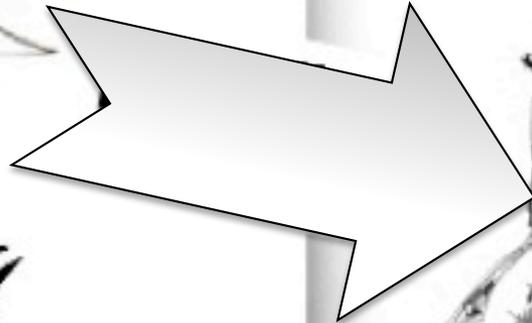


**Task:** *Risk assessment for native vs. invasive species, limited gene drive spread, gene flow*

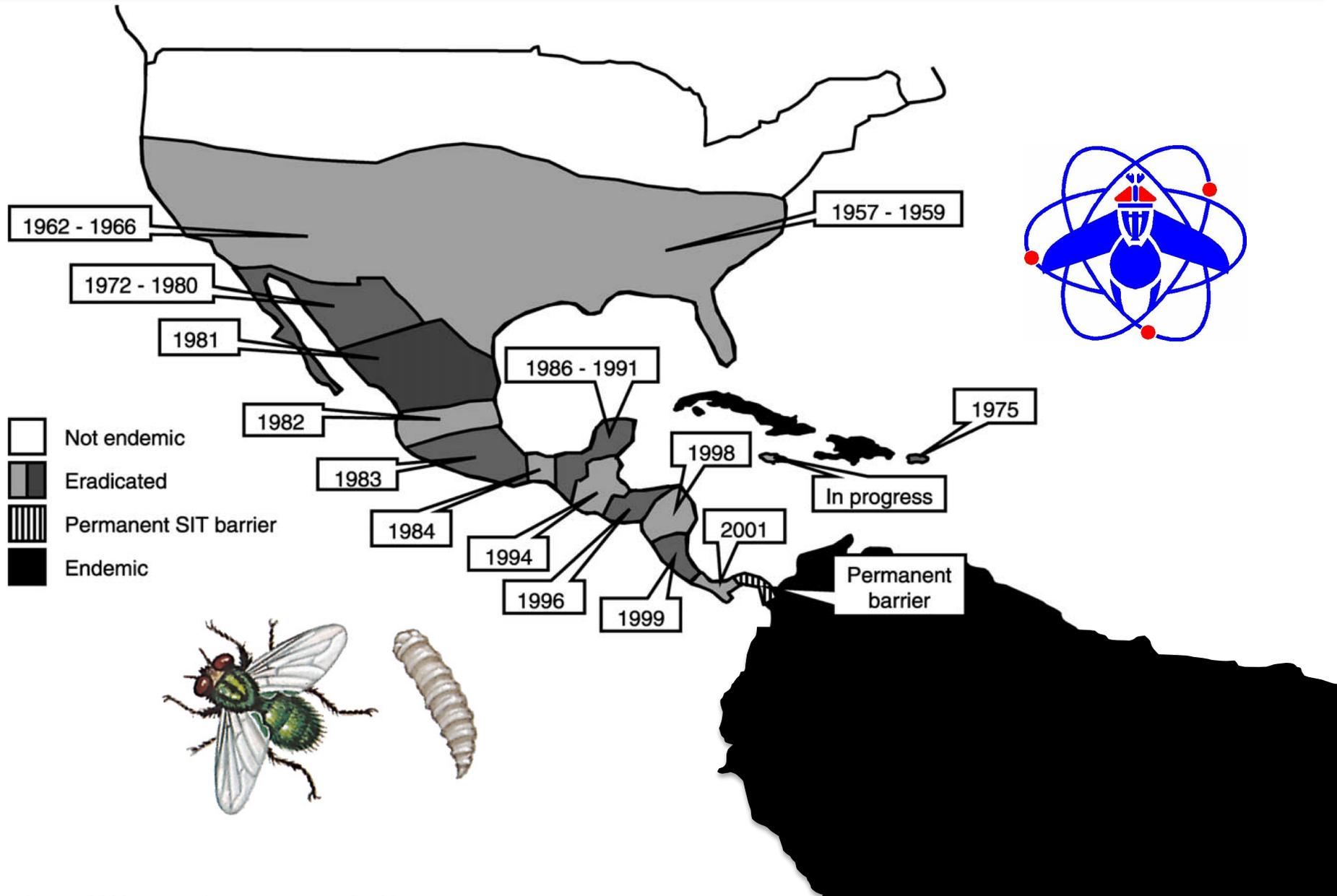


# The Ecology of Reproductive Isolation: Implications for Potential Gene Drive Releases

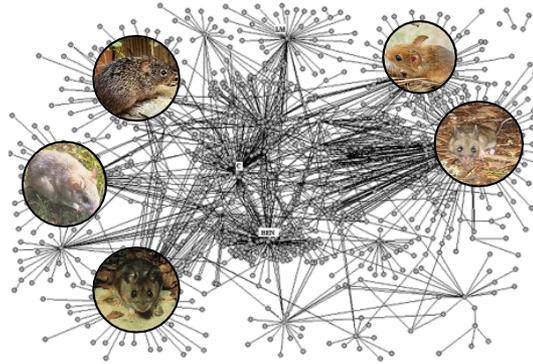
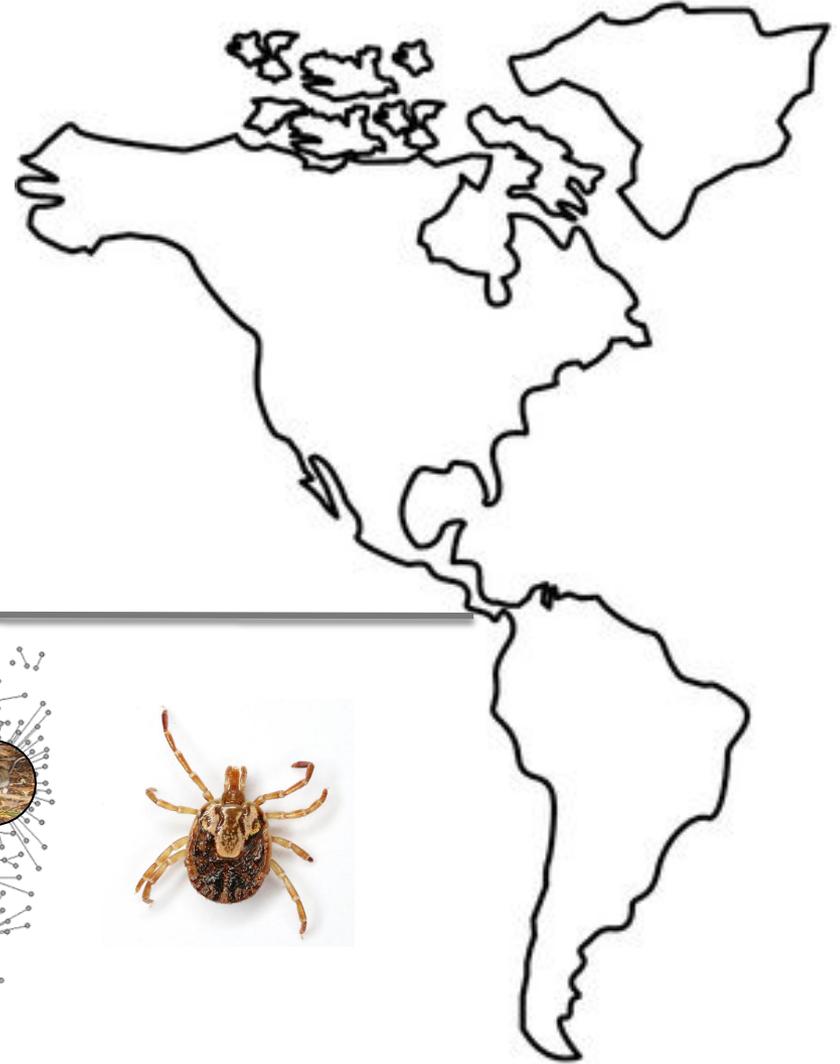
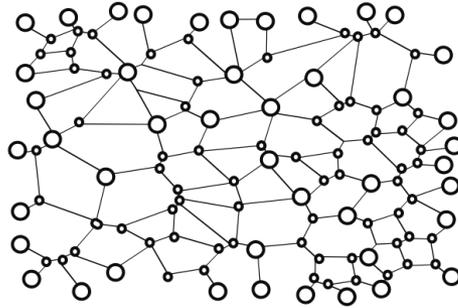
Raul F. Medina



# Native and Invasive Species Eradication Involve Different Risks



# Native and Invasive Species Eradication Involve Different Risks



# Geographic Genetic Population Structure May Affect GD Spread

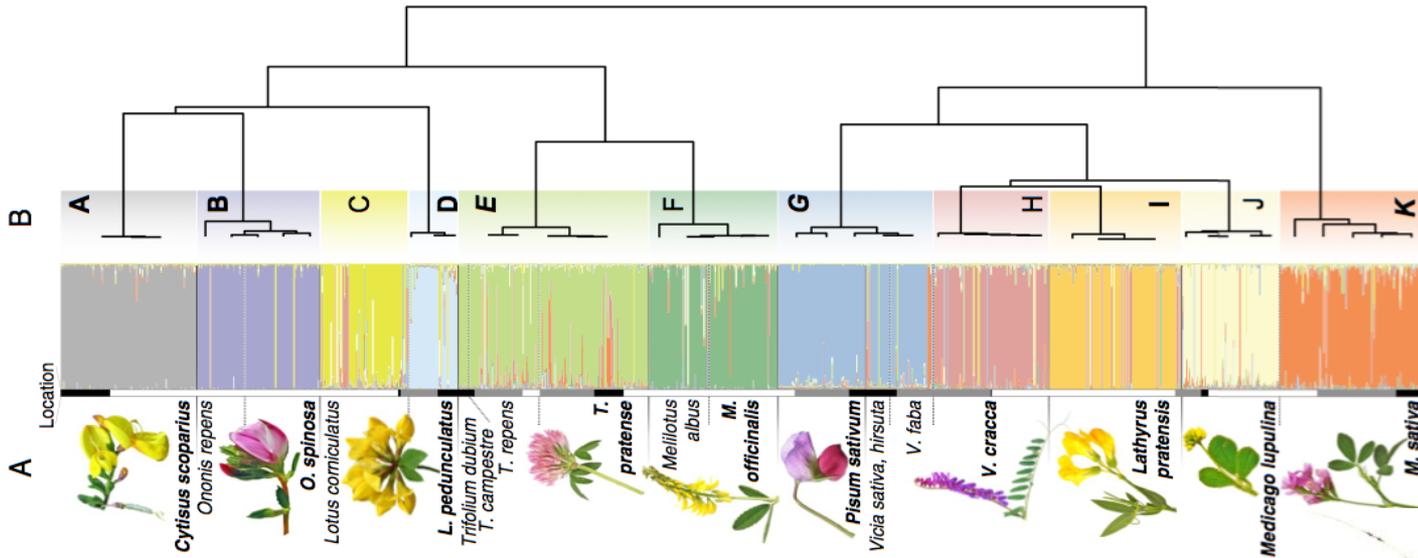


POLETA, 1981

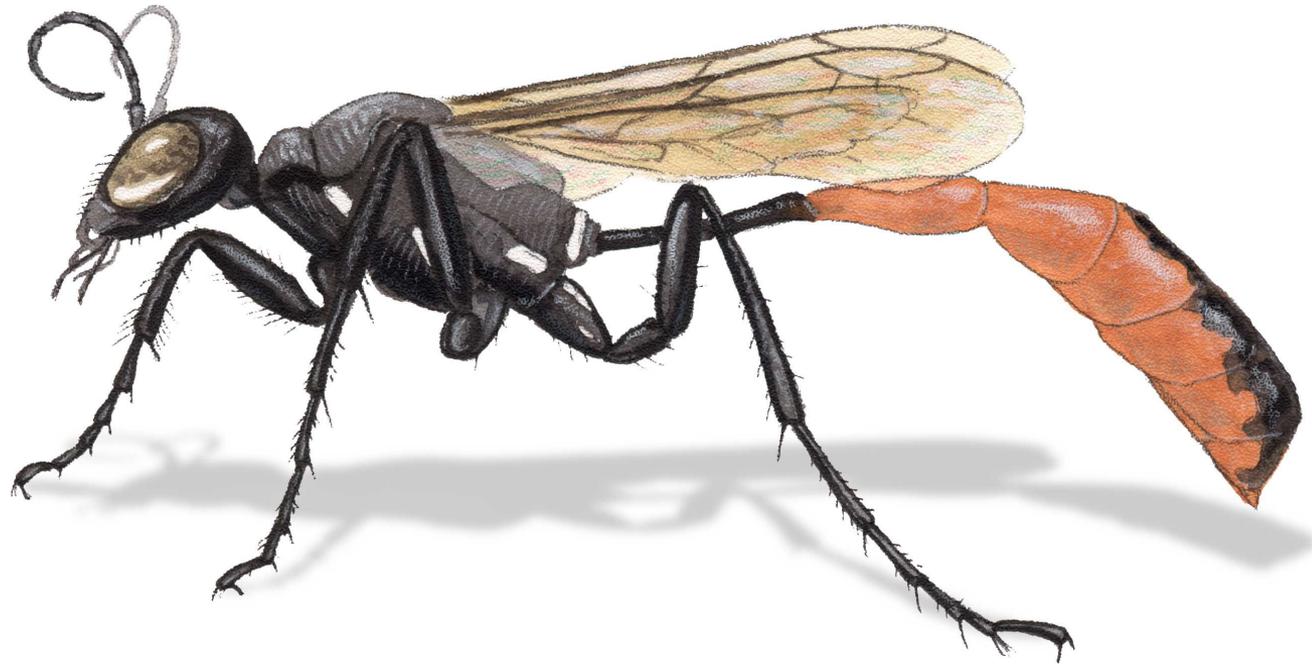


