



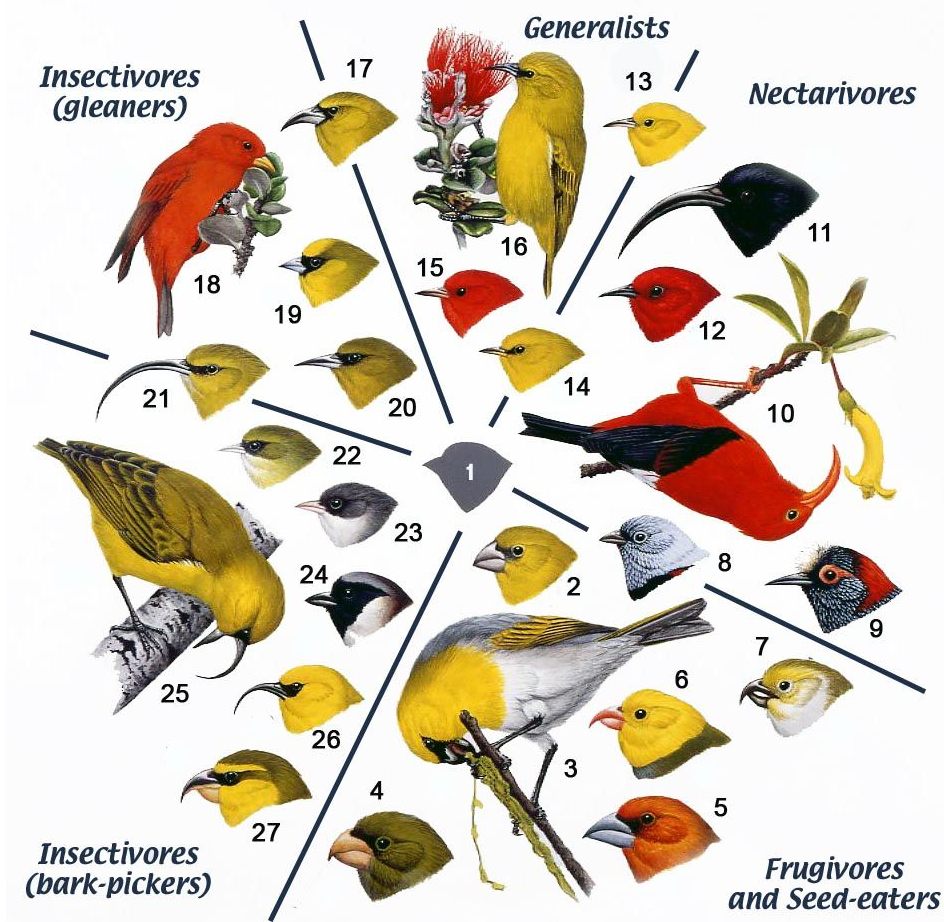
Cool Mosquitoes

Cold tolerance in *Culex quinquefasciatus*
and how it relates to microbiome

MEHANA LEAFCHILD

MEDEIROS LAB HUI University of Hawaii at Manoa

Native Hawaiïan Honeycreepers







Only 17 of 50 species of honeycreepers are still alive today



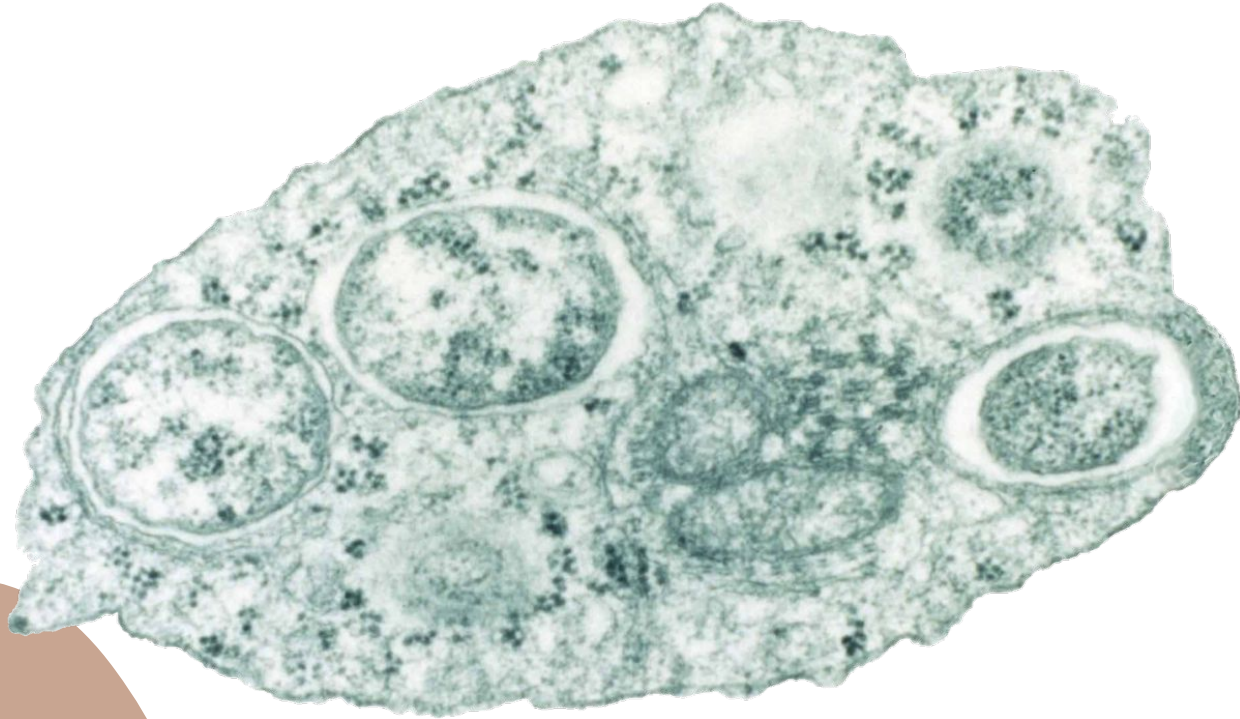
Mosquitoes spread avian malaria

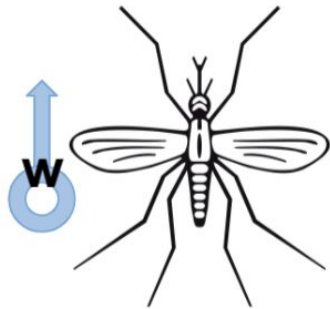
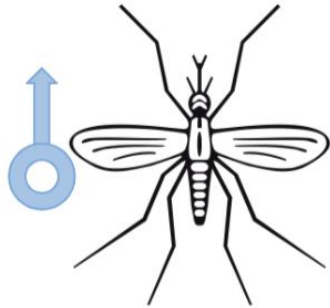
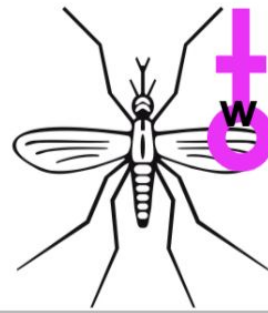
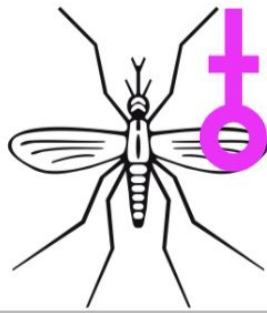


