  | undirected |
| HMEL010966g1.t1 | HmOBP20 | 0.906476025 | undirected |
| HMEL010955g1.t1 | HmOBP20 | 0.912792564 | undirected |
| HMEL010894g1.t1 | HmOBP20 | 0.810847428 | undirected |
| HMEL010825g1.t1 | HmOBP20 | 0.860807744 | undirected |
| HMEL010778g1.t1 | HmOBP20 | 0.724191304 | undirected |
| HMEL010629g1.t1 | HmOBP20 | 0.741847504 | undirected |
| HMEL010575g1.t2 | HmOBP20 | 0.7835945   | undirected |
| HMEL010362g1.t1 | HmOBP20 | 0.827753503 | undirected |
| HMEL010338g1.t1 | HmOBP20 | 0.864467743 | undirected |
| HMEL010330g1.t1 | HmOBP20 | 0.780516265 | undirected |
| HMEL010272g1.t1 | HmOBP20 | 0.866658911 | undirected |
| HMEL010164g1.t1 | HmOBP20 | 0.894529942 | undirected |
| HMEL010071g1.t1 | HmOBP20 | 0.814626946 | undirected |
| HMEL010064g1.t1 | HmOBP20 | 0.870026823 | undirected |
| HMEL009811g1.t1 | HmOBP20 | 0.820621257 | undirected |
| HMEL009742g1.t1 | HmOBP20 | 0.818347367 | undirected |
| HMEL009669g1.t1 | HmOBP20 | 0.870505743 | undirected |
| HMEL009597g1.t1 | HmOBP20 | 0.794725319 | undirected |
| HMEL009537g1.t1 | HmOBP20 | 0.727330396 | undirected |
| HMEL009498g2.t1 | HmOBP20 | 0.793220314 | undirected |
| HMEL009462g2.t1 | HmOBP20 | 0.823232374 | undirected |
| HMEL009462g1.t1 | HmOBP20 | 0.883904311 | undirected |
| HMEL009421g1.t1 | HmOBP20 | 0.882063989 | undirected |
| HMEL009418g1.t1 | HmOBP20 | 0.872926169 | undirected |
| HMEL009362g1.t1 | HmOBP20 | 0.806727964 | undirected |
| HMEL009177g1.t1 | HmOBP20 | 0.866932062 | undirected |
| HMEL009174g1.t1 | HmOBP20 | 0.813715942 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL009162g1.t3 | HmOBP20 | 0.877279675 | undirected |
| HMEL009162g1.t2 | HmOBP20 | 0.885359665 | undirected |
| HMEL009162g1.t1 | HmOBP20 | 0.884685153 | undirected |
| HMEL008985g1.t2 | HmOBP20 | 0.921167081 | undirected |
| HMEL008930g1.t1 | HmOBP20 | 0.708081101 | undirected |
| HMEL008833g1.t1 | HmOBP20 | 0.737610771 | undirected |
| HMEL008603g1.t1 | HmOBP20 | 0.728798778 | undirected |
| HMEL008588g1.t1 | HmOBP20 | 0.788575818 | undirected |
| HMEL008552g1.t1 | HmOBP20 | 0.768923796 | undirected |
| HMEL008507g1.t1 | HmOBP20 | 0.704826431 | undirected |
| HMEL008472g1.t1 | HmOBP20 | 0.930669891 | undirected |
| HMEL008471g6.t1 | HmOBP20 | 0.812013976 | undirected |
| HMEL008423g1.t1 | HmOBP20 | 0.837540543 | undirected |
| HMEL008320g2.t1 | HmOBP20 | 0.975571081 | undirected |
| HMEL008054-RA   | HmOBP20 | 0.716564216 | undirected |
| HMEL008044g1.t1 | HmOBP20 | 0.843436562 | undirected |
| HMEL007962g1.t1 | HmOBP20 | 0.869804702 | undirected |
| HMEL007886g1.t1 | HmOBP20 | 0.745473748 | undirected |
| HMEL007754g1.t1 | HmOBP20 | 0.863821952 | undirected |
| HMEL007500g1.t1 | HmOBP20 | 0.814168393 | undirected |
| HMEL007496g1.t1 | HmOBP20 | 0.849137397 | undirected |
| HMEL007396g2.t1 | HmOBP20 | 0.852361242 | undirected |
| HMEL007392g1.t1 | HmOBP20 | 0.704207164 | undirected |
| HMEL007354g1.t3 | HmOBP20 | 0.87079223  | undirected |
| HMEL007353g1.t5 | HmOBP20 | 0.723568193 | undirected |
| HMEL007353g1.t4 | HmOBP20 | 0.881790868 | undirected |
| HMEL007353g1.t3 | HmOBP20 | 0.915578904 | undirected |
| HMEL007353g1.t2 | HmOBP20 | 0.837823478 | undirected |
| HMEL007353g1.t1 | HmOBP20 | 0.766700161 | undirected |
| HMEL007324g1.t1 | HmOBP20 | 0.774251721 | undirected |
| HMEL007233g1.t2 | HmOBP20 | 0.828825504 | undirected |
| HMEL007233g1.t1 | HmOBP20 | 0.783445335 | undirected |
| HMEL007151g1.t1 | HmOBP20 | 0.824180376 | undirected |
| HMEL006935g1.t1 | HmOBP20 | 0.848735914 | undirected |
| HMEL006897g1.t1 | HmOBP20 | 0.872726811 | undirected |
| HMEL006830g1.t1 | HmOBP20 | 0.828799965 | undirected |
| HMEL006712g1.t1 | HmOBP20 | 0.825886107 | undirected |
| HMEL006706g1.t1 | HmOBP20 | 0.79769241  | undirected |
| HMEL006705g1.t1 | HmOBP20 | 0.791345462 | undirected |
| HMEL006690g1.t3 | HmOBP20 | 0.749303132 | undirected |
| HMEL006690g1.t1 | HmOBP20 | 0.718608894 | undirected |
| HMEL006584g1.t1 | HmOBP20 | 0.864416196 | undirected |
| HMEL006583g1.t1 | HmOBP20 | 0.889047846 | undirected |
| HMEL006576g1.t1 | HmOBP20 | 0.732423952 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL006434g1.t1 | HmOBP20 | 0.739203499 | undirected |
