### S1 Text Table A.

| Ingredient | Quantity | Source |
|------------|----------|--------|
| Cornmeal   | 10g      | Drosophila |
| Proprionic acid | 1,000ml | Drosophila |
| Malt + yeast | 20g     | Drosophila |
| Banana     | 1,000ml  | Drosophila |
| CrPV       | 30g      | Drosophila |
| Nipagin    | 10g      | Drosophila |
| Molasses   | 80g      | Drosophila |
| Malt extract | 14ml   | Drosophila |
| Soya flour | 150g     | Drosophila |
| Yeast      | 88g      | Drosophila |
| Agar       | 11g      | Drosophila |
| Water      | 1,000ml  | Drosophila |
| Semolina   | 22g      | Drosophila |
| Water 1     | 2.558    | Drosophila |
| Water 2     | 2.056    | Drosophila |
| Water 3     | 2.053    | Drosophila |
| Water 4     | 2.045    | Drosophila |
| Water 5     | 2.013    | Drosophila |
| Water 6     | 1.969    | Drosophila |
| Water 7     | 1.917    | Drosophila |
| Water 8     | 1.914    | Drosophila |
| Water 9     | 1.895    | Drosophila |
| Water 10    | 1.864    | Drosophila |

### S1 Text Table B.

| Species         | RpL32_qPCR_F-a | RpL32_qPCR_F-b | RpL32_qPCR_F-c | RpL32_qPCR_F-d |
|-----------------|----------------|----------------|----------------|----------------|
| D. melanogaster | -0.38 (p < 0.001) | -0.40 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) |
| D. yakuba       | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) |
| D. sechellia    | -0.43 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) |
| D. putridia     | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  |
| D. simulans     | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  |
| D. virilis      | -0.03 (95% CI = -0.01, 0.08) | -0.03 (95% CI = -0.01, 0.08) | -0.03 (95% CI = -0.01, 0.08) | -0.03 (95% CI = -0.01, 0.08) |
| D. ananassae    | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) |

### S1 Text Table C.

| Host Species | RpL32_qPCR_R-a | RpL32_qPCR_R-b | RpL32_qPCR_R-c | RpL32_qPCR_R-d |
|--------------|----------------|----------------|----------------|----------------|
| D. melanogaster | -0.38 (p < 0.001) | -0.38 (p < 0.001) | -0.38 (p < 0.001) | -0.38 (p < 0.001) |
| D. yakuba     | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) |
| D. sechellia  | -0.43 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) |
| D. simulans   | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  |
| D. virilis    | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  |
| D. ananassae  | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) | -0.05 (95% CI = -0.14, 0.03) |

### S1 Text Table E.

For different host species (S1 Text Table C) to account for SNPs in the primer binding sites.

### S1 Text Supplementary Methods.

Recipes for each media type can be found below.

S1 Text Table A.

| Medium Type | Recipe |
|-------------|--------|
| Cornmeal    | 10g    |
| Proprionic acid | 1,000ml |
| Malt + yeast | 20g   |
| Banana      | 1,000ml |
| CrPV        | 30g    |
| Nipagin     | 10g    |
| Molasses    | 80g    |
| Malt extract | 14ml |
| Soya flour  | 150g   |
| Yeast       | 88g    |
| Agar        | 11g    |
| Water 1     | 2.558  |
| Water 2     | 2.056  |
| Water 3     | 2.053  |
| Water 4     | 2.045  |
| Water 5     | 2.013  |
| Water 6     | 1.969  |
| Water 7     | 1.917  |
| Water 8     | 1.914  |
| Water 9     | 1.895  |
| Water 10    | 1.864  |

CrPV : DCV-C

DCV-EB : DCV-M

CrPV : DCV-M

Posterior Mean

MCMCglmm model estimates of the effects of wing length on viral load of each virus across host species.

| Name          | RpL32_qPCR_R-a | RpL32_qPCR_R-b | RpL32_qPCR_R-c | RpL32_qPCR_R-d |
|---------------|----------------|----------------|----------------|----------------|
| RpL32_qPCR_F-a | -0.38 (p < 0.001) | -0.40 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) |
| RpL32_qPCR_F-b | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) |
| RpL32_qPCR_F-c | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  |
| RpL32_qPCR_F-d | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  |
| RpL32_qPCR_R-a | -0.38 (p < 0.001) | -0.40 (p < 0.001) | -0.43 (p < 0.001) | -0.43 (p < 0.001) |
| RpL32_qPCR_R-b | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) | -0.45 (p < 0.001) |
| RpL32_qPCR_R-c | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  | -0.07 (p = 0.17)  |
| RpL32_qPCR_R-d | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  | -0.02 (p = 0.47)  |