# Host-Associated Differentiation (HAD) may Affect GD Spread

HAD: Genetically distinct parasite populations on different host species

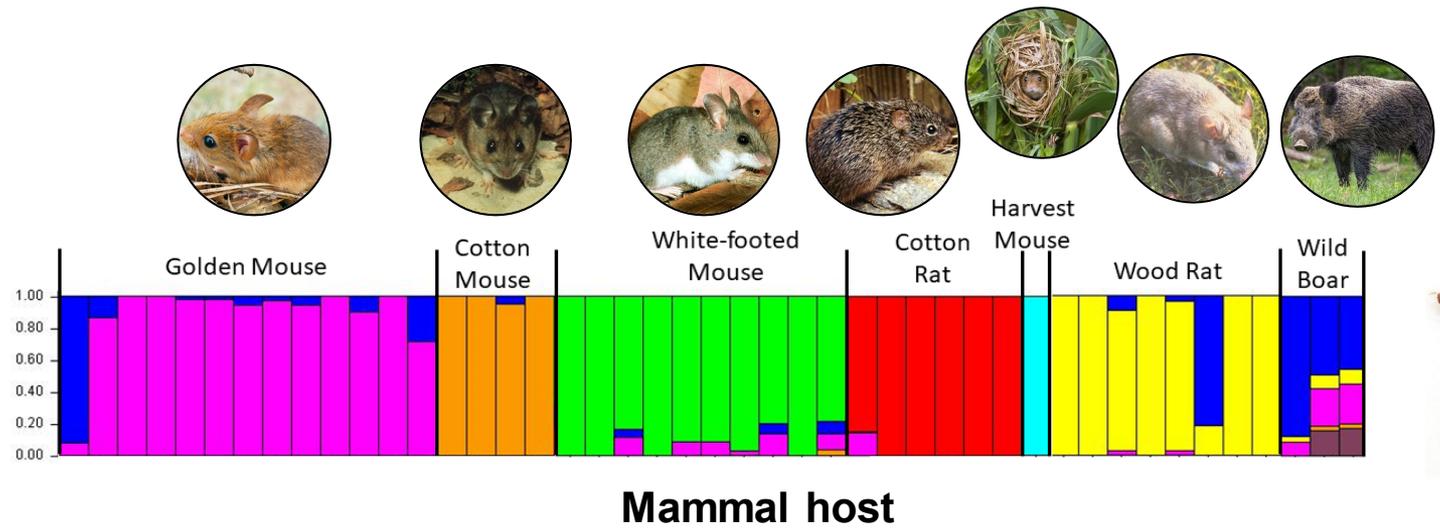


Genetically Distinct Populations May Differ in Traits Relevant to their Control



# HAD Occurs in Both Plant and Animal Parasites

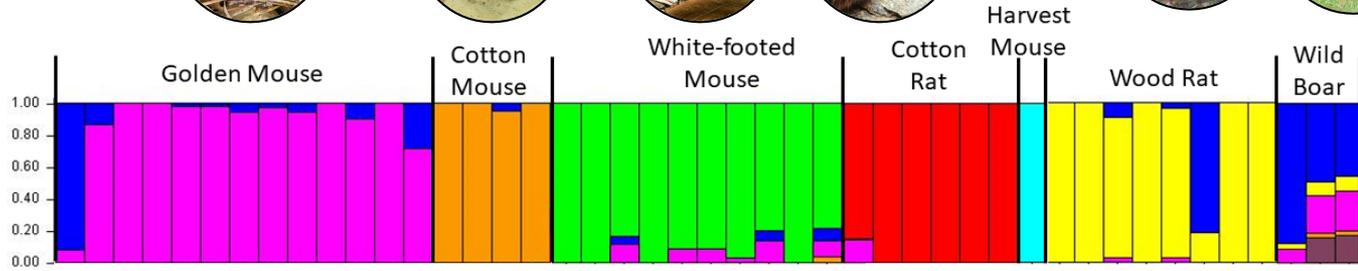
Probability of pop. assignment