GET RID OF MOSQUITOES



Wolbachia





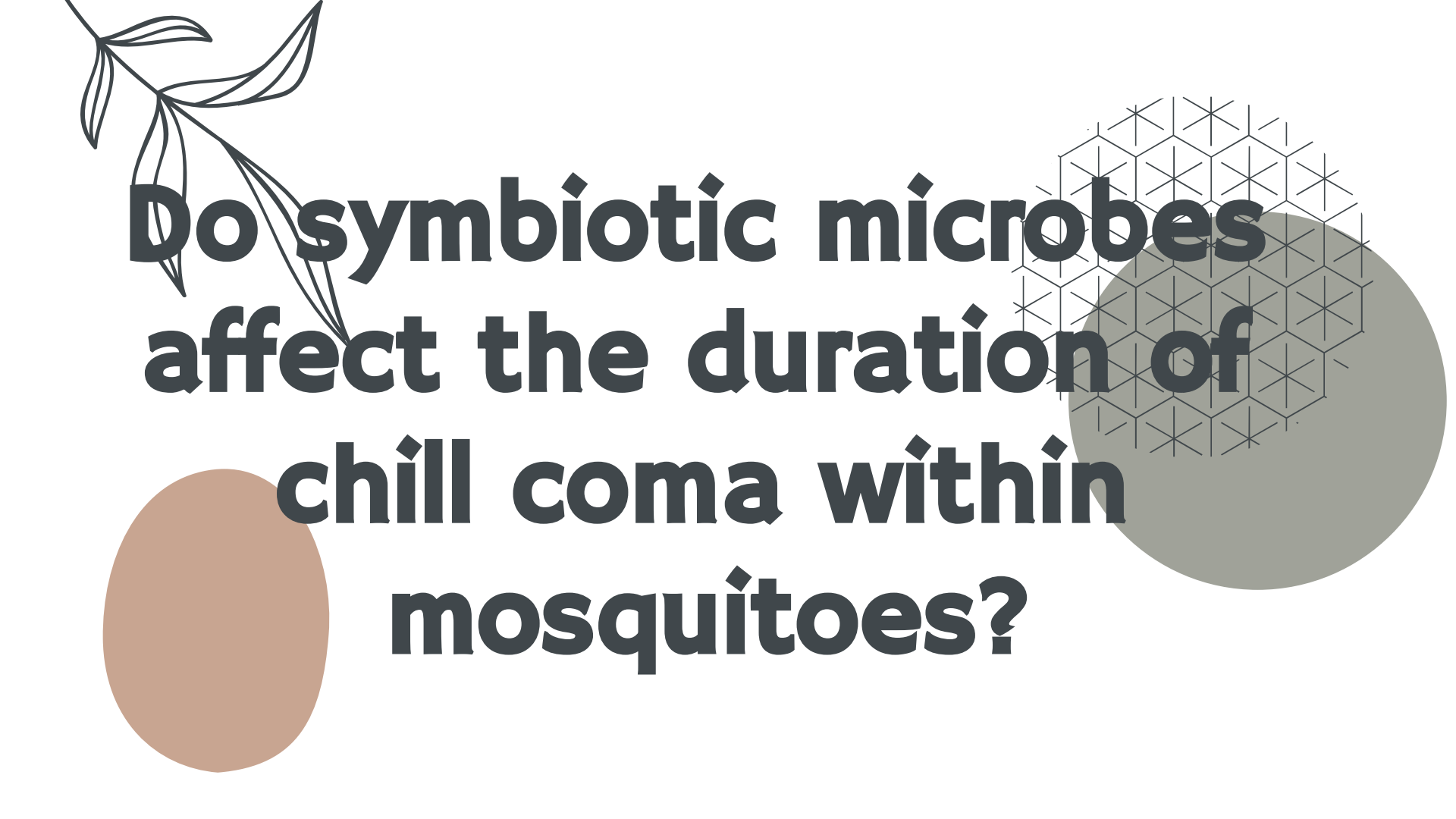
Viable Eggs	Depends on cytoplasmic incompatibility
Unviable Eggs	Depends on strain



Similar projects have been done and are being done in Singapore, California, and Puerto Rico