| HMEL006371g1.t1 | HmOBP20 | 0.732437924 | undirected |
| HMEL006348g1.t1 | HmOBP20 | 0.771483768 | undirected |
| HMEL006306g1.t1 | HmOBP20 | 0.82165658  | undirected |
| HMEL005774g1.t1 | HmOBP20 | 0.846090377 | undirected |
| HMEL005676g1.t1 | HmOBP20 | 0.905197879 | undirected |
| HMEL005631g1.t1 | HmOBP20 | 0.747937682 | undirected |
| HMEL005601g1.t1 | HmOBP20 | 0.81123706  | undirected |
| HMEL005575g1.t1 | HmOBP20 | 0.70230948  | undirected |
| HMEL005572g1.t1 | HmOBP20 | 0.852852324 | undirected |
| HMEL005541g1.t1 | HmOBP20 | 0.901650473 | undirected |
| HMEL005534g1.t1 | HmOBP20 | 0.773260735 | undirected |
| HMEL005352g1.t1 | HmOBP20 | 0.876357792 | undirected |
| HMEL005318g1.t1 | HmOBP20 | 0.747952353 | undirected |
| HMEL005242g1.t1 | HmOBP20 | 0.74802003  | undirected |
| HMEL005241g1.t1 | HmOBP20 | 0.884497337 | undirected |
| HMEL005232g1.t1 | HmOBP20 | 0.890907162 | undirected |
| HMEL005015g1.t1 | HmOBP20 | 0.862127146 | undirected |
| HMEL005010g1.t1 | HmOBP20 | 0.870788175 | undirected |
| HMEL004951g1.t1 | HmOBP20 | 0.782827613 | undirected |
| HMEL004701g1.t1 | HmOBP20 | 0.882240113 | undirected |
| HMEL004675g1.t1 | HmOBP20 | 0.778041159 | undirected |
| HMEL004586g2.t1 | HmOBP20 | 0.74859246  | undirected |
| HMEL004402g1.t1 | HmOBP20 | 0.892013909 | undirected |
| HMEL004401-RA   | HmOBP20 | 0.7326225   | undirected |
| HMEL004236g1.t1 | HmOBP20 | 0.710722939 | undirected |
| HMEL004084g1.t1 | HmOBP20 | 0.809688822 | undirected |
| HMEL004058g2.t1 | HmOBP20 | 0.800559714 | undirected |
| HMEL004020g1.t1 | HmOBP20 | 0.739506525 | undirected |
| HMEL003975g1.t1 | HmOBP20 | 0.847762871 | undirected |
| HMEL003926g1.t1 | HmOBP20 | 0.720019365 | undirected |
| HMEL003819g1.t1 | HmOBP20 | 0.791745376 | undirected |
| HMEL003764g1.t2 | HmOBP20 | 0.852865343 | undirected |
| HMEL003675g2.t1 | HmOBP20 | 0.837697043 | undirected |
| HMEL003579g1.t1 | HmOBP20 | 0.85848042  | undirected |
| HMEL003538g2.t1 | HmOBP20 | 0.761909572 | undirected |
| HMEL003497g2.t1 | HmOBP20 | 0.773517333 | undirected |
| HMEL003480g1.t1 | HmOBP20 | 0.774197297 | undirected |
| HMEL003338g1.t1 | HmOBP20 | 0.795627864 | undirected |
| HMEL003265g1.t1 | HmOBP20 | 0.840386139 | undirected |
| HMEL003249g1.t1 | HmOBP20 | 0.752600087 | undirected |
| HMEL003232g1.t1 | HmOBP20 | 0.870964037 | undirected |
| HMEL003142g1.t1 | HmOBP20 | 0.764309744 | undirected |
| HMEL002857g1.t1 | HmOBP20 | 0.795523278 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL002665g1.t1 | HmOBP20 | 0.841323479 | undirected |
| HMEL002475g2.t1 | HmOBP20 | 0.739788235 | undirected |
| HMEL002475g1.t1 | HmOBP20 | 0.802872236 | undirected |
| HMEL002471-RA   | HmOBP20 | 0.774147527 | undirected |
| HMEL002452g1.t1 | HmOBP20 | 0.747901355 | undirected |
| HMEL002450g1.t1 | HmOBP20 | 0.80729531  | undirected |
| HMEL002403g1.t1 | HmOBP20 | 0.868415205 | undirected |
| HMEL002390g1.t1 | HmOBP20 | 0.739586208 | undirected |
| HMEL002291g1.t1 | HmOBP20 | 0.710130122 | undirected |
| HMEL002202g1.t1 | HmOBP20 | 0.856330622 | undirected |
| HMEL002199g1.t1 | HmOBP20 | 0.86945506  | undirected |
| HMEL002168g1.t1 | HmOBP20 | 0.854864014 | undirected |
| HMEL002148g1.t1 | HmOBP20 | 0.849228978 | undirected |
| HMEL002016g1.t1 | HmOBP20 | 0.779515781 | undirected |
| HMEL000056g1.t1 | HmOBP20 | 0.823423596 | undirected |
| HmCSP12         | HmOBP20 | 0.879240614 | undirected |
| HmCSP11         | HmOBP20 | 0.918849923 | undirected |

***OBP20* and its adjacency nodes in *H. cydno***

| <b>fromNode</b>  | <b>toNode</b> | <b>weight</b> | <b>direction</b> |
|------------------|---------------|---------------|------------------|
| HmOBP2           | HmOBP20       | 0.966422709   | undirected       |
| HmOBP1           | HmOBP20       | 0.962595015   | undirected       |
| HmIR8a           | HmOBP20       | 0.878932808   | undirected       |
| HmIR87a          | HmOBP20       | 0.912737665   | undirected       |
| HmIR76b          | HmOBP20       | 0.846392018   | undirected       |
| HmIR75q2         | HmOBP20       | 0.727711969   | undirected       |
| HmIR75q1         | HmOBP20       | 0.93774986    | undirected       |
| HmIR75p2         | HmOBP20       | 0.791865951   | undirected       |