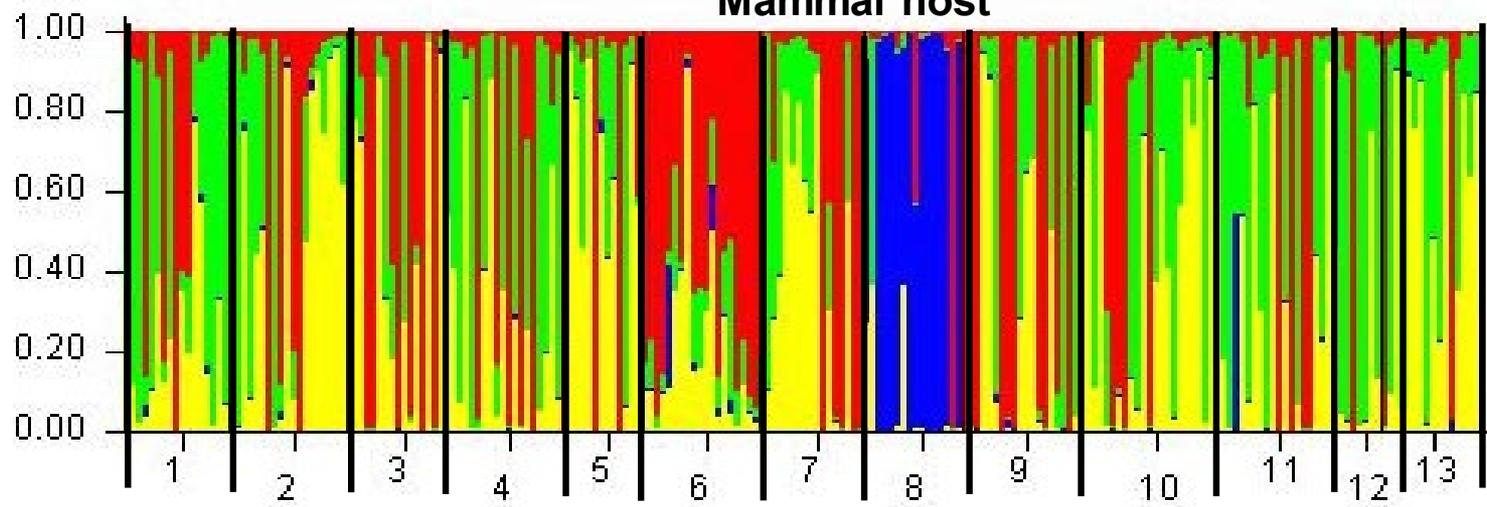
# Not all Species' Hosts May Show HAD



Probability of pop. assignment

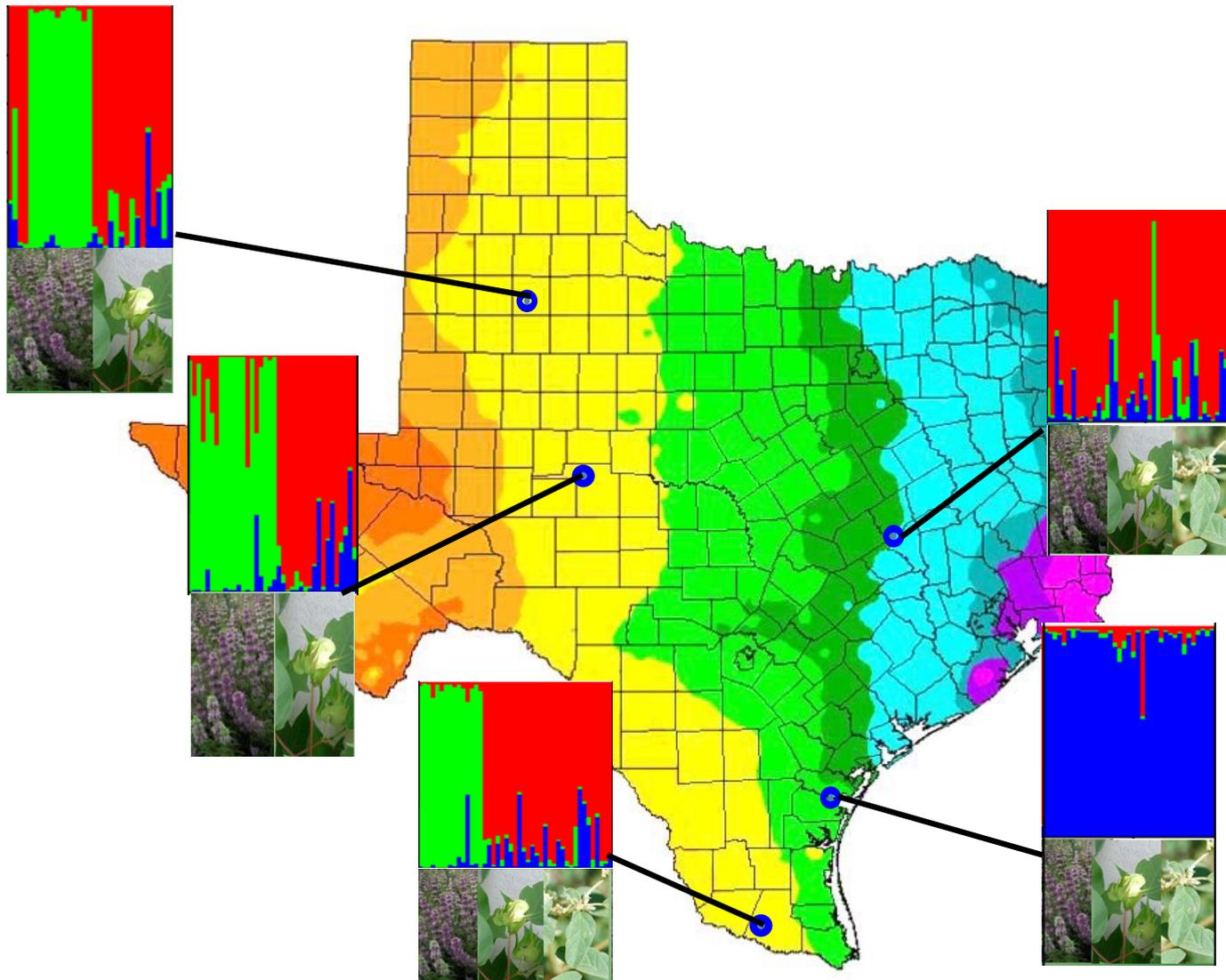


Mammal host

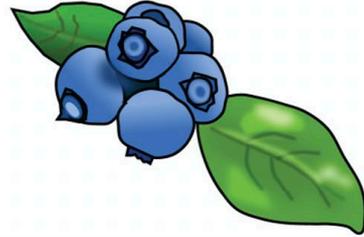


Host-plant

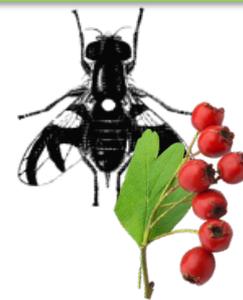
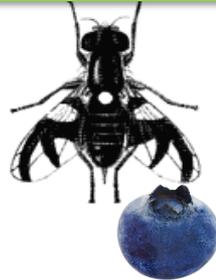
# Geographic Variation in HAD