Mosquito Chill Coma

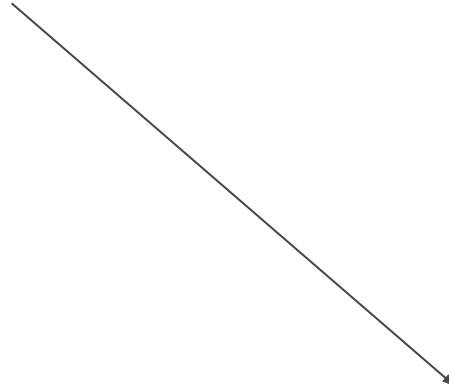




**Do symbiotic microbes
affect the duration of
chill coma within
mosquitoes?**

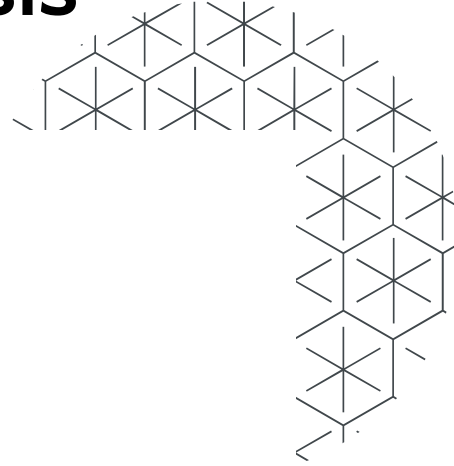
Hypothesis

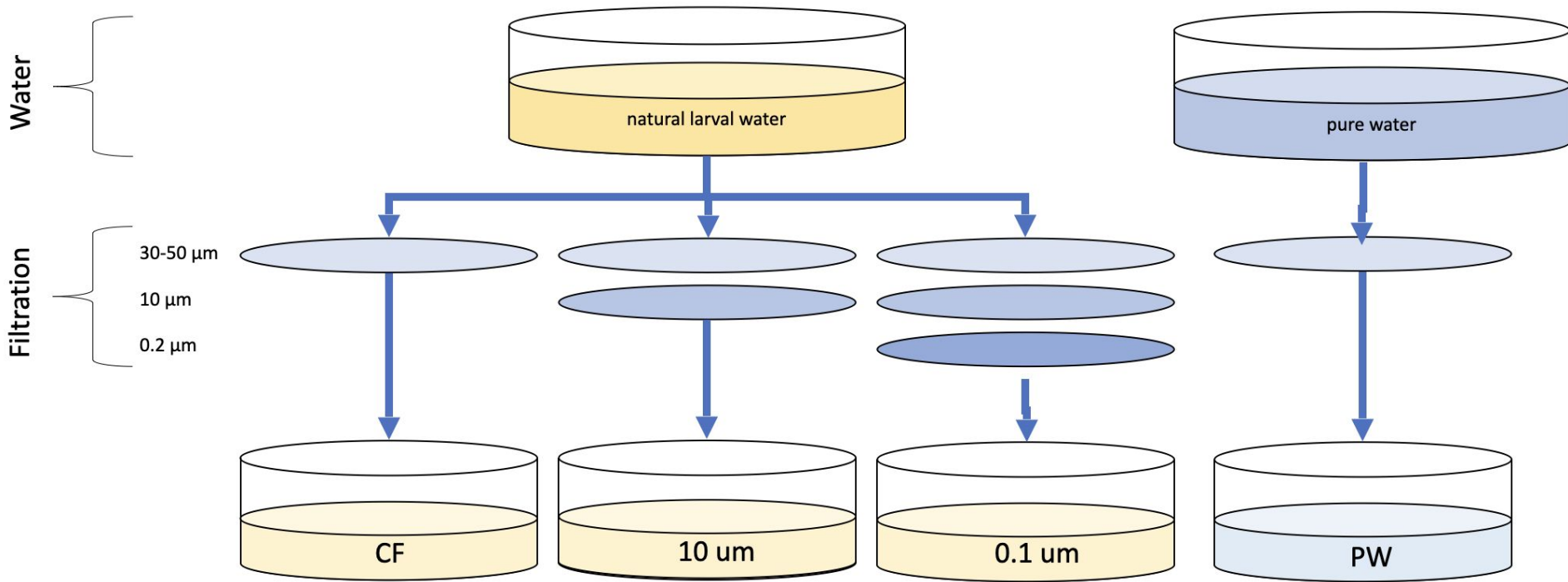
Recovery Time



Lab Microbes