| HmIR25a          | HmOBP20       | 0.820344926   | undirected       |
| HmIR21a          | HmOBP20       | 0.81510015    | undirected       |
| HmIR1            | HmOBP20       | 0.714131038   | undirected       |
| HmelUGT34A5.mrna | HmOBP20       | 0.724149606   | undirected       |
| HmelGSTd1.mrna   | HmOBP20       | 0.95096439    | undirected       |
| HMEL037956g1.t1  | HmOBP20       | 0.846665348   | undirected       |
| HMEL037950g1.t1  | HmOBP20       | 0.800819286   | undirected       |
| HMEL037810g1.t1  | HmOBP20       | 0.891474286   | undirected       |
| HMEL037671g1.t1  | HmOBP20       | 0.854841771   | undirected       |
| HMEL037670g1.t1  | HmOBP20       | 0.808098265   | undirected       |
| HMEL037669g1.t1  | HmOBP20       | 0.802419894   | undirected       |
| HMEL037547g1.t4  | HmOBP20       | 0.859285497   | undirected       |
| HMEL037396g1.t1  | HmOBP20       | 0.761342084   | undirected       |
| HMEL037290g1.t1  | HmOBP20       | 0.751666641   | undirected       |
| HMEL037249g1.t1  | HmOBP20       | 0.761649188   | undirected       |
| HMEL037102g1.t1  | HmOBP20       | 0.740460986   | undirected       |
| HMEL037099g1.t1  | HmOBP20       | 0.868146746   | undirected       |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL036862g1.t1 | HmOBP20 | 0.963585557 | undirected |
| HMEL036569g1.t1 | HmOBP20 | 0.924172378 | undirected |
| HMEL036494g1.t3 | HmOBP20 | 0.877791184 | undirected |
| HMEL036494g1.t2 | HmOBP20 | 0.853297696 | undirected |
| HMEL036494g1.t1 | HmOBP20 | 0.850037201 | undirected |
| HMEL036493g1.t1 | HmOBP20 | 0.777746513 | undirected |
| HMEL036393g1.t1 | HmOBP20 | 0.708727774 | undirected |
| HMEL036246g1.t1 | HmOBP20 | 0.871533946 | undirected |
| HMEL036105g1.t1 | HmOBP20 | 0.802678354 | undirected |
| HMEL036072g1.t1 | HmOBP20 | 0.716376472 | undirected |
| HMEL036071g1.t1 | HmOBP20 | 0.85104488  | undirected |
| HMEL036054g1.t1 | HmOBP20 | 0.835645778 | undirected |
| HMEL035989g1.t1 | HmOBP20 | 0.756619119 | undirected |
| HMEL035979g1.t1 | HmOBP20 | 0.824325044 | undirected |
| HMEL035852g1.t1 | HmOBP20 | 0.851161372 | undirected |
| HMEL035799g1.t1 | HmOBP20 | 0.895428441 | undirected |
| HMEL035794g1.t1 | HmOBP20 | 0.91792514  | undirected |
| HMEL035793g1.t1 | HmOBP20 | 0.828921785 | undirected |
| HMEL035771g1.t1 | HmOBP20 | 0.729358807 | undirected |
| HMEL035738g1.t1 | HmOBP20 | 0.737309141 | undirected |
| HMEL035601g1.t1 | HmOBP20 | 0.716662686 | undirected |
| HMEL035576g1.t1 | HmOBP20 | 0.738102052 | undirected |
| HMEL035356g1.t1 | HmOBP20 | 0.915852151 | undirected |
| HMEL035285g1.t1 | HmOBP20 | 0.824535249 | undirected |
| HMEL035283g1.t1 | HmOBP20 | 0.807383322 | undirected |
| HMEL035263g1.t1 | HmOBP20 | 0.911900336 | undirected |
| HMEL035254g1.t3 | HmOBP20 | 0.842322658 | undirected |
| HMEL035254g1.t2 | HmOBP20 | 0.867546211 | undirected |
| HMEL035254g1.t1 | HmOBP20 | 0.702180154 | undirected |
| HMEL035166g1.t1 | HmOBP20 | 0.875139595 | undirected |
| HMEL035158g1.t1 | HmOBP20 | 0.84729872  | undirected |
| HMEL035157g1.t1 | HmOBP20 | 0.784528114 | undirected |
| HMEL035065g1.t1 | HmOBP20 | 0.855774024 | undirected |
| HMEL035027g1.t1 | HmOBP20 | 0.774522307 | undirected |
| HMEL034896g1.t1 | HmOBP20 | 0.734025866 | undirected |
| HMEL034864g1.t1 | HmOBP20 | 0.76354079  | undirected |
| HMEL034821g1.t2 | HmOBP20 | 0.800781295 | undirected |
| HMEL034737g1.t1 | HmOBP20 | 0.895251232 | undirected |
| HMEL034735g1.t1 | HmOBP20 | 0.845740397 | undirected |
| HMEL034728g1.t1 | HmOBP20 | 0.898194121 | undirected |
| HMEL034623g1.t1 | HmOBP20 | 0.896422153 | undirected |
| HMEL034622g1.t1 | HmOBP20 | 0.912847284 | undirected |
| HMEL034604g1.t1 | HmOBP20 | 0.79408894  | undirected |
| HMEL034592g1.t1 | HmOBP20 | 0.800884096 | undirected |



|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL034496g1.t1 | HmOBP20 | 0.828846261 | undirected |
| HMEL034485g1.t1 | HmOBP20 | 0.83304498  | undirected |
| HMEL034470g1.t1 | HmOBP20 | 0.701069736 | undirected |
| HMEL034303g1.t1 | HmOBP20 | 0.785208339 | undirected |
| HMEL034302g1.t1 | HmOBP20 | 0.923428109 | undirected |
| HMEL034053g1.t1 | HmOBP20 | 0.937244437 | undirected |
| HMEL033955g1.t1 | HmOBP20 | 0.740418507 | undirected |
| HMEL033947g1.t1 | HmOBP20 | 0.803898861 | undirected |
| HMEL033876g1.t1 | HmOBP20 | 0.734128912 | undirected |
| HMEL033852g1.t3 | HmOBP20 | 0.793628804 | undirected |
| HMEL033849g1.t1 | HmOBP20 | 0.932446373 | undirected |
| HMEL033848g1.t1 | HmOBP20 | 0.974430246 | undirected |
| HMEL033828g1.t1 | HmOBP20 | 0.877337806 | undirected |
| HMEL033819g1.t1 | HmOBP20 | 0.738632421 | undirected |
| HMEL033611g1.t1 | HmOBP20 | 0.961243566 | undirected |
| HMEL033610g1.t1 | HmOBP20 | 0.88355836  | undirected |
| HMEL033560g1.t1 | HmOBP20 | 0.82308678  | undirected |
| HMEL033492g1.t1 | HmOBP20 | 0.706159382 | undirected |
| HMEL033309g1.t1 | HmOBP20 | 0.886193631 | undirected |
| HMEL033230g1.t2 | HmOBP20 | 0.75081379  | undirected |
| HMEL033113g1.t1 | HmOBP20 | 0.861738674 | undirected |
| HMEL033043g1.t1 | HmOBP20 | 0.723983397 | undirected |
| HMEL032798g1.t1 | HmOBP20 | 0.703260137 | undirected |
| HMEL032790g1.t1 | HmOBP20 | 0.859113675 | undirected |
| HMEL032656g1.t1 | HmOBP20 | 0.794849497 | undirected |
| HMEL032607g1.t1 | HmOBP20 | 0.843629734 | undirected |
| HMEL032606g1.t1 | HmOBP20 | 0.766901226 | undirected |
| HMEL032559g1.t1 | HmOBP20 | 0.796873172 | undirected |
| HMEL032513g1.t1 | HmOBP20 | 0.799669457 | undirected |
| HMEL032509g1.t1 | HmOBP20 | 0.887944276 | undirected |
| HMEL032473g1.t1 | HmOBP20 | 0.884823489 | undirected |
| HMEL032468g1.t1 | HmOBP20 | 0.773264862 | undirected |
| HMEL032397g1.t1 | HmOBP20 | 0.777904859 | undirected |
| HMEL032360g1.t1 | HmOBP20 | 0.742172128 | undirected |
| HMEL032158g1.t1 | HmOBP20 | 0.842740988 | undirected |
| HMEL032063g1.t1 | HmOBP20 | 0.960635374 | undirected |
| HMEL031995g1.t1 | HmOBP20 | 0.773639579 | undirected |
| HMEL031986g1.t2 | HmOBP20 | 0.710371732 | undirected |
| HMEL031979g1.t1 | HmOBP20 | 0.751285233 | undirected |
| HMEL031813g1.t1 | HmOBP20 | 0.862237005 | undirected |
| HMEL031781g1.t1 | HmOBP20 | 0.886254983 | undirected |
| HMEL031767g1.t1 | HmOBP20 | 0.801413726 | undirected |
| HMEL031680g1.t1 | HmOBP20 | 0.712324915 | undirected |
| HMEL031626g1.t1 | HmOBP20 | 0.736722364 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL031604g1.t1 | HmOBP20 | 0.821409709 | undirected |
| HMEL031526g1.t1 | HmOBP20 | 0.702724343 | undirected |
| HMEL031324g1.t1 | HmOBP20 | 0.734013378 | undirected |
| HMEL031109g1.t1 | HmOBP20 | 0.878444831 | undirected |
| HMEL030987g1.t1 | HmOBP20 | 0.719233589 | undirected |
| HMEL030950g1.t1 | HmOBP20 | 0.914961666 | undirected |
| HMEL030629g1.t1 | HmOBP20 | 0.727405686 | undirected |
| HMEL030379g1.t1 | HmOBP20 | 0.943319721 | undirected |
| HMEL030249g1.t1 | HmOBP20 | 0.779183096 | undirected |
| HMEL030227g1.t1 | HmOBP20 | 0.702518649 | undirected |
| HMEL030026g1.t1 | HmOBP20 | 0.743456521 | undirected |
| HMEL030014g1.t1 | HmOBP20 | 0.841325856 | undirected |
| HMEL022591-RA   | HmOBP20 | 0.812721668 | undirected |
| HMEL022261g2.t1 | HmOBP20 | 0.739556692 | undirected |
| HMEL021778g1.t1 | HmOBP20 | 0.844468962 | undirected |
| HMEL021639g1.t1 | HmOBP20 | 0.918519965 | undirected |
| HMEL021575g1.t1 | HmOBP20 | 0.894227285 | undirected |
| HMEL021572g1.t1 | HmOBP20 | 0.908755411 | undirected |
| HMEL021458g1.t1 | HmOBP20 | 0.76060949  | undirected |
| HMEL021313g1.t1 | HmOBP20 | 0.784630277 | undirected |
| HMEL021303g1.t1 | HmOBP20 | 0.841842624 | undirected |
| HMEL020069g2.t1 | HmOBP20 | 0.836216603 | undirected |
| HMEL020069g1.t1 | HmOBP20 | 0.783204838 | undirected |
| HMEL018072g1.t1 | HmOBP20 | 0.744214458 | undirected |
| HMEL018055g1.t1 | HmOBP20 | 0.70445471  | undirected |
| HMEL018046g1.t1 | HmOBP20 | 0.700687456 | undirected |
| HMEL017692g1.t4 | HmOBP20 | 0.878180743 | undirected |
| HMEL017692g1.t3 | HmOBP20 | 0.805583081 | undirected |
| HMEL017603g1.t1 | HmOBP20 | 0.753083897 | undirected |
| HMEL017532g1.t1 | HmOBP20 | 0.715240802 | undirected |
| HMEL017528-RA   | HmOBP20 | 0.951646129 | undirected |
| HMEL017520g1.t1 | HmOBP20 | 0.876485058 | undirected |
| HMEL017261g1.t1 | HmOBP20 | 0.886582339 | undirected |
| HMEL017235g1.t3 | HmOBP20 | 0.852830878 | undirected |
| HMEL017211g1.t1 | HmOBP20 | 0.702849261 | undirected |
| HMEL017154-RA   | HmOBP20 | 0.892829983 | undirected |
