

Example Module:  
Investigating Arabia Mountain:  
A Molecular Approach

Introductory Biology Laboratory  
by Nitya Jacob  
Oxford College  
(giving another presentation)

# Investigating Arabia Mountain: A Molecular Approach

1) Literature Research – Proposal

“Thinking Time”

(Student ownership)



2) Sample collection



3) Laboratory bench work



4) Data analysis

“Thinking Time”



Connection to Biology 141

(Student ownership)



5) Communicating Evidence

# Piedmont Virginia Community College Sophomore Capstone Research Project

- Science 299 – Required for A.S. in Science degree (Biology, Geology, Chemistry, Physics)
- Semester-long independent research project & poster presentation



# Institutional Organization of Science 299

- Faculty coordinator (bearing teaching credit)
  - 3 organizational meetings throughout semester,
- Individual faculty members & lab support staff supervise students
  - 2-3 students per faculty . . . though highly variable
  - Course offered Fall & Spring
    - 6 students Fall 2011,
    - 18 students Spring 2012
- Student outcomes:
  - 15 of 18 students from Spring 2012 course transferring to 4-yr schools in Fall 2012 and planning science majors

## A sample of projects (2012)

- Gina Baldi (Biology): The Efficacy of Garlic as an Antimicrobial against *Escherichia coli*, Ampicillin-Resistant *Escherichia coli* and *Staphylococcus aureus*.  
(transferring to University of Virginia; summer NIH research student at Johns Hopkins)
  - Martin Edwards (Chemistry): Synthesis of Prilocaine Hydrochloride from Toