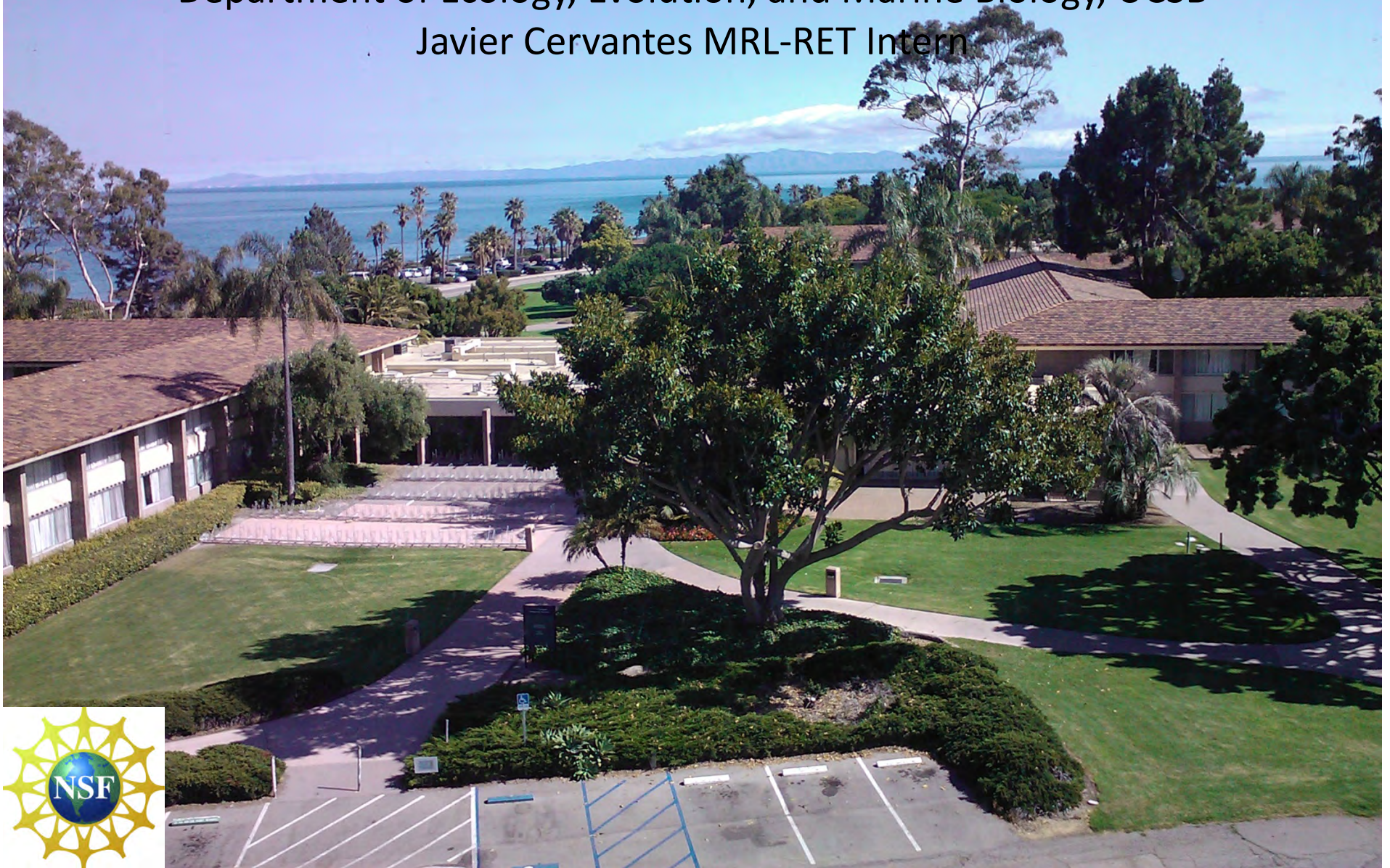


Studying the Evolution of Mating Systems in Clarkia

The Dr. Susan Mazer and Dr. Leah Dudley Lab

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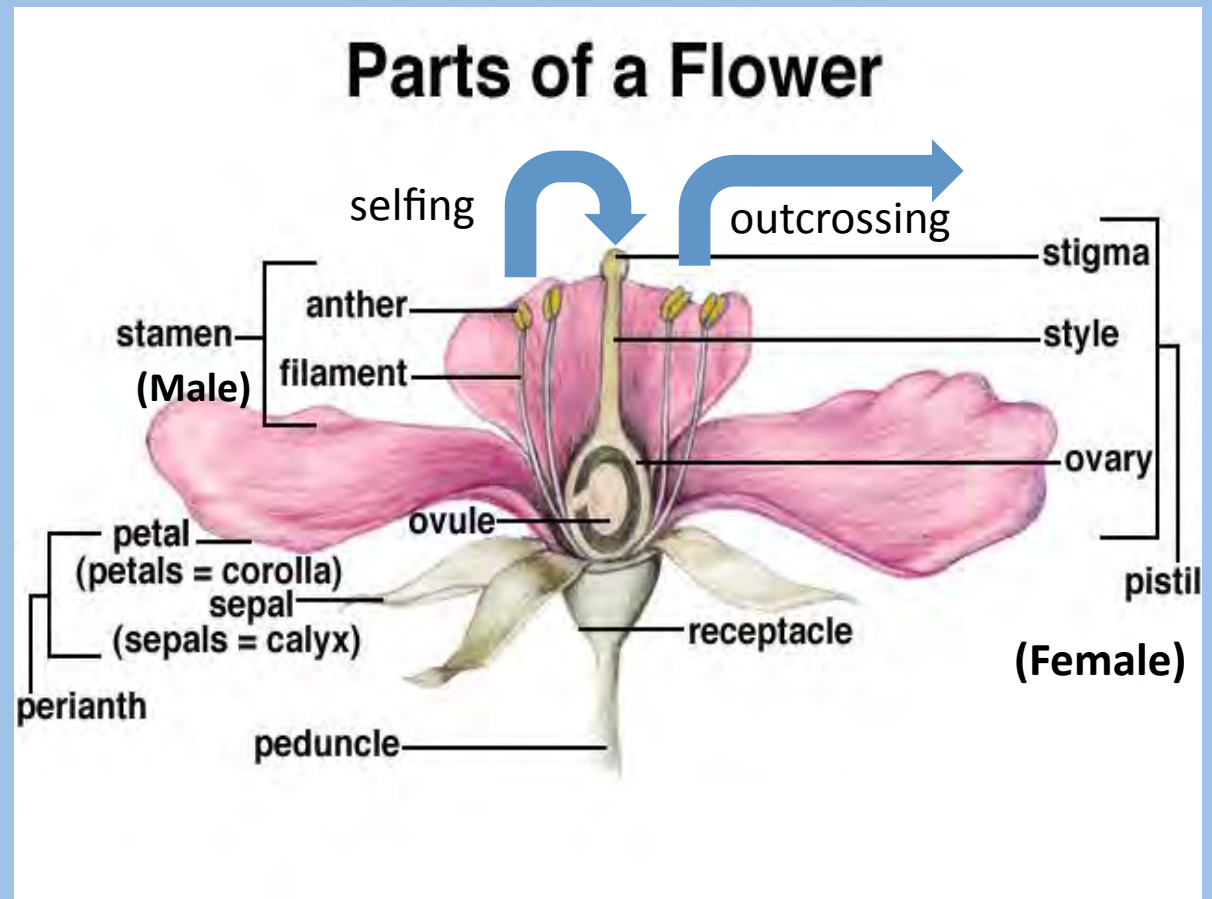


A little Background

Mating system-refers to the type of reproduction used by a plant. This can be either self-pollination(selfers), cross-pollination(outcrossers) or both .

Pollen to Ovule ratio

- The best predictor of mating system being used by a flowering plant.
- High P:O indicates outcrosser.
- Low P:O indicates selfer (Cruden 1977).



Observations

- Climate Change may be causing plants to have earlier flowering dates.
- Early flowering plants tend to be selfers.
- Selfers tend to be less physically fit plants.