| HMEL017153-RA   | HmOBP20 | 0.816376876 | undirected |
| HMEL017127g1.t9 | HmOBP20 | 0.895237169 | undirected |
| HMEL017127g1.t7 | HmOBP20 | 0.926706288 | undirected |
| HMEL017127g1.t6 | HmOBP20 | 0.847238599 | undirected |
| HMEL017127g1.t3 | HmOBP20 | 0.892861232 | undirected |
| HMEL017127g1.t2 | HmOBP20 | 0.899849783 | undirected |
| HMEL017127g1.t1 | HmOBP20 | 0.844598206 | undirected |
| HMEL017033g1.t1 | HmOBP20 | 0.802395243 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL017031g1.t1 | HmOBP20 | 0.790377561 | undirected |
| HMEL017007g1.t1 | HmOBP20 | 0.762919287 | undirected |
| HMEL016985g1.t2 | HmOBP20 | 0.882545187 | undirected |
| HMEL016985g1.t1 | HmOBP20 | 0.817675013 | undirected |
| HMEL016911g1.t1 | HmOBP20 | 0.752893135 | undirected |
| HMEL016787g1.t2 | HmOBP20 | 0.775532322 | undirected |
| HMEL016787g1.t1 | HmOBP20 | 0.90062292  | undirected |
| HMEL016622g1.t1 | HmOBP20 | 0.902597394 | undirected |
| HMEL016611g1.t1 | HmOBP20 | 0.853278241 | undirected |
| HMEL016609g1.t1 | HmOBP20 | 0.851529045 | undirected |
| HMEL016603g1.t1 | HmOBP20 | 0.843868527 | undirected |
| HMEL016594g1.t1 | HmOBP20 | 0.910597508 | undirected |
| HMEL016484g1.t1 | HmOBP20 | 0.743448915 | undirected |
| HMEL016354g1.t1 | HmOBP20 | 0.805531534 | undirected |
| HMEL016287g1.t1 | HmOBP20 | 0.83539169  | undirected |
| HMEL016193g1.t1 | HmOBP20 | 0.953497009 | undirected |
| HMEL016130g1.t1 | HmOBP20 | 0.764568418 | undirected |
| HMEL016093g1.t1 | HmOBP20 | 0.90823328  | undirected |
| HMEL016082g1.t1 | HmOBP20 | 0.765779806 | undirected |
| HMEL016032g1.t1 | HmOBP20 | 0.852796426 | undirected |
| HMEL015930g1.t1 | HmOBP20 | 0.711296601 | undirected |
| HMEL015899g1.t1 | HmOBP20 | 0.71687037  | undirected |
| HMEL015881g1.t1 | HmOBP20 | 0.718869777 | undirected |
| HMEL015879g1.t1 | HmOBP20 | 0.853222064 | undirected |
| HMEL015841g1.t1 | HmOBP20 | 0.891893543 | undirected |
| HMEL015776g1.t1 | HmOBP20 | 0.887415229 | undirected |
| HMEL015710g1.t1 | HmOBP20 | 0.893790495 | undirected |
| HMEL015651g1.t4 | HmOBP20 | 0.70139322  | undirected |
| HMEL015651g1.t2 | HmOBP20 | 0.887994862 | undirected |
| HMEL015651g1.t1 | HmOBP20 | 0.762608313 | undirected |
| HMEL015647g2.t1 | HmOBP20 | 0.741545121 | undirected |
| HMEL015572g3.t1 | HmOBP20 | 0.768725209 | undirected |
| HMEL015522g1.t1 | HmOBP20 | 0.744955045 | undirected |
| HMEL015247g1.t1 | HmOBP20 | 0.863653732 | undirected |
| HMEL015202g1.t1 | HmOBP20 | 0.772841148 | undirected |
| HMEL015097g1.t1 | HmOBP20 | 0.78423981  | undirected |
| HMEL015079g1.t1 | HmOBP20 | 0.904722557 | undirected |
| HMEL015071g2.t1 | HmOBP20 | 0.739623852 | undirected |
| HMEL015053g1.t1 | HmOBP20 | 0.912101211 | undirected |
| HMEL014795g1.t1 | HmOBP20 | 0.717095092 | undirected |
| HMEL014794g1.t1 | HmOBP20 | 0.859670945 | undirected |
| HMEL014743g1.t1 | HmOBP20 | 0.958200742 | undirected |
| HMEL014736g1.t1 | HmOBP20 | 0.81394084  | undirected |
| HMEL014645g1.t1 | HmOBP20 | 0.768855715 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL014608g1.t1 | HmOBP20 | 0.863633646 | undirected |
| HMEL014575g1.t1 | HmOBP20 | 0.870188643 | undirected |
| HMEL014506g1.t1 | HmOBP20 | 0.842447646 | undirected |
| HMEL014462g1.t1 | HmOBP20 | 0.74039444  | undirected |
| HMEL014389g1.t1 | HmOBP20 | 0.829136445 | undirected |
| HMEL014380g2.t1 | HmOBP20 | 0.809993773 | undirected |
| HMEL014119g1.t1 | HmOBP20 | 0.752807605 | undirected |
| HMEL013933g1.t1 | HmOBP20 | 0.804432104 | undirected |
| HMEL013867g1.t2 | HmOBP20 | 0.898500052 | undirected |
| HMEL013867g1.t1 | HmOBP20 | 0.861131534 | undirected |
| HMEL013676g1.t1 | HmOBP20 | 0.787423694 | undirected |
| HMEL013620g2.t1 | HmOBP20 | 0.861696465 | undirected |
| HMEL013520g4.t1 | HmOBP20 | 0.7788478   | undirected |
| HMEL013515g1.t1 | HmOBP20 | 0.720919234 | undirected |
| HMEL013510g1.t1 | HmOBP20 | 0.863410574 | undirected |
| HMEL013351-RA   | HmOBP20 | 0.885413647 | undirected |
| HMEL013289g1.t1 | HmOBP20 | 0.775553998 | undirected |
| HMEL013221g1.t1 | HmOBP20 | 0.812124943 | undirected |
| HMEL013192g1.t1 | HmOBP20 | 0.753727615 | undirected |
| HMEL013124g1.t1 | HmOBP20 | 0.76748649  | undirected |
| HMEL013099g1.t1 | HmOBP20 | 0.724869933 | undirected |