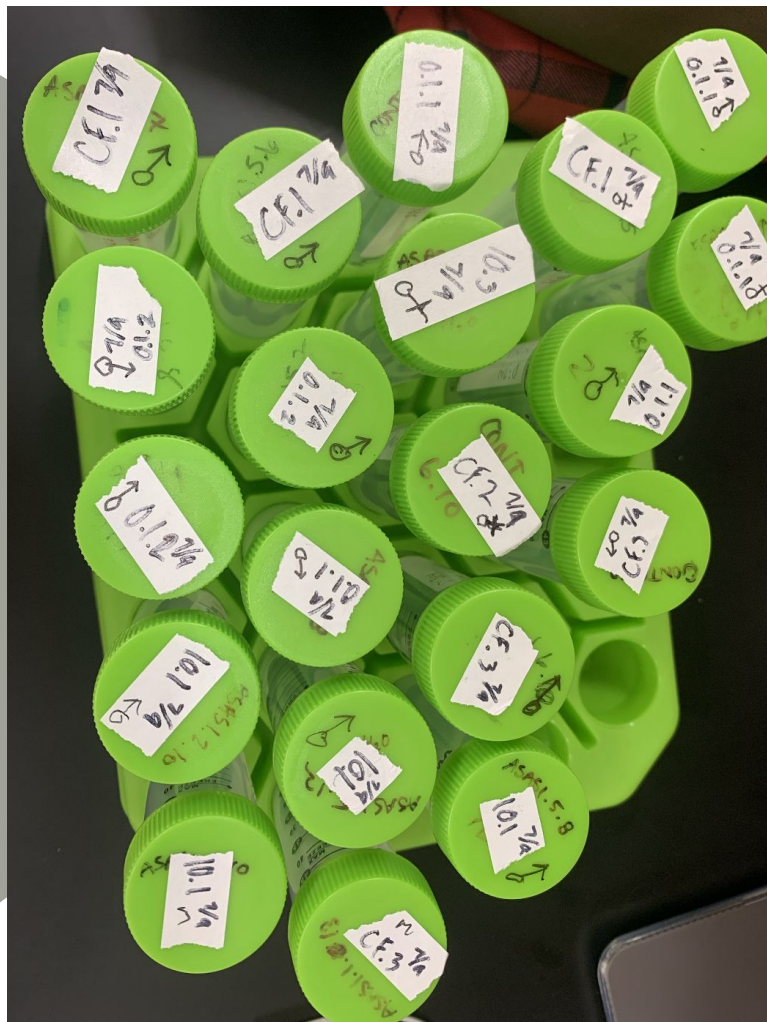
Wild Microbes

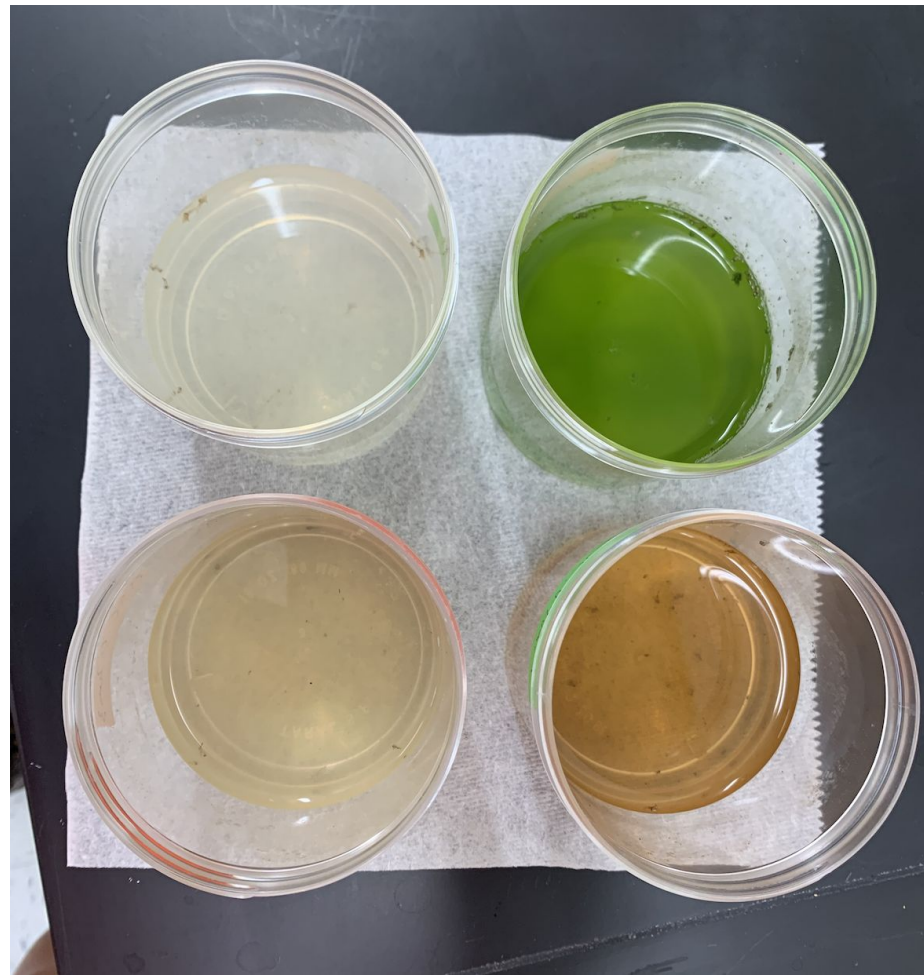
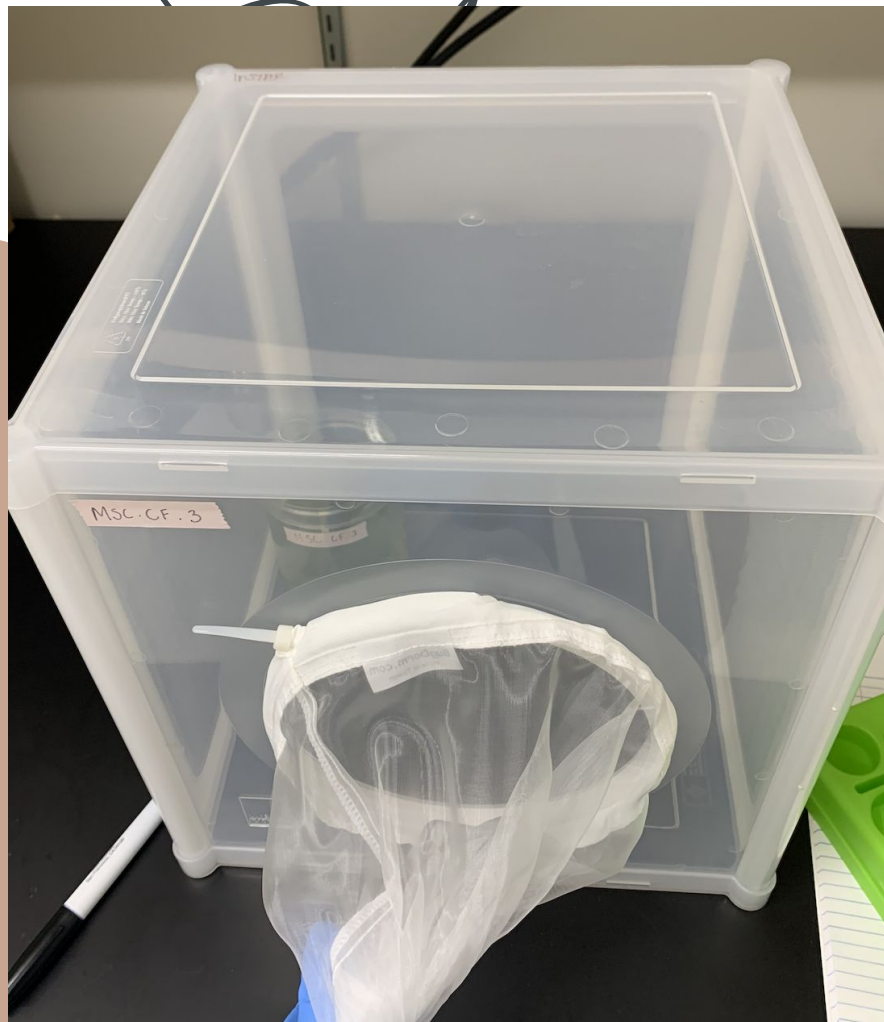