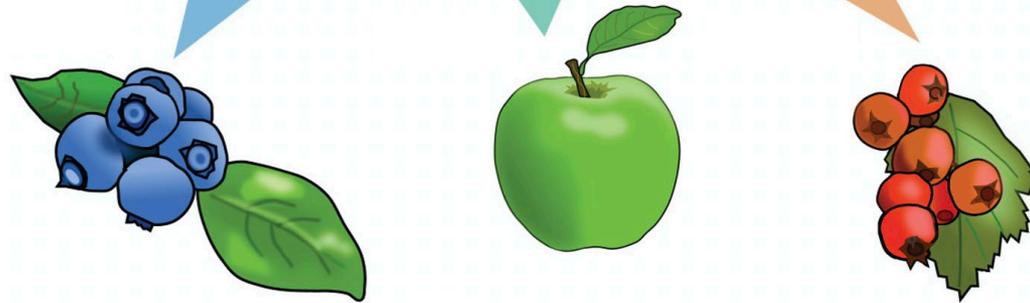
# Temporal Isolation May Result in HAD



HAD in fruit flies



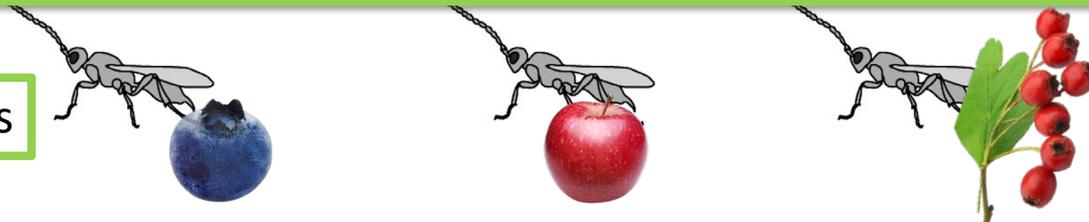
# HAD Can Cascade-Up Trophic Levels



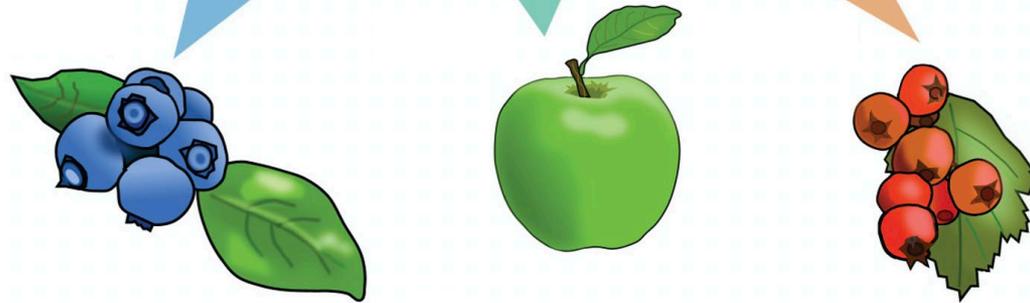
HAD in fruit flies



HAD in fly parasitoids



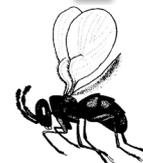
# HAD Can Cascade-Up Trophic Levels

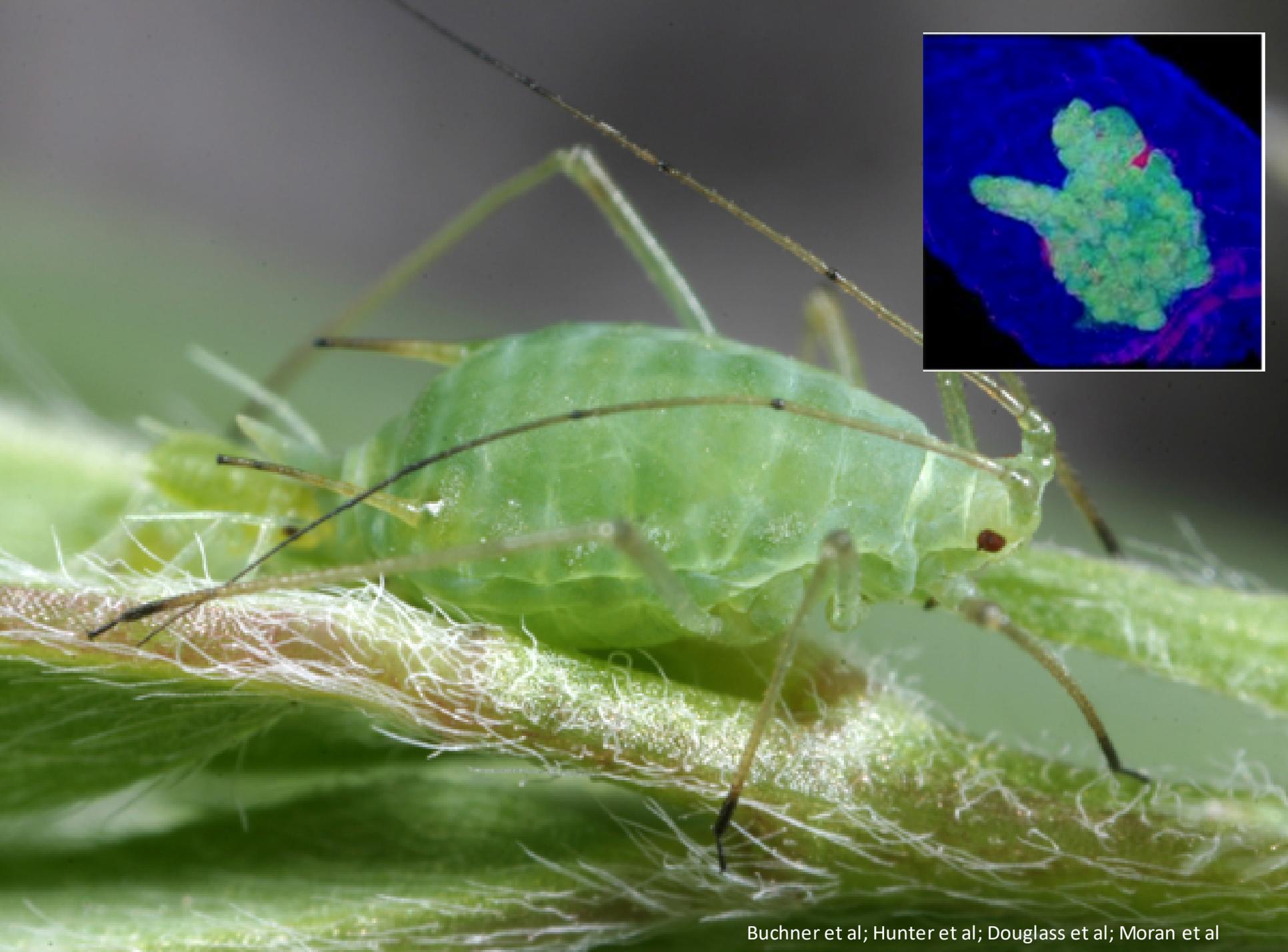


HAD in fruit flies



