OrNV Transmission Experiment

James Grasela and Aubrey Moore

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This experiment was performed to determine if OrNV isolate V23B can be transmitted from a dosed CRB adult to an undosed CRB adult.

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@misc{grasela_guam_2020,
  title = {Guam {{CRB Biocontrol Project Technical Report}}: {{OrNV Transmission Experiment}}},
  author = {Grasela, James and Moore, Aubrey},
  date = {2020},
  url = {https://github.com/aubreymoore/OrNV-Transmission/blob/master/ornv-transmission.pdf}
}
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1 Materials and Methods

1.1 Beetles

Beetles were field collected from pheromone sites and kept individually in moist peat moss in Mason jars. The jars were held under standard rearing conditions in an environmental chamber: 30 deg C; 80% RH; 12h photoperiod.

1.2 Virus and Dosing Method

Beetles were dosed per os with ca. 30 microlitre V23B virus preparation of unknown concentration (AgResearch, New Zealand).

1.3 Experimental design

To test for virus transmission, beetles were selected at random and assigned to 45 pairs with a male and a female in each pair. These pairs were housed in Mason jars half filled with moist peat moss. The jars were held under standard rearing conditions. At the start of the bioassay, the beetle pairs were randomly placed in 3 treatment groups of 15 jars each. Beetles were observed every other day.

1.4 Post-mortems

Dead beetles were dissected and images were made of guts using a cellphone camera. Note on pathology were recorded.

2 Analysis

Data were saved in a comma separated values text file, **OrNV-transmission.csv**. Analysis was performed using a Jupyter notebook, **OrNV-transmission.ipynb**.

Table 1: Treatment groups.

Treatment group	Treatment
Jars labeled C1 through C15	Experimental control; neither beetle was dosed
Jars labeled TF1 through TF15	Female was dosed with virus; male was not dosed
Jars labeled MF1 through MF15	Female was dosed with virus; male was not dosed

3 Results

Results from this experiment are inconclusive because ofh high control mortality (Fig. 1).

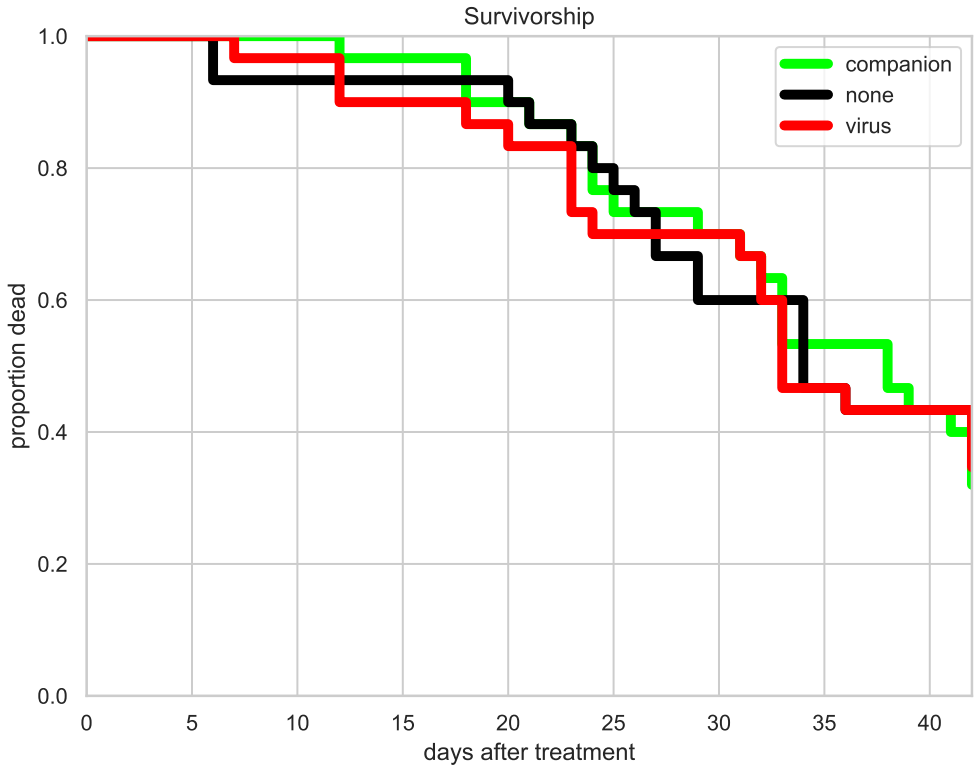

Figure 1: Survival of beetles after treatment.