Natural chemistry	+	+	+	
Natural eukaryotes	+			
Natural bacteria	+	+		
Laboratory eukaryotes	+	+	+	+
Laboratory bacteria	+	+	+	+







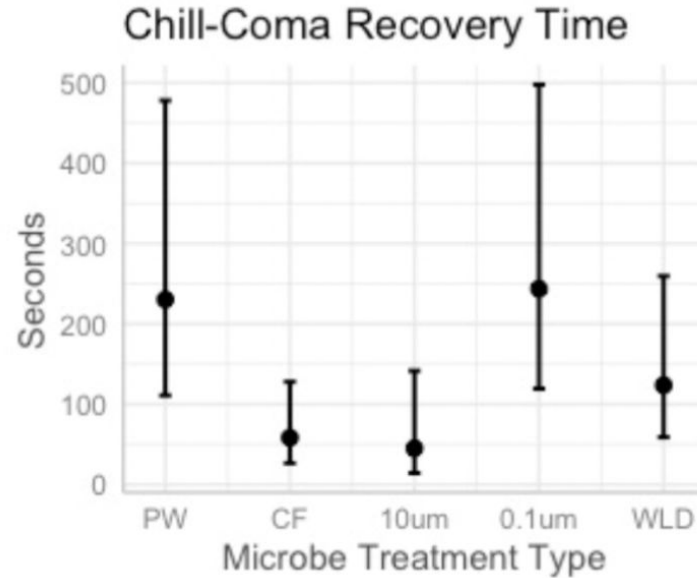
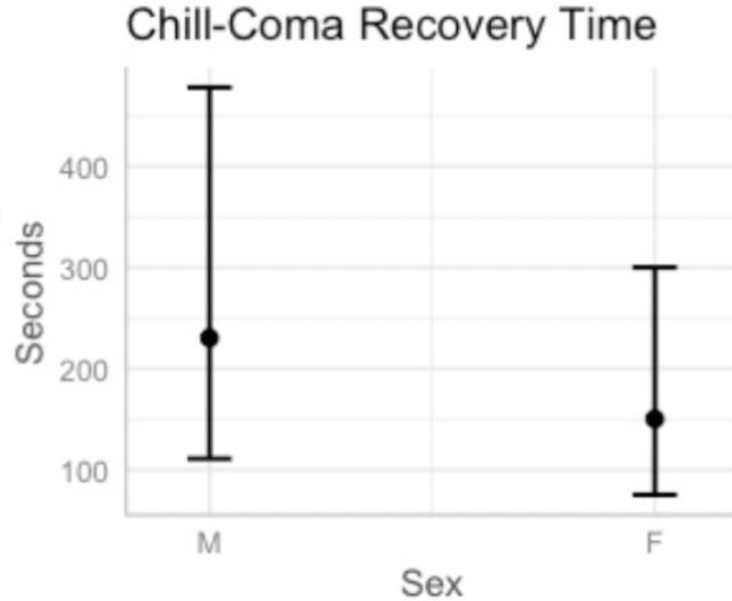
Chill coma recovery is dependent on the sex and mesocosms treatment

