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# Collaborative Research: Development and empirical tests of a mechanistic multi-host, multi-pathogen theory

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# Data Management Plan

## Types of Data Produced

Data produced for the proposed work will include data collected in lab experiments (Aims 1.C.2, 1.C.3, 2.C.2, 3.C.3, and 3.C.4) as well as field data (Aim 4.C). For the lab experiments, data will include those from beaker-level experiments (Aims 1.C.2 and 3.C.3), which will include data on susceptibility, reproduction, life span, and spore yield for each of the genotypes used in the study. It will also include data from mesocosm experiments (Aims 1.C.3, 2.C.2, and 3.C.4), including data on host density, pathogen infection prevalence, and stage structure of the host communities. For the field data (Aim 4.C), data collected will include time series data on host density, infection prevalences, and egg ratios in the different hosts in the eight lake communities. In year 2, additional data on coinfection rates and spore yield from infected hosts will also be collected.

## Data and Metadata Standards

All of the data collected will be recorded on paper in lab notebooks and immediately transferred to an electronic spreadsheet, saved as a .csv file. The electronic spreadsheets are maintained on a lab computer that is immediately mirrored to the cloud. Different versions of each file are maintained, so that, if the file is corrupted, it is possible to go back to an earlier version. In addition, pictures of all hard copy data sheets are taken with a cell phone camera at the end of each day and uploaded to an electronic lab notebook. Thus, all of the data are in four locations: the hard copy lab notebook, an electronic lab notebook, the lab computer, and on the cloud.

## Policies for Access and Sharing

All data, metadata, and code required for analyzing the data are posted to github upon submission of manuscripts. An example of this for an earlier project is available at:

<https://github.com/duffymeg/BroodParasiteDescription>

(Note: it is possible to access and download github files anonymously.) Data can also be obtained via email.

All models, analyzes, proofs, and software code (e.g., Matlab scripts) will be made available through supplementary information accompanying publications on the publisher's website and posted on github as described above.

## Policies for Re-Use and Distribution

Data and code will be archived and preserved on github, as described in the section above. Data will be posted with a license allowing reuse by others. Duffy is also working with University of Michigan librarian Scott Martin to help pilot a program that would also archive data through the library.