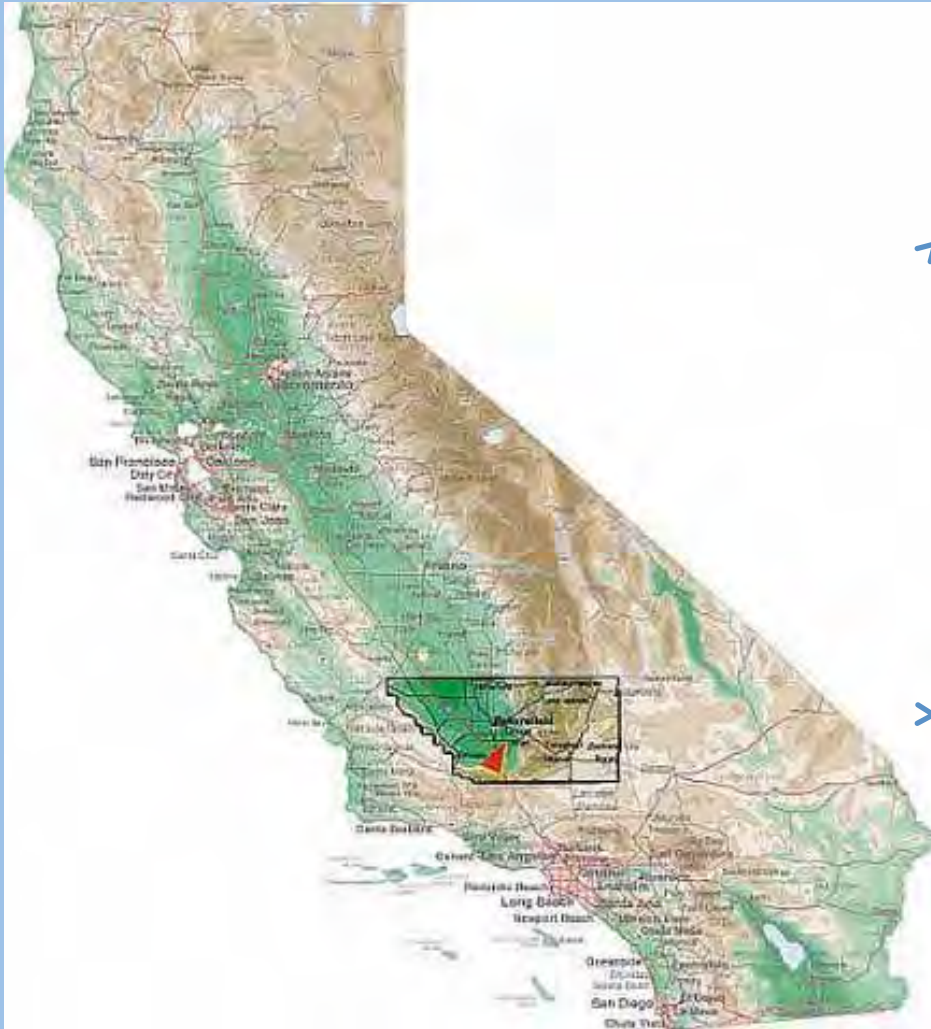
Question

- Is time of flowering genetically correlated to the mating system of a plant?

Methods - Overview

- Select two species of *Clarkia* known to be outcrossers (*Xantiana* and *Unguiculata*).
- Grow them and self pollinate them for several generations in the greenhouse.
- Record flowering dates and pollen to ovule ratios.
- Compare results to outcrossed controls grown along side.

Clarkia used in this study



Seeds were collected from Old Mill Creek and Highway 99 in Kern County.



Clarkia xantiana ssp. xantiana

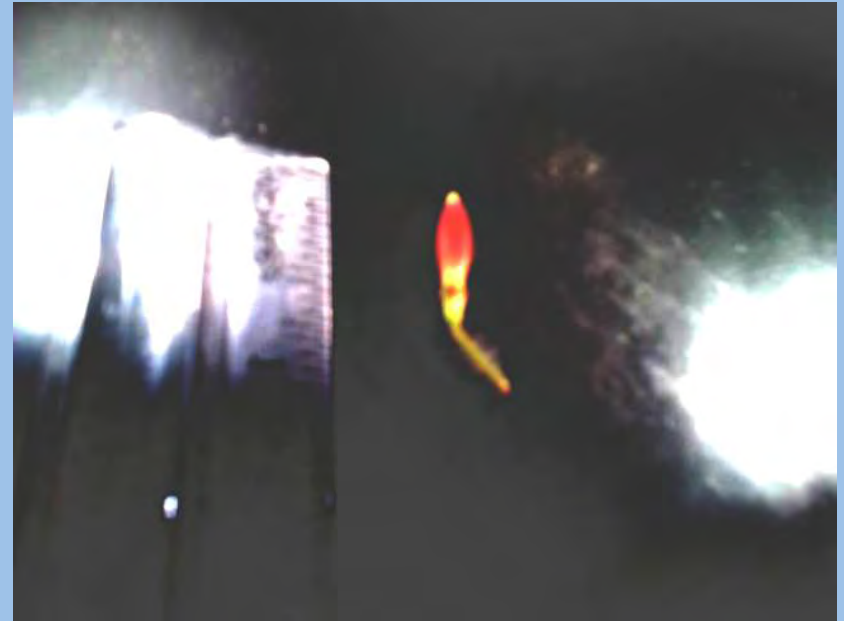


Clarkia unguiculata

Growing, Selfing, Outcrossing and collecting flower buds



The seeds collected were grown in a controlled environment. 150 families were selected for the experiment.



