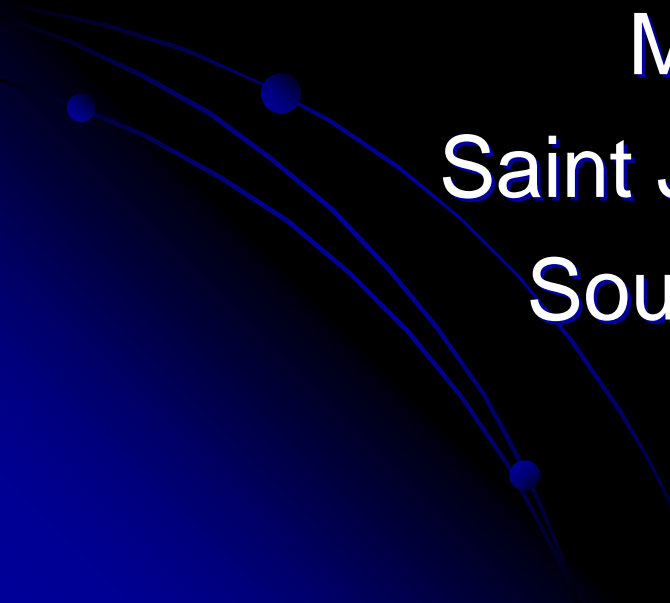


FOLLOW THAT FLY

Michael E. Walsh
Saint Joseph's High School
South Bend, IN. 46617



Dr. Jeff Feder



□ www.nd.edu/~aforbes/federlab.html

Dr. Andy Michel



<http://www.nd.edu/%7Eamichel1/>

Professor Feder's Objective

➤ Determining the role host-plant shifts play in sympatric speciation for phytophagous insects. This research examines two important questions in speciation theory:

➤ a) the relationship between ecological adaptation and reproductive isolation, and

➤ b) whether geographic isolation is a prerequisite for animal speciation.

Work in this area is concentrated on the *Rhagoletis pomonella* (Diptera: Tephritidae) sibling species complex, a model for sympatric host race formation and speciation for phytophagous insects.



Dr. Michel's Objective


MAIN INTEREST = POPULATIONS

- INTERACTION WITH ENVIRONMENT / INFLUENCES THEIR GENETIC STRUCTURE & GENE VARIATION
- QUESTIONS ARISE / ON BIOGEOGRAPY, SPECIATION, & EVOLUTION

USE POPULATION GENETIC METHODS


- COMPARING GENE FREQUENCIES BETWEEN POPULATIONS
- FAVORABLE ALLELES SHOW UP GIVING DIVERGENCE TO POPULATIONS

Notre Dame Research

- Process of speciation by *Rhagoletis pomonella*
 - Specific Tasks:
 - Pick individuals from a population
 - Identify number and label male or female
 - Decapitate, Crush Heads, Extract DNA
 - Run PCR & gel
 - Compare results for different Apple or Hawthorn host flies
- 

Curriculum Component

Gel-Electrophoresis & PCR

- Students will either run a PCR or use purchased one
 - Students will make Gel
 - Students will process DNA through gel via electrophoresis machine
 - * SWBAT understand process and uses of procedures
- 

Curriculum Component

FLY LAB

- Lab
1 http://sps.k12.ar.us/massengale/lab_7_genetics_of_organisms.htm
- Lab
2 <http://www.ekcsk12.org/science/apbio/fruitflylab.htm>
- Virtual
<http://bioweb.wku.edu/courses/Biol114/Vfly1.asp>

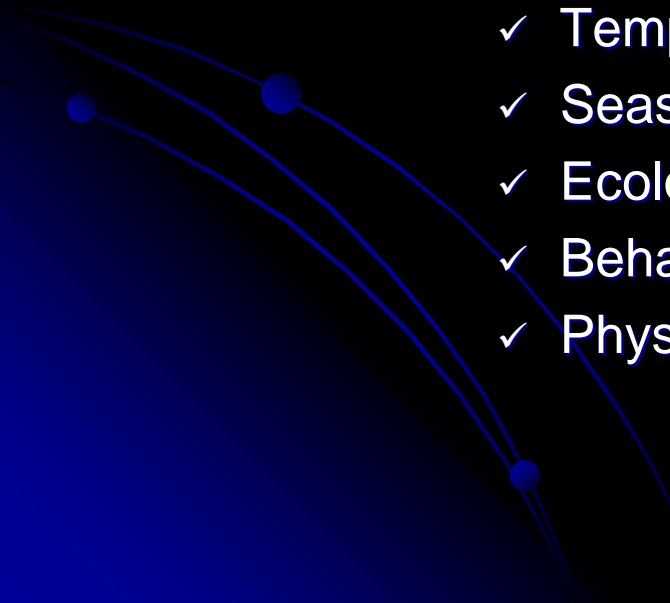
Assignment

Students will use previous knowledge

➤ Meiosis

➤ Genetics

➤ Evolution process-speciation


- ✓ Temporal
 - ✓ Seasonal
 - ✓ Ecological
 - ✓ Behavioral
 - ✓ Physiological
- 

Question

Using the labs & past knowledge

Students will research and
answer the Problem:

How these processes can be used to show
speciation in a current scientific
investigation



END

