



Examining the incidence of Paternal Mitochondrial Inheritance in closely related populations of *Tigriopus californicus*

Jorge Santana, Biology BS

Faculty Advisor (Biology Dept.): Christopher Willett

Research Question and Importance

- ▶ What is the incidence of paternal mitochondrial inheritance (paternal leakage) in hybrids produced when crossing two closely related populations of *Tigriopus californicus* (intertidal copepod)?
- ▶ Animals usually inherit their mitochondria from their mothers. However, it has been observed in some species that there is a presence of paternal mitochondria, although not as much as the maternal, when looking at hybrids (individuals born when mating two closely related species or populations).
- ▶ The importance of this line of research is to better understand how often paternal inheritance occurs in this species of copepod and whether this phenomenon is a possible consequence of hybrid breakdown or if it is an independent event within the species.

Results & Conclusions

- ▶ After doing reciprocal crosses between the two populations used (SD & BR), and amplifying mitochondrial DNA sequences using PCR and population-specific primers, it was evident that there was an unexpected presence of paternal inheritance in all the life stages of the reciprocal cross that had female BR and male SD parents.
- ▶ This is very interesting in the sense that it leads to questions of how related must the populations be for paternal leakage to appear, if it is actually related to hybrid breakdown; or whether it is a common occurrence within this species.
- ▶ Copepods are a model species for evolutionary genetics research and knowing more about the circumstances behind their mechanisms of inheritance is of the utmost importance.