# Modeling the metabolic interplay between a parasitic worm and its bacterial endosymbiont allows the identification of novel drug targets

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# **Supplemental Information**

Contains:

Supplemental Table 1

Supplemental Table 2

Supplemental Table 3

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Open | L3 | L3D6 | L3D9 | L4 | F30 | F42 | F120 | M30 | M42 | M120 |
| Control | HOHG | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| HOLG | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| LOHG | 12.6 | 12.6 | 9.1 | 8.7 | 9.4 | 10.2 | 11.4 | 7.1 | 9.8 | 8.8 | 8.9 |
| LOLG | 10.2 | 7.2 | 7.2 | 6.4 | 6.5 | 7.0 | 7.6 | 6.5 | 7.3 | 6.7 | 6.4 |
| + pyruvate | HOHG | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| HOLG | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| LOHG | 12.6 | 12.6 | 10.3 | 10.2 | 10.7 | 11.3 | 12.6 | 8.3 | 11.2 | 10.5 | 12.1 |
| LOLG | 12.6 | 9.4 | 8.2 | 7.4 | 7.2 | 7.7 | 8.5 | 7.4 | 8.0 | 7.6 | 8.4 |

**Supplemental Table 1. The objective flux under a high *Wolbachia* weight.** This table compares the flux through the objective function with a *Wolbachia* weight of 1.0 in each life stage model under different nutrient conditions, with and without excess pyruvate.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Open | L3 | L3D6 | L3D9 | L4 | F30 | F42 | F120 | M30 | M42 | M120 |
| Control | HOHG | 59.5 | 37.8 | 28.0 | 31.1 | 33.4 | 35.3 | 36.6 | 18.1 | 30.5 | 31.0 | 15.7 |
| HOLG | 48.5 | 37.1 | 24.4 | 24.5 | 30.8 | 27.4 | 27.3 | 17.0 | 26.2 | 25.7 | 15.7 |
| LOHG | 44.3 | 35.6 | 26.6 | 27.6 | 28.0 | 30.0 | 32.2 | 14.5 | 26.0 | 26.0 | 15.7 |
| LOLG | 24.1 | 23.4 | 22.9 | 23.0 | 22.8 | 21.8 | 23.2 | 13.5 | 21.0 | 21.0 | 15.7 |
| + pyruvate | HOHG | 69.1 | 37.8 | 31.0 | 31.9 | 33.5 | 37.2 | 37.5 | 21.2 | 31.1 | 32.6 | 15.7 |
| HOLG | 60.0 | 37.6 | 26.0 | 25.5 | 31.2 | 28.7 | 28.3 | 19.2 | 26.6 | 26.5 | 15.7 |
| LOHG | 54.3 | 37.5 | 28.6 | 29.6 | 29.0 | 33.4 | 34.2 | 18.1 | 28.3 | 29.1 | 15.7 |
| LOLG | 35.8 | 29.8 | 24.5 | 24.4 | 23.5 | 23.1 | 24.5 | 16.6 | 22.9 | 23.7 | 15.7 |

**Supplemental Table 2. The maximum objective flux achieved with varying *Wolbachia* weight.** This table compares the maximum flux through the objective function in each life stage model under different nutrient conditions, with and without excess pyruvate.

|  |  |  |
| --- | --- | --- |
|  | Movement units (mean) | Movement units (standard deviation) |
| Control | 18.54 | 2.11 |
| Fosmidomycin | 15.59 | 5.48 |
| MDL-29951 | 17.54 | 2.98 |
| Tenofovir | 21.23 | 1.68 |

**Supplemental Table 3. Motility of *B. malayi* was not affected by drug treatment.** Assessments were made on one female worm per well, with eight biological replicates per condition. A unique motility phenotype was observed with Fosmidomycin treatment, but results were not significant as measured using the Worminator assay.