The Date of first flowering was recorded and the second or third bud was collected for dissecting.

Dissecting buds and counting ovules



locules



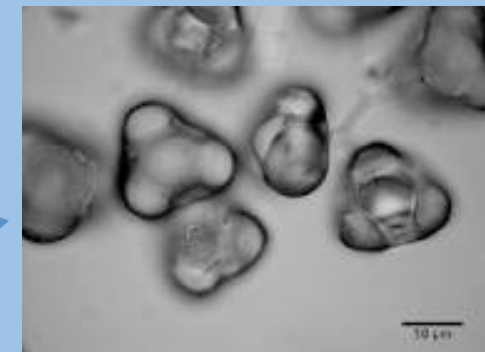
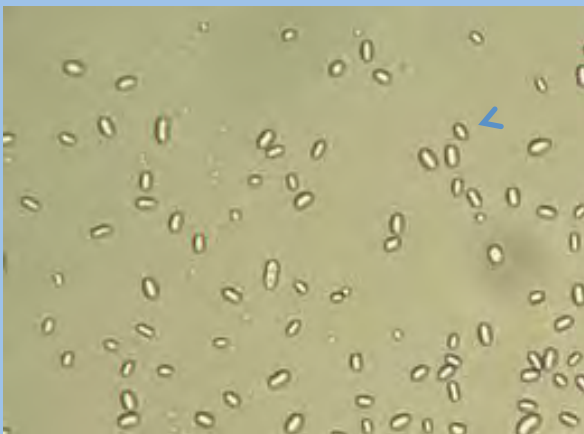
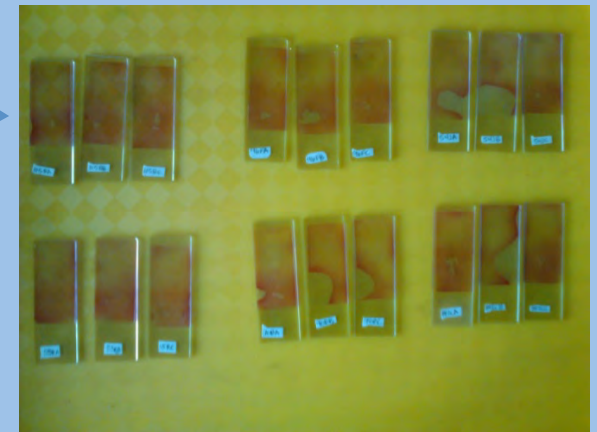
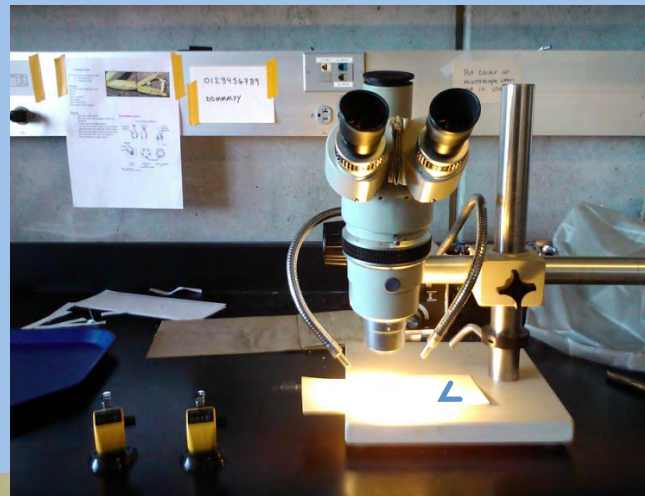
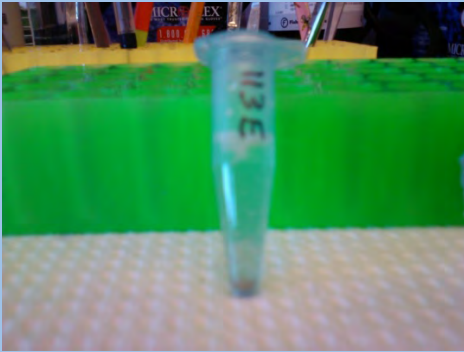
The buds collected were dissected. The ovaries and anthers were separated and the ovules of each ovary were counted.



