MSC proposal 1
**Supervised by Dr. Alice Dennis**
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How does pollution change tolerance of warming conditions?

Daphnia are small crustaceans, found in bodies of freshwater around the world. They are an excellent model for environmental adaptation, with different species and strains occurring at different times of the year, under different levels of pollution, and more. We are using them to understand how different stressors act together to determine when and where a species will occur. This is an important component of understanding ecological niche, because many studies only consider one aspect of the environment at a time, and this is not realistic. On the other side, modeling that incorporates many different variables is valuable but not easy to replicate in lab experiments. Therefore, in this project we will investigate the impact of two stressors (Pollution from P and temperature). The student will rear different lineages of *Daphnia* under increasing levels of phosphorous pollution and couple this with measures temperature tolerance (via thermal death-time curves). This will be related back to when and where the lineages occur. Below is an example of the approach:
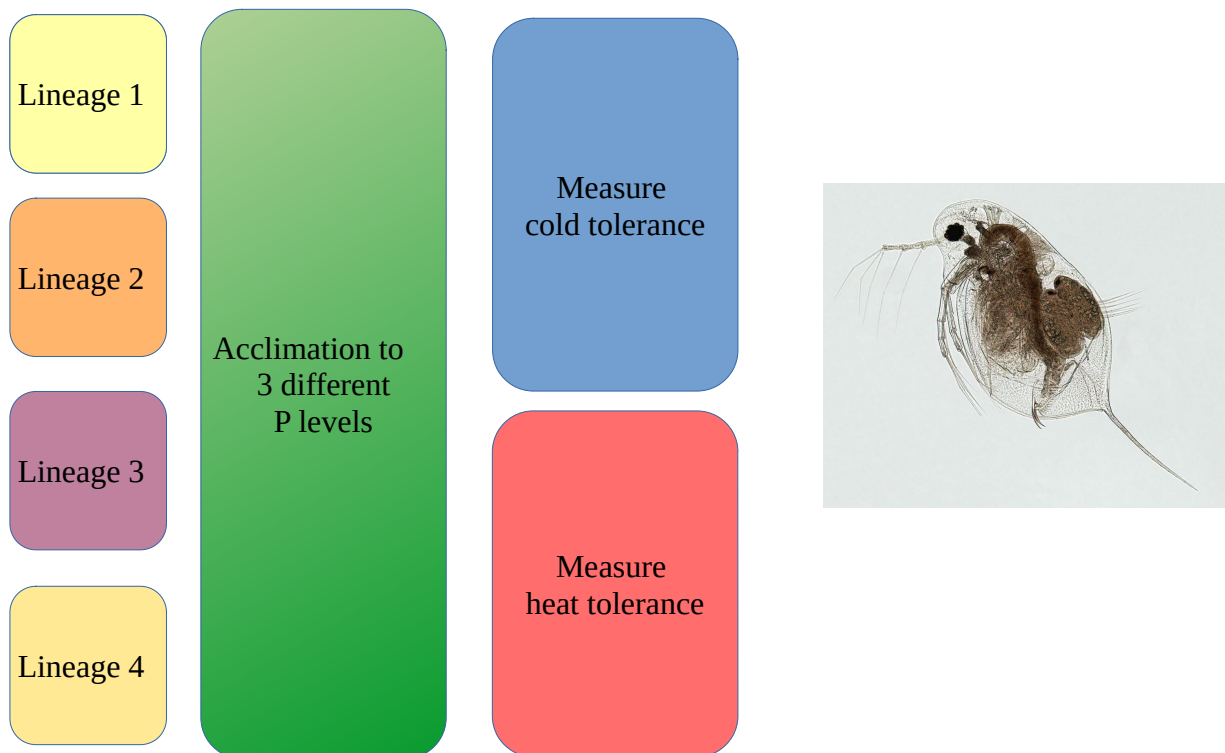
This project will give students experience in:
- Experimental design and *Daphnia* rearing
- Measuring phenotypes
- Cutting-edge methods to quantify temperature tolerance (Thermal Death Time Curves)