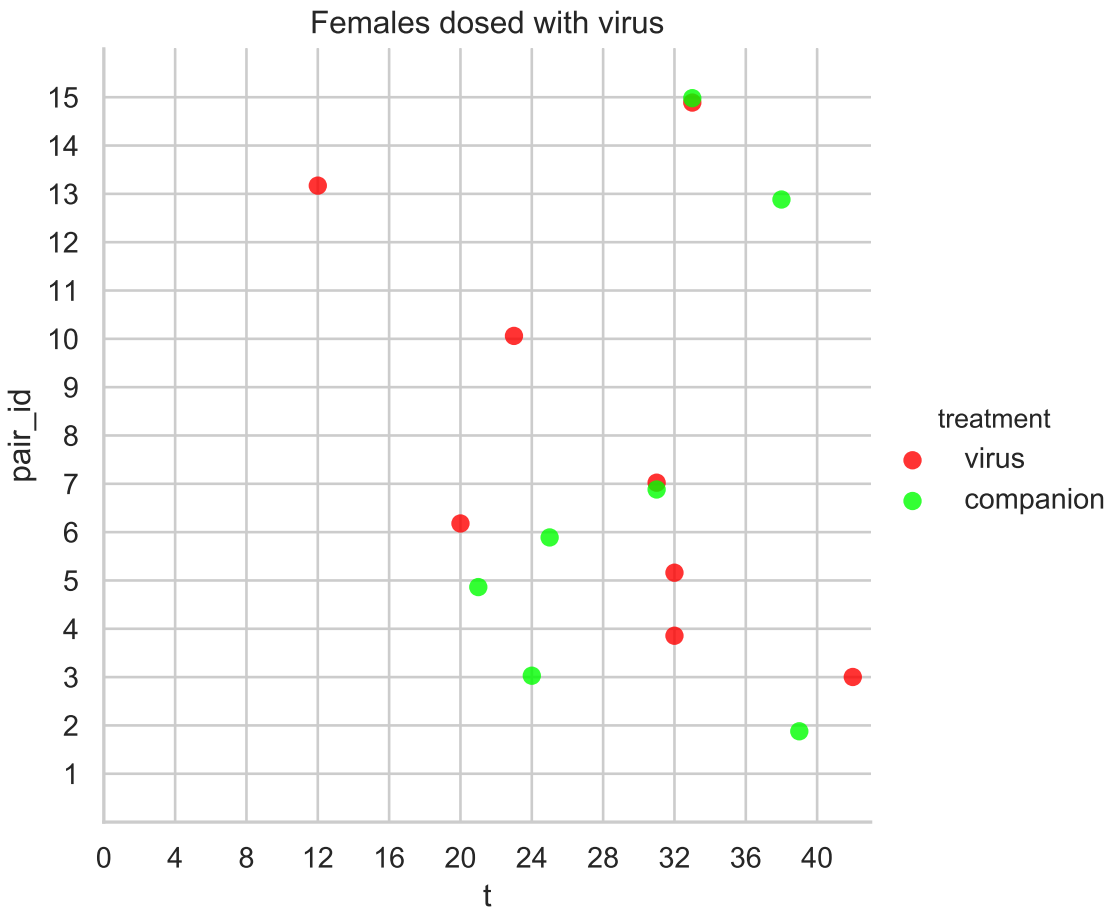

Figure 2: Mortality of beetles in jars where the female was dosed with virus. Points indicate time of death, in days after treatment, for dosed (red points) and undosed beetles (green points).

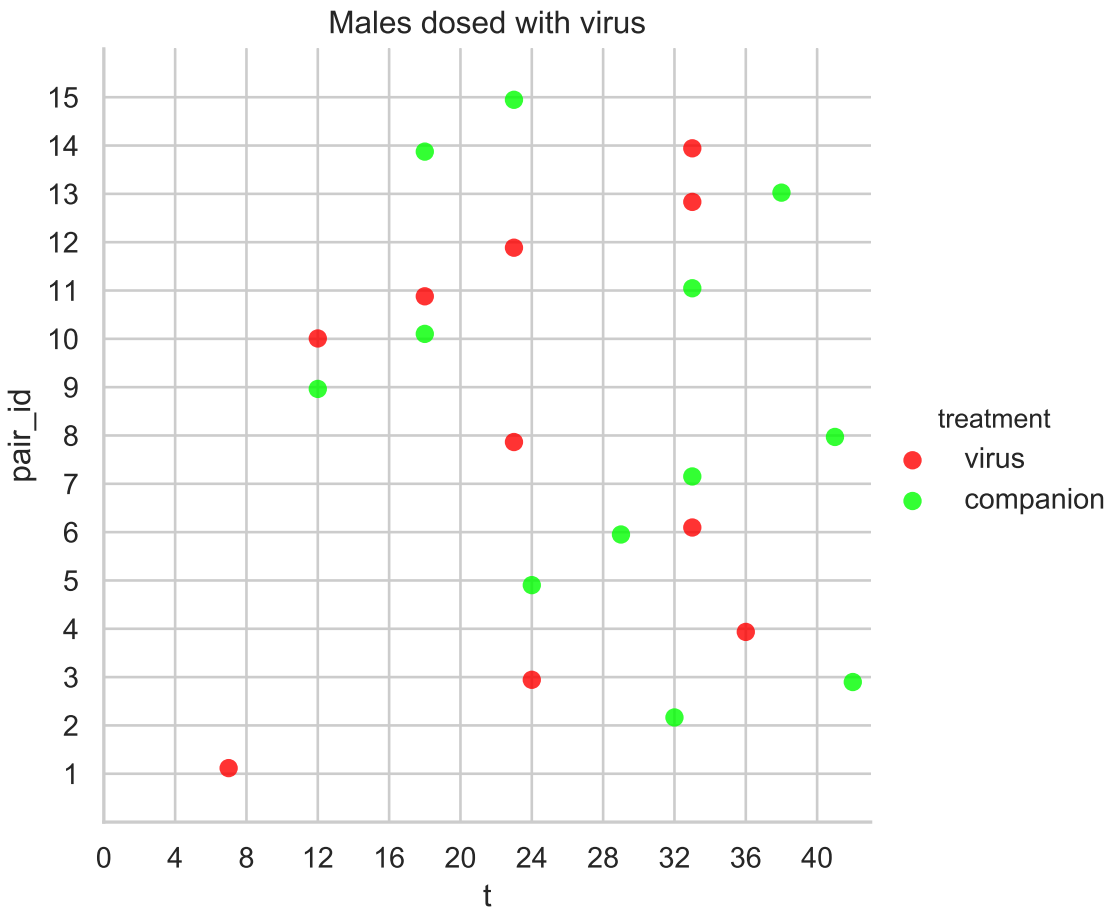

Figure 3: Mortality of beetles in jars where the male was dosed with virus. Points indicate time of death, in days after treatment, for dosed (red points) and undosed beetles (green points).