| HMEL013089g1.t1 | HmOBP20 | 0.927907663 | undirected |
| HMEL013069g1.t1 | HmOBP20 | 0.847376355 | undirected |
| HMEL013055g2.t1 | HmOBP20 | 0.740965923 | undirected |
| HMEL013041g6.t1 | HmOBP20 | 0.807145272 | undirected |
| HMEL013041g1.t1 | HmOBP20 | 0.784372515 | undirected |
| HMEL013040g3.t1 | HmOBP20 | 0.884042821 | undirected |
| HMEL013040g2.t1 | HmOBP20 | 0.874118659 | undirected |
| HMEL012949g1.t1 | HmOBP20 | 0.854483256 | undirected |
| HMEL012901g1.t1 | HmOBP20 | 0.805264996 | undirected |
| HMEL012890g2.t1 | HmOBP20 | 0.723282764 | undirected |
| HMEL012890g1.t1 | HmOBP20 | 0.746795746 | undirected |
| HMEL012628g1.t1 | HmOBP20 | 0.74504909  | undirected |
| HMEL012546g3.t1 | HmOBP20 | 0.748558331 | undirected |
| HMEL012531g1.t1 | HmOBP20 | 0.737046644 | undirected |
| HMEL012516g1.t1 | HmOBP20 | 0.700535883 | undirected |
| HMEL012484g2.t2 | HmOBP20 | 0.703568338 | undirected |
| HMEL012484g2.t1 | HmOBP20 | 0.711595466 | undirected |
| HMEL012423g2.t1 | HmOBP20 | 0.724207016 | undirected |
| HMEL012415g1.t1 | HmOBP20 | 0.723833134 | undirected |
| HMEL012304g1.t2 | HmOBP20 | 0.90990664  | undirected |
| HMEL012304g1.t1 | HmOBP20 | 0.896994879 | undirected |
| HMEL012299g1.t1 | HmOBP20 | 0.886178868 | undirected |
| HMEL012268g1.t1 | HmOBP20 | 0.751690491 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL012214g1.t1 | HmOBP20 | 0.819150223 | undirected |
| HMEL012033g2.t1 | HmOBP20 | 0.731284961 | undirected |
| HMEL011914g2.t1 | HmOBP20 | 0.906461416 | undirected |
| HMEL011914g1.t1 | HmOBP20 | 0.816012272 | undirected |
| HMEL011869g3.t1 | HmOBP20 | 0.867537182 | undirected |
| HMEL011869g2.t1 | HmOBP20 | 0.865659378 | undirected |
| HMEL011814g1.t1 | HmOBP20 | 0.954559193 | undirected |
| HMEL011804g1.t1 | HmOBP20 | 0.924949359 | undirected |
| HMEL011688g1.t1 | HmOBP20 | 0.95701933  | undirected |
| HMEL011624g4.t1 | HmOBP20 | 0.893307555 | undirected |
| HMEL011562g6.t1 | HmOBP20 | 0.921773118 | undirected |
| HMEL011562g1.t1 | HmOBP20 | 0.912993872 | undirected |
| HMEL011473g1.t1 | HmOBP20 | 0.905339044 | undirected |
| HMEL011399g1.t1 | HmOBP20 | 0.7025084   | undirected |
| HMEL011394g1.t1 | HmOBP20 | 0.743230873 | undirected |
| HMEL011326g1.t1 | HmOBP20 | 0.776235691 | undirected |
| HMEL011239g1.t1 | HmOBP20 | 0.72850282  | undirected |
| HMEL011192g1.t1 | HmOBP20 | 0.886680826 | undirected |
| HMEL011007g1.t1 | HmOBP20 | 0.735667916 | undirected |
| HMEL011006g1.t1 | HmOBP20 | 0.706080381 | undirected |
| HMEL010966g1.t1 | HmOBP20 | 0.939075158 | undirected |
| HMEL010955g1.t1 | HmOBP20 | 0.890373066 | undirected |
| HMEL010953g3.t1 | HmOBP20 | 0.766924717 | undirected |
| HMEL010874-RA   | HmOBP20 | 0.718749931 | undirected |
| HMEL010870g1.t1 | HmOBP20 | 0.925767736 | undirected |
| HMEL010825g1.t1 | HmOBP20 | 0.80640548  | undirected |
| HMEL010699g1.t1 | HmOBP20 | 0.756376128 | undirected |
| HMEL010693-RA   | HmOBP20 | 0.748733523 | undirected |
| HMEL010575g1.t2 | HmOBP20 | 0.874811778 | undirected |
| HMEL010362g1.t1 | HmOBP20 | 0.711018499 | undirected |
| HMEL010338g1.t1 | HmOBP20 | 0.874286067 | undirected |
| HMEL010330g1.t1 | HmOBP20 | 0.76713111  | undirected |
| HMEL010272g1.t1 | HmOBP20 | 0.89329224  | undirected |
| HMEL010202g1.t1 | HmOBP20 | 0.764531753 | undirected |
| HMEL010201g1.t1 | HmOBP20 | 0.71597812  | undirected |
| HMEL010164g1.t1 | HmOBP20 | 0.824683618 | undirected |
| HMEL010109g1.t1 | HmOBP20 | 0.775141027 | undirected |
| HMEL010071g1.t1 | HmOBP20 | 0.895622789 | undirected |
| HMEL010064g1.t1 | HmOBP20 | 0.830663143 | undirected |
| HMEL009992g4.t1 | HmOBP20 | 0.713636895 | undirected |
| HMEL009954g1.t1 | HmOBP20 | 0.730888845 | undirected |
| HMEL009811g1.t1 | HmOBP20 | 0.863627898 | undirected |
| HMEL009742g1.t1 | HmOBP20 | 0.840379788 | undirected |
| HMEL009669g1.t1 | HmOBP20 | 0.81679992  | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL009603g1.t1 | HmOBP20 | 0.741213294 | undirected |
| HMEL009597g1.t1 | HmOBP20 | 0.738057081 | undirected |
| HMEL009522g1.t1 | HmOBP20 | 0.737940916 | undirected |
| HMEL009498g2.t1 | HmOBP20 | 0.721046235 | undirected |
| HMEL009462g2.t1 | HmOBP20 | 0.873754841 | undirected |
| HMEL009462g1.t1 | HmOBP20 | 0.88345352  | undirected |