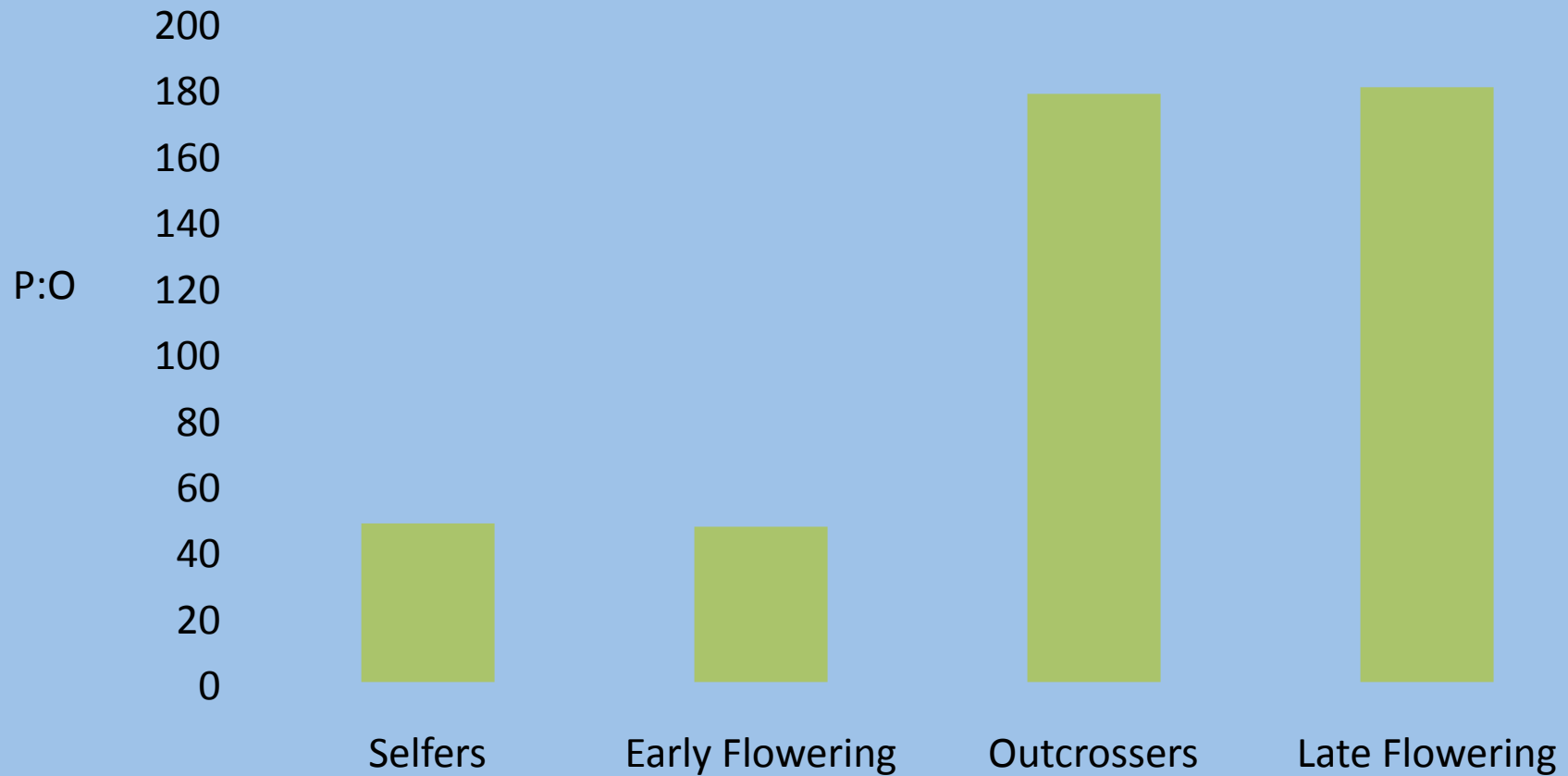
Ovules

Counting pollen

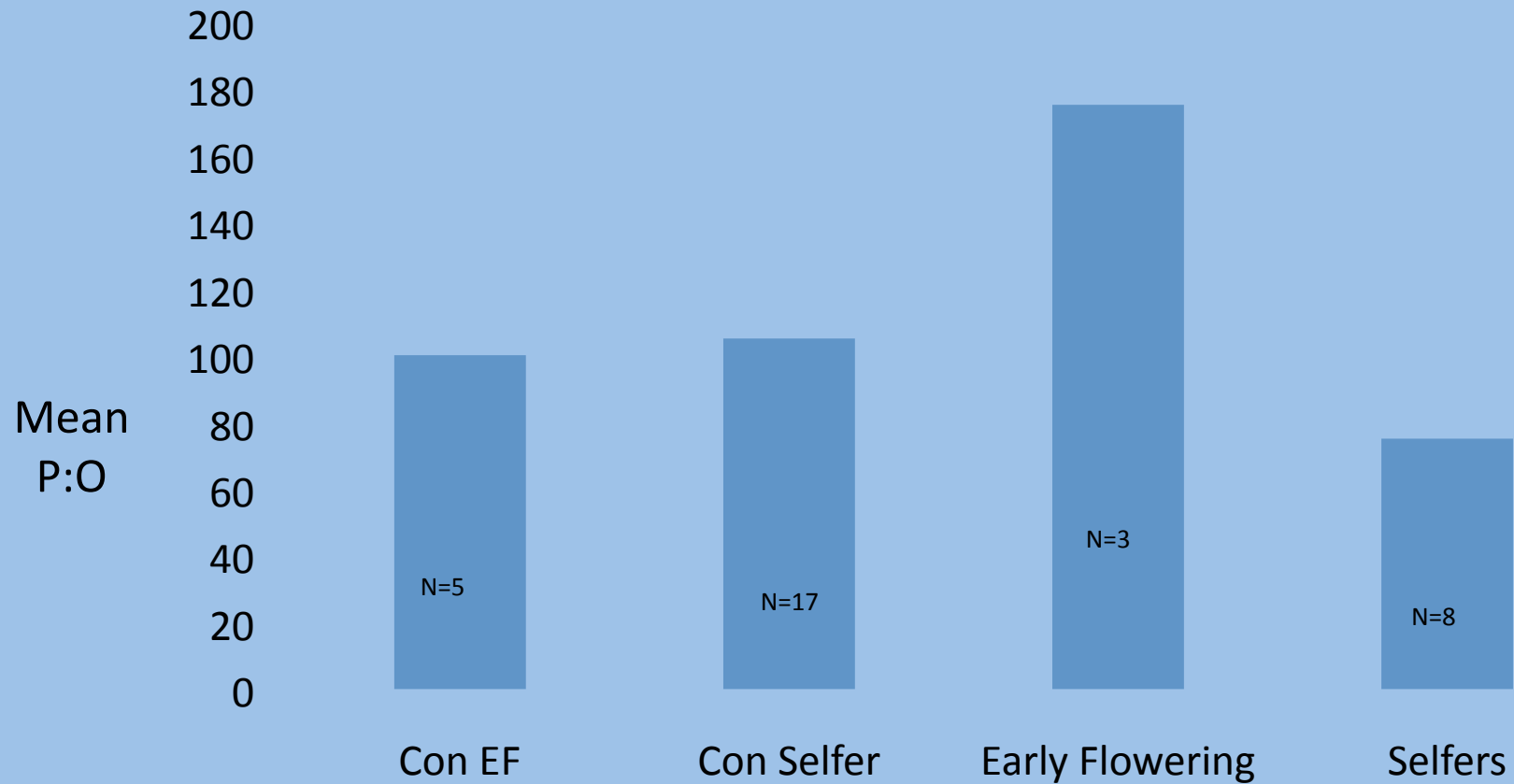
The anthers are placed in solution and agitated to release all their pollen. Three replicate slides are made and an estimate of total number of pollen grains in the solution is made from the count taken.



Expected Pollen to Ovule Ratios



Preliminary Results



Conclusion

- Although final results from our research project were incomplete, enough was completed to achieve the goals of the program and my personal goals to levels far beyond my expectations.
- So stay tuned to the next publication from Dr. Mazer and Dr. Dudley to learn what happens next in their study.

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