Mesocosm treatment does not affect males or females differently

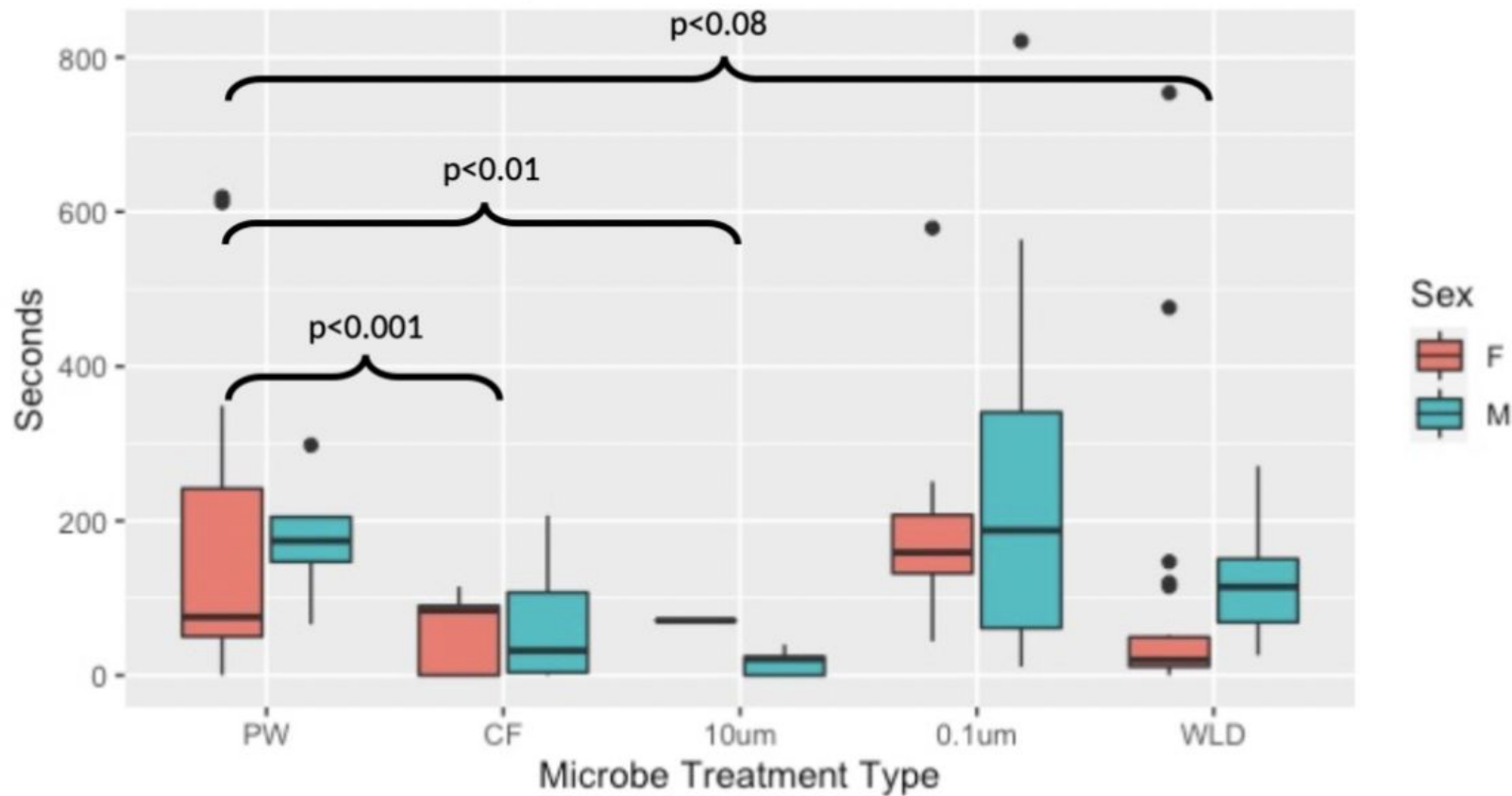
Log-likelihood Ratio Test of Fixed Effects

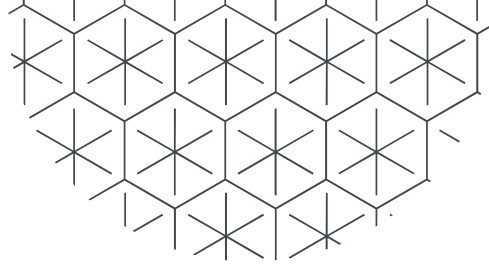
	Chi	Df	p
Sex	4.1	1	0.04
Microbe Treatment	13.3	4	0.01
Sex*Microbe Treatment	7.0	4	0.14