| HMEL009421g1.t1 | HmOBP20 | 0.909406917 | undirected |
| HMEL009418g1.t1 | HmOBP20 | 0.748161032 | undirected |
| HMEL009417g1.t1 | HmOBP20 | 0.703486666 | undirected |
| HMEL009362g1.t1 | HmOBP20 | 0.703011328 | undirected |
| HMEL009177g1.t1 | HmOBP20 | 0.880849555 | undirected |
| HMEL009174g1.t1 | HmOBP20 | 0.823929538 | undirected |
| HMEL009162g1.t3 | HmOBP20 | 0.911592846 | undirected |
| HMEL009162g1.t2 | HmOBP20 | 0.857224083 | undirected |
| HMEL009162g1.t1 | HmOBP20 | 0.853725412 | undirected |
| HMEL009054g1.t1 | HmOBP20 | 0.718437157 | undirected |
| HMEL008985g1.t2 | HmOBP20 | 0.778234897 | undirected |
| HMEL008985g1.t1 | HmOBP20 | 0.700495378 | undirected |
| HMEL008833g1.t1 | HmOBP20 | 0.812559279 | undirected |
| HMEL008824g1.t2 | HmOBP20 | 0.751757768 | undirected |
| HMEL008552g1.t1 | HmOBP20 | 0.863567331 | undirected |
| HMEL008529g1.t1 | HmOBP20 | 0.795213719 | undirected |
| HMEL008472g1.t1 | HmOBP20 | 0.931184444 | undirected |
| HMEL008471g6.t1 | HmOBP20 | 0.820818875 | undirected |
| HMEL008423g1.t1 | HmOBP20 | 0.840156312 | undirected |
| HMEL008320g2.t1 | HmOBP20 | 0.951043954 | undirected |
| HMEL008104g1.t1 | HmOBP20 | 0.836227853 | undirected |
| HMEL008044g1.t1 | HmOBP20 | 0.935842157 | undirected |
| HMEL007962g1.t1 | HmOBP20 | 0.905442223 | undirected |
| HMEL007754g1.t1 | HmOBP20 | 0.758865631 | undirected |
| HMEL007496g1.t1 | HmOBP20 | 0.705915061 | undirected |
| HMEL007396g2.t1 | HmOBP20 | 0.788009871 | undirected |
| HMEL007396g1.t4 | HmOBP20 | 0.80225947  | undirected |
| HMEL007392g1.t1 | HmOBP20 | 0.765103639 | undirected |
| HMEL007354g1.t3 | HmOBP20 | 0.899513891 | undirected |
| HMEL007353g1.t5 | HmOBP20 | 0.86717551  | undirected |
| HMEL007353g1.t4 | HmOBP20 | 0.86035327  | undirected |
| HMEL007353g1.t3 | HmOBP20 | 0.900808715 | undirected |
| HMEL007353g1.t2 | HmOBP20 | 0.711867879 | undirected |
| HMEL007353g1.t1 | HmOBP20 | 0.729518951 | undirected |
| HMEL007297g1.t1 | HmOBP20 | 0.730723812 | undirected |
| HMEL007233g1.t2 | HmOBP20 | 0.854461283 | undirected |
| HMEL007233g1.t1 | HmOBP20 | 0.897950538 | undirected |
| HMEL007166g1.t1 | HmOBP20 | 0.780801952 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL007151g1.t1 | HmOBP20 | 0.898166834 | undirected |
| HMEL007133g1.t1 | HmOBP20 | 0.732904842 | undirected |
| HMEL006959g1.t1 | HmOBP20 | 0.717602367 | undirected |
| HMEL006935g1.t1 | HmOBP20 | 0.76444301  | undirected |
| HMEL006897g1.t1 | HmOBP20 | 0.827693306 | undirected |
| HMEL006808g1.t1 | HmOBP20 | 0.719554519 | undirected |
| HMEL006712g1.t1 | HmOBP20 | 0.875619939 | undirected |
| HMEL006690g1.t3 | HmOBP20 | 0.726078485 | undirected |
| HMEL006690g1.t1 | HmOBP20 | 0.744535085 | undirected |
| HMEL006584g1.t1 | HmOBP20 | 0.865520205 | undirected |
| HMEL006583g1.t1 | HmOBP20 | 0.833888447 | undirected |
| HMEL006434g1.t1 | HmOBP20 | 0.772098665 | undirected |
| HMEL006306g1.t1 | HmOBP20 | 0.752449711 | undirected |
| HMEL006254g1.t1 | HmOBP20 | 0.783121979 | undirected |
| HMEL006217g3.t1 | HmOBP20 | 0.707154104 | undirected |
| HMEL005927g3.t1 | HmOBP20 | 0.748652084 | undirected |
| HMEL005774g1.t1 | HmOBP20 | 0.792871226 | undirected |
| HMEL005631g1.t1 | HmOBP20 | 0.744021662 | undirected |
| HMEL005601g1.t1 | HmOBP20 | 0.727301473 | undirected |
| HMEL005541g1.t1 | HmOBP20 | 0.804167533 | undirected |
| HMEL005534g1.t1 | HmOBP20 | 0.718234119 | undirected |
| HMEL005467g1.t1 | HmOBP20 | 0.713383429 | undirected |
| HMEL005447g1.t2 | HmOBP20 | 0.712139054 | undirected |
| HMEL005352g1.t1 | HmOBP20 | 0.833924312 | undirected |
| HMEL005318g1.t1 | HmOBP20 | 0.711243066 | undirected |
| HMEL005242g1.t1 | HmOBP20 | 0.90174761  | undirected |
| HMEL005241g1.t1 | HmOBP20 | 0.860219469 | undirected |
| HMEL005015g1.t1 | HmOBP20 | 0.795820294 | undirected |
| HMEL005010g1.t1 | HmOBP20 | 0.886994118 | undirected |
| HMEL004951g1.t1 | HmOBP20 | 0.753637563 | undirected |
| HMEL004701g1.t1 | HmOBP20 | 0.910331909 | undirected |
| HMEL004675g1.t1 | HmOBP20 | 0.845501902 | undirected |
| HMEL004586g2.t1 | HmOBP20 | 0.783672534 | undirected |
| HMEL004586g1.t1 | HmOBP20 | 0.801537006 | undirected |
| HMEL004481g1.t1 | HmOBP20 | 0.708772127 | undirected |