HAD in fly parasitoids





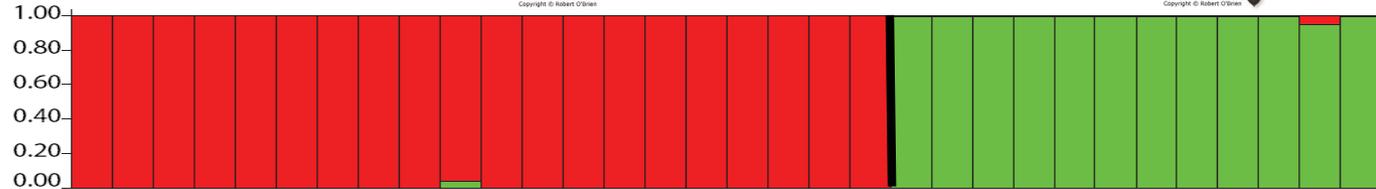
# HAD Can Cascade-Down Trophic Levels



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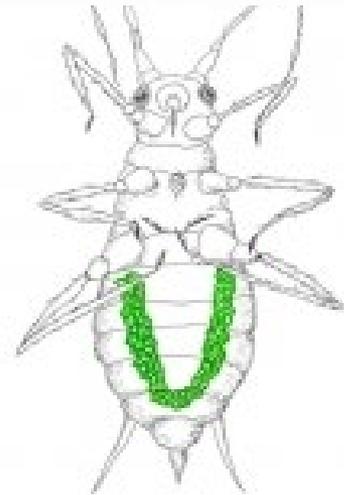
Copyright © Robert O'Shea



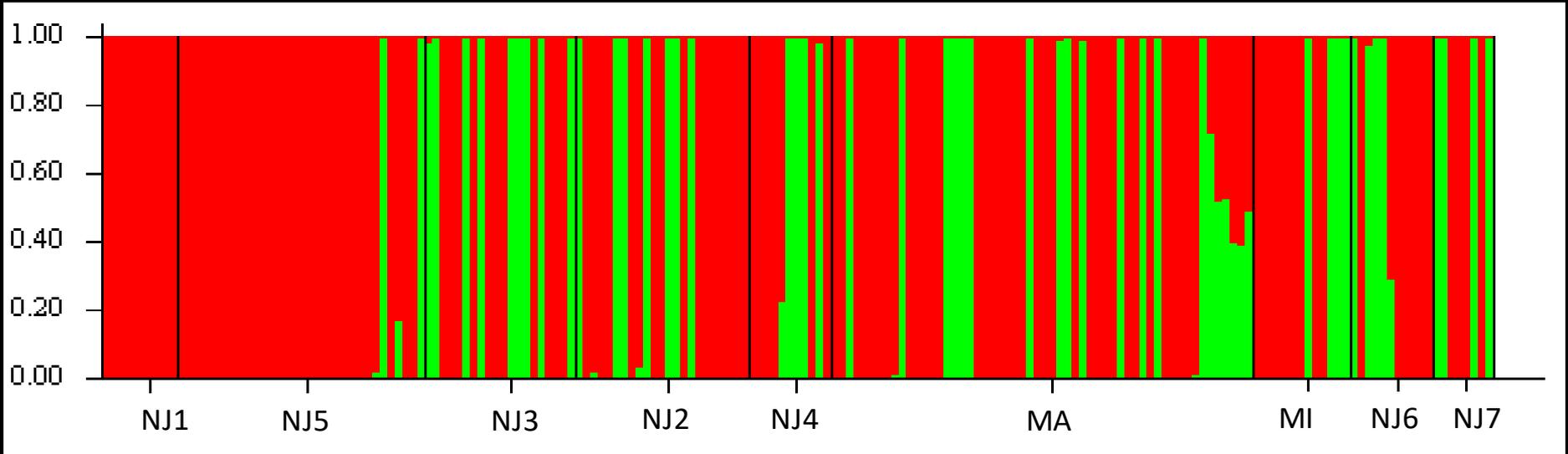
	Host-plant species	
Bacterial species	Water hickory	Pecan
<i>Wolbachia</i> sp	97.97	28.26
<i>Serratia marcescens</i>	0	67.57
<i>Pantoea agglomerans</i>	0	2.15