Results of sex and mesocosm treatment recovery



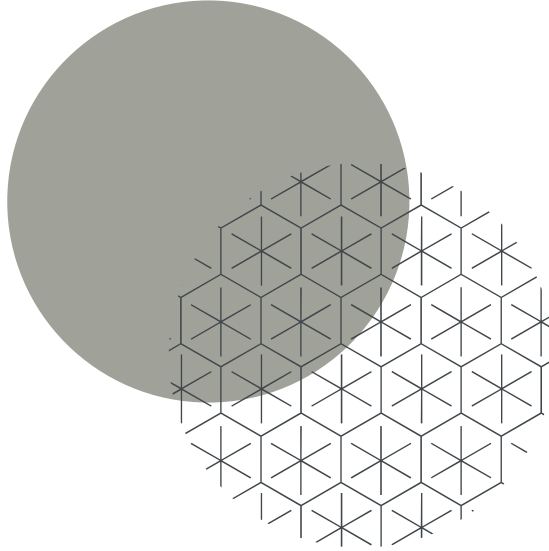
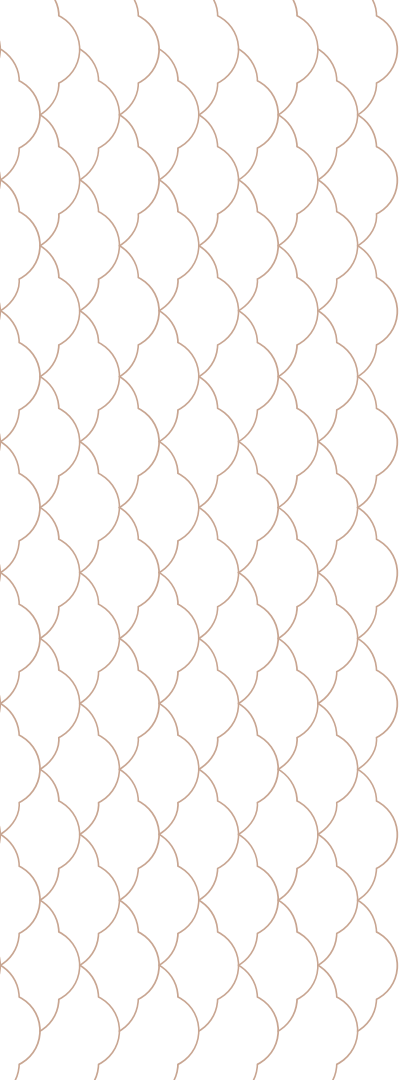
Chill-Coma Recovery Time





Whoa!

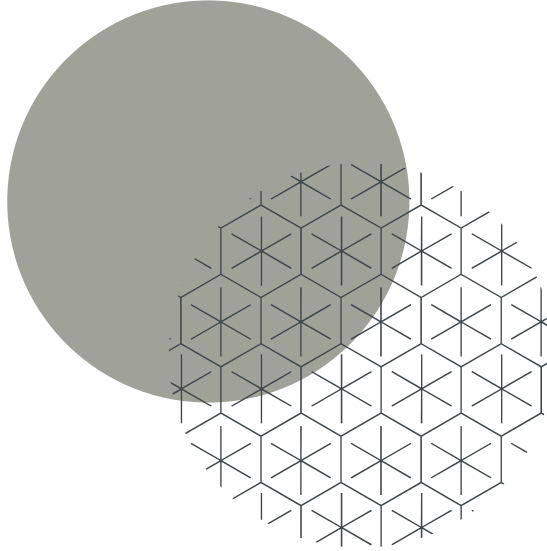
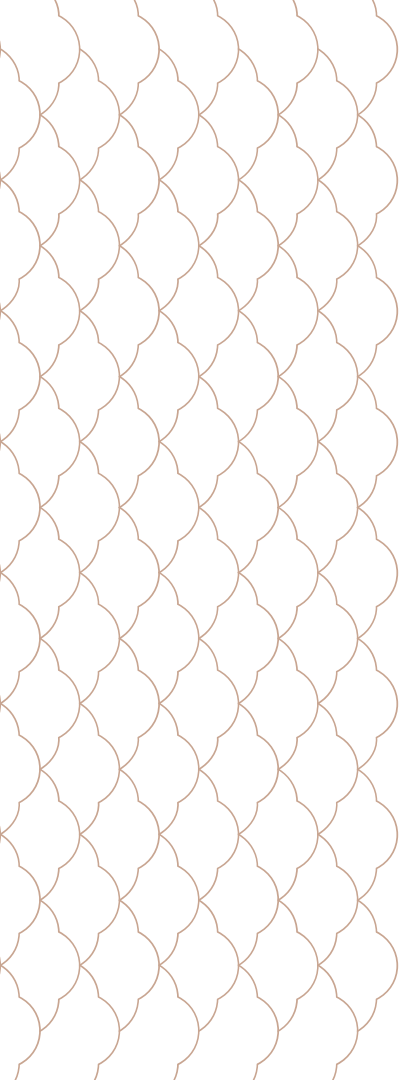
Mesocosms with natural
microbes grew more cold
tolerant mosquitoes!



Why is it important?

- Help scientist rear more biologically fit mosquitoes.
- To eradicate an invasive species
- To preserve our native birds
- Preserves ancient cultural practices





Whats next?

- Medeiros Lab is in the process of replicating the experiment
- Conduct an inventory of the microbes



Mahalo

Matt Medeiros
Kiana Frank
Mamo Waianuhea
Danya Weber
Caleb Olaso
Nicole Yoneishi
And the InSTAR Lab

Do you have any questions?
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