Research article

Analysis of immune-related genes during Nora virus infection of Drosophila melanogaster using next generation sequencing

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Supplementary
Table S1. Statistical analysis of PANTHER analysis of differentially expressed genes across time points for NV+ and NV− flies. The numbers in the columns indicate a hypergeometric p-value for the PANTHER analysis for days 2, 10, 20 and 30. *The numbers in the table are unmapped IDs, NA = Not applicable because 0 genes were in this specific category. A value of 0 means that the exponent of the p-value was so high (indicating an extremely low p-value), that the p-value cannot be depicted properly by the operating system.

| Category name (gene ontology accession number) | Day 2 | Day 10 | Day 20 | Day 30 | FlyBase [1] |
|-----------------------------------------------|-------|--------|--------|--------|------------|
|                                               | Up    | Down   | Up     | Down   | Up         | Down   | # Genes in GO Category |
| Biological adhesion (GO: 0022610)             | 4.64e-07 | NA   | 2.59e-30 | NA   | 1.27e-19 | NA   | 2.22e-31 | 1.63e-47 | 669 |
| Biological regulation (GO: 0065007)          | 0     | NA    | 0      | 0      | 0      | 0      | 0      | 0      | 16394 |
| Cellular component organization or biogenesis (GO: 0071840) | 4.71e-242 | NA   | 6.70e-33 | 0     | 1.28e-113 | 0     | 0      | 0      | 7995 |
| Cellular process (GO: 0009987)                | 0     | NA    | 0      | 0      | 0      | 0      | 0      | 0      | 43160 |
| Developmental process (GO: 0032502)          | 4.50e-130 | NA | 5.30e-28 | 0     | 2.00e-97 | 0     | 0      | 0      | 5667 |
| Growth (GO: 0040007)                          | 3.04e-10 | NA  | 2.78e-39 | 0.023156 | 6.23e-28 | 3.72e-09 | 1.10e-46 | 2.80e-46 | 556 |
| Immune system process (GO:0002376)           | NA    | NA    | 2.31e-49 | NA    | 2.37e-37 | NA    | 8.21e-52 | 4.96e-42 | 743 |
| Localization (GO: 0051179)                   | 0     | NA    | 8.55e-109 | 0     | 0      | 0      | 0      | 0      | 12057 |
| Locomotion (GO: 0040011)                     | 7.46e-15 | NA  | 1.05e-56 | NA    | 1.44e-39 | 5.79e-13 | 2.74e-58 | 2.30e-58 | 846 |
| Metabolic process (GO: 0008152)              | 0     | NA    | 0      | 0      | 0      | 0      | 0      | 0      | 45390 |
| Multicellular organism process (GO: 0032501)  | 9.58e-226 | NA | 0      | NA    | 0      | 4.77e-179 | 0      | 0      | 8101 |
| Reproduction (GO: 0000003)                   | 1.18e-69 | NA  | 1.58e-257 | NA    | 1.43e-183 | 1.50e-38 | 4.71e-272 | 6.57e-191 | 2773 |
| Response to stimulus (GO: 0050896)           | 0     | NA    | 1.19e-68 | 0      | 1.02e-256 | 0      | 0      | 0      | 10778 |
| Rhythmic process (GO: 0048511)               | 0.087659 | NA  | 7.51e-05 | NA    | 8.45e-07 | NA    | 5.34e-06 | NA    | 164 |
Table S2. PANTHER analysis of differentially expressed genes across time points for NV+ vs. NV− flies. The numbers in the column indicate the total number of genes found either upregulated or downregulated for the immune system processes that were able to be mapped from PANTHER. *This gene is an orthologue described by PANTHER databases.

|       | Day 2 |       | Day 10 |       | Day 20 |       | Day 30 |
|-------|-------|-------|--------|-------|--------|-------|--------|
| Up    | 9     | Down  | 0      | 26    | 2      | 21    | 3      | 23     |
| Aplip1| CG5568| Hsp27 | CG11319| CG5568| Aplip1 | CG3394|
| CG11319|      |       |        |       |        |       |        |
| CG11407|      |       |        |       |        |       |        |
| CG11407'|      |       |        |       |        |       |        |
| CG11391|      |       |        |       |        |       |        |
| CG11407|      |       |        |       |        |       |        |
| CG11453|      |       |        |       |        |       |        |
| CG115611|     |       |        |       |        |       |        |
| Fatp  | CG11407|      |        |       |        |       |        |
| CG11453|      |       |        |       |        |       |        |
| CG11319|      |       |        |       |        |       |        |
| CG11391|      |       |        |       |        |       |        |
| CG11407|      |       |        |       |        |       |        |
| CG11453|      |       |        |       |        |       |        |
| CG15611|      |       |        |       |        |       |        |
| CG17684|      |       |        |       |        |       |        |
| CG17999|      |       |        |       |        |       |        |
| CG30456|      |       |        |       |        |       |        |
| CG42673|      |       |        |       |        |       |        |
| CG4328 |      |       |        |       |        |       |        |
| CG4461 |      |       |        |       |        |       |        |
| CG45002|      |       |        |       |        |       |        |
| CG45002|      |       |        |       |        |       |        |
| CG5568 |      |       |        |       |        |       |        |
| CG5708 |      |       |        |       |        |       |        |
| CG7409 | fw    |       |        |       |        |       |        |
| CG8834 | hig   |       |        |       |        |       |        |
| CG9993 | l(2)efl|     |        |       |        |       |        |
| Fatp  |       |       |        |       |        |       |        |
| CG7409|      |       |        |        |        |       |        |
| CG8834|      |       |        |        |        |       |        |
| CG9993|      |       |        |        |        |       |        |
| Fatp  |       |       |        |        |        |       |        |
| l(2)efl|      |       |        |        |        |       |        |
| Lim3' |       |       |        |        |        |       |        |
| fw    |       |       |        |        |        |       |        |
| hig   |       |       |        |        |        |       |        |
| Lim3' |       |       |        |        |        |       |        |
| Hsp67Bc|      | wry   |        |        |        |       |        |
| l(2)efl|      |       |        |        |        |       |        |
| Lim3' |       |       |        |        |        |       |        |
| Mlp60A|      |       |        |        |        |       |        |
| Mlp60A|      |       |        |        |        |       |        |

Table S3. Gene list of differentially expressed immune related genes across time points for NV+ and NV− flies from the manual analysis using a list of Drosophila genes with potential relevance to the immune response [2], FlyBase [1], The Interactive Fly list of RNAi genes [3]. The red highlighted genes represent the upregulated genes, whereas the green highlighted genes represent the downregulated genes for each comparison.
Table S4. The excel file depicts the data for Nora virus infected (NV+) or uninfected (NV−) flies for each time point (10, 20 and 30) compared to the control time point (day 2). These are comparisons NV+ day 2 vs. day 10, 20 and 30. The comparisons for NV+ vs. NV− for each time point (2, 10, 20 and 30) are also given. The red highlighted genes represent the upregulated genes, whereas the green highlighted genes represent the downregulated genes for each comparison.

References

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3. Society for Developmental Biology, the Interactive Fly: RNAi and posttranscriptional gene silencing, 2017. Available from: http://www.sdbonline.org/sites/fly/aigntfam/rnaistuf.htm.

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