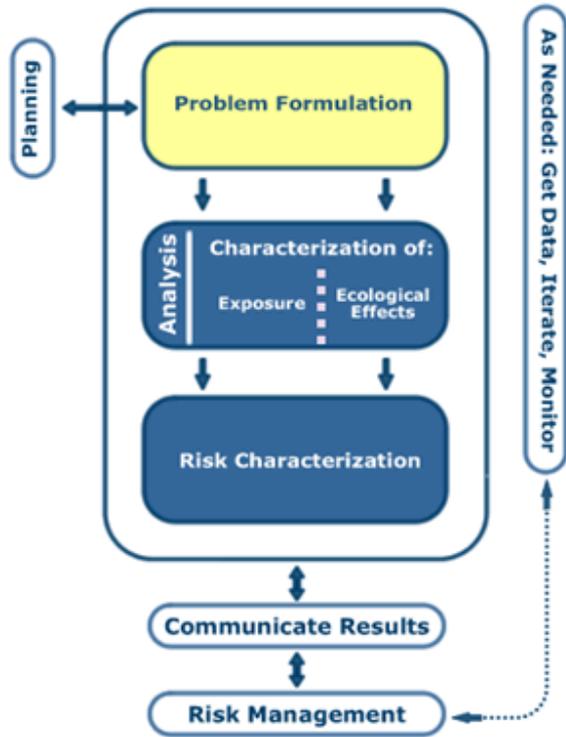
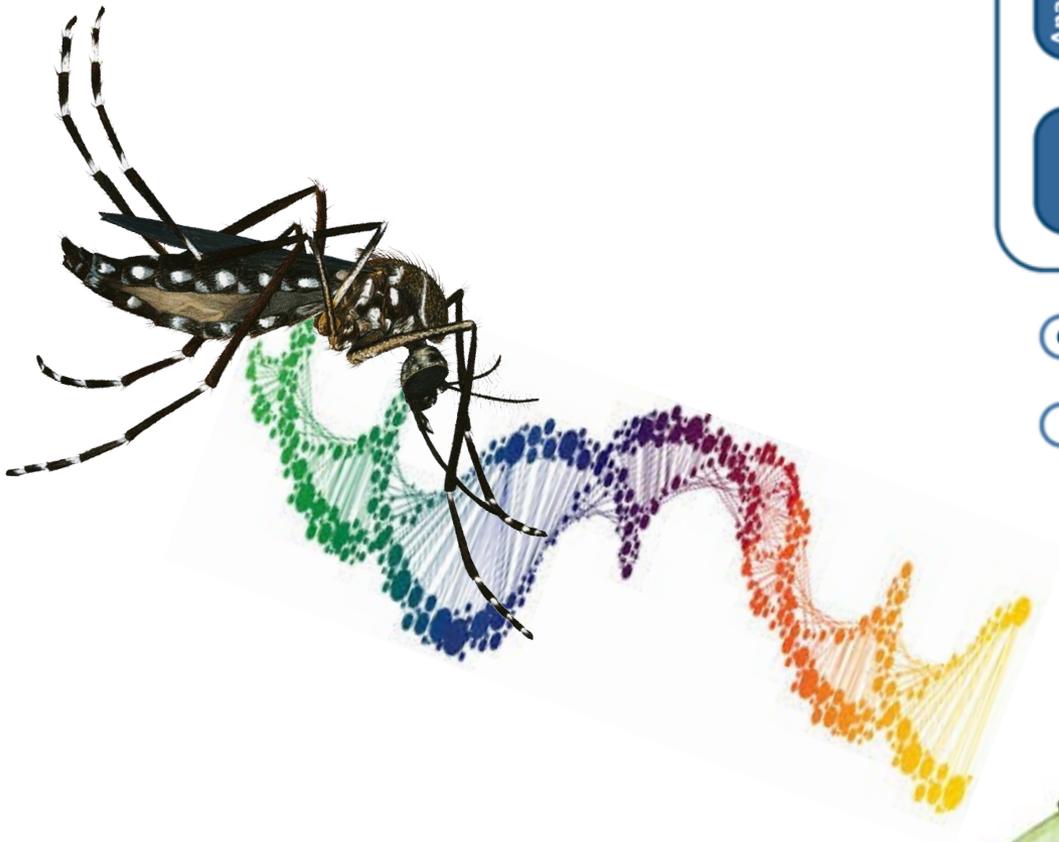
# Microbiota May Influence:

- *Reproductive Isolation*
- *Host range*
- *Onset of sexual reproduction*
- *Heat tolerance*
- *Resistance against parasitism*
- *Detoxification of allelochemicals*
- *Insect host nutrition*



# Genetic Variation can be Clustered by Unknown Factors





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