| HMEL004401-RA   | HmOBP20 | 0.770712526 | undirected |
| HMEL004344g1.t1 | HmOBP20 | 0.716695501 | undirected |
| HMEL004058g2.t1 | HmOBP20 | 0.868771417 | undirected |
| HMEL003975g1.t1 | HmOBP20 | 0.792071394 | undirected |
| HMEL003926g1.t1 | HmOBP20 | 0.766024657 | undirected |
| HMEL003819g1.t1 | HmOBP20 | 0.720431402 | undirected |
| HMEL003764g1.t2 | HmOBP20 | 0.940096923 | undirected |
| HMEL003751g1.t1 | HmOBP20 | 0.867022168 | undirected |
| HMEL003746g1.t1 | HmOBP20 | 0.727833416 | undirected |

|                 |         |             |            |
|-----------------|---------|-------------|------------|
| HMEL003675g2.t1 | HmOBP20 | 0.888971614 | undirected |
| HMEL003626g2.t1 | HmOBP20 | 0.737771868 | undirected |
| HMEL003600g1.t1 | HmOBP20 | 0.758722981 | undirected |
| HMEL003579g1.t1 | HmOBP20 | 0.82656449  | undirected |
| HMEL003497g3.t1 | HmOBP20 | 0.854635799 | undirected |
| HMEL003497g2.t1 | HmOBP20 | 0.863640072 | undirected |
| HMEL003480g1.t1 | HmOBP20 | 0.757980133 | undirected |
| HMEL003360g1.t2 | HmOBP20 | 0.763359195 | undirected |
| HMEL003338g1.t1 | HmOBP20 | 0.820979241 | undirected |
| HMEL003266g1.t1 | HmOBP20 | 0.765116837 | undirected |
| HMEL003265g1.t1 | HmOBP20 | 0.833747914 | undirected |
| HMEL003232g1.t1 | HmOBP20 | 0.830234806 | undirected |
| HMEL003212g2.t2 | HmOBP20 | 0.880460306 | undirected |
| HMEL003212g2.t1 | HmOBP20 | 0.750815536 | undirected |
| HMEL003210g1.t1 | HmOBP20 | 0.884839975 | undirected |
| HMEL003142g1.t1 | HmOBP20 | 0.757143502 | undirected |
| HMEL003119g2.t1 | HmOBP20 | 0.714340781 | undirected |
| HMEL002857g1.t1 | HmOBP20 | 0.735146109 | undirected |
| HMEL002832g1.t3 | HmOBP20 | 0.778820014 | undirected |
| HMEL002665g1.t1 | HmOBP20 | 0.751835602 | undirected |
| HMEL002505g1.t2 | HmOBP20 | 0.772564092 | undirected |
| HMEL002471-RA   | HmOBP20 | 0.757740411 | undirected |
| HMEL002452g1.t1 | HmOBP20 | 0.768126511 | undirected |
| HMEL002450g1.t1 | HmOBP20 | 0.817391697 | undirected |
| HMEL002403g1.t1 | HmOBP20 | 0.821047533 | undirected |
| HMEL002202g1.t1 | HmOBP20 | 0.943317594 | undirected |
| HMEL002199g1.t1 | HmOBP20 | 0.917283186 | undirected |
| HMEL002168g1.t1 | HmOBP20 | 0.898334069 | undirected |
| HMEL002149g1.t1 | HmOBP20 | 0.707370608 | undirected |
| HMEL002148g1.t1 | HmOBP20 | 0.924589839 | undirected |
| HMEL002118g1.t1 | HmOBP20 | 0.751596057 | undirected |
| HMEL002016g1.t1 | HmOBP20 | 0.78351611  | undirected |
| HMEL000048g1.t1 | HmOBP20 | 0.751612237 | undirected |
| HMEL000007g1.t1 | HmOBP20 | 0.720071413 | undirected |
| HmCSP12         | HmOBP20 | 0.885707719 | undirected |
| HmCSP11         | HmOBP20 | 0.927647216 | undirected |
| HmOBP20         | HmOr9   | 0.783461633 | undirected |
| HmOBP20         | HmOr74  | 0.815216997 | undirected |
| HmOBP20         | HmOr71  | 0.801539275 | undirected |
| HmOBP20         | HmOr69  | 0.926971268 | undirected |
| HmOBP20         | HmOr67  | 0.761893725 | undirected |
| HmOBP20         | HmOr63  | 0.71309585  | undirected |
| HmOBP20         | HmOr58  | 0.867487049 | undirected |
| HmOBP20         | HmOr57  | 0.883205979 | undirected |



|         |         |             |            |
|---------|---------|-------------|------------|
| HmOBP20 | HmOr53  | 0.777424443 | undirected |
| HmOBP20 | HmOr50  | 0.875472425 | undirected |
| HmOBP20 | HmOr44  | 0.813885297 | undirected |
| HmOBP20 | HmOr41  | 0.819446705 | undirected |
| HmOBP20 | HmOr34  | 0.735132431 | undirected |
| HmOBP20 | HmOr32  | 0.798214184 | undirected |
| HmOBP20 | HmOr3   | 0.905116309 | undirected |
| HmOBP20 | HmOr29  | 0.781467407 | undirected |
| HmOBP20 | HmOr28  | 0.858951539 | undirected |
| HmOBP20 | HmOr22  | 0.925380081 | undirected |
| HmOBP20 | HmOr2   | 0.967706594 | undirected |
| HmOBP20 | HmOr19  | 0.923753815 | undirected |
| HmOBP20 | HmOr14  | 0.901655632 | undirected |
| HmOBP20 | HmOr12  | 0.903890378 | undirected |
| HmOBP20 | HmOBP6  | 0.985694294 | undirected |
| HmOBP20 | HmOBP51 | 0.720059198 | undirected |
| HmOBP20 | HmOBP47 | 0.742053801 | undirected |
| HmOBP20 | HmOBP38 | 0.924501919 | undirected |
| HmOBP20 | HmOBP3  | 0.983158114 | undirected |
| HmOBP20 | HmOBP21 | 0.969150694 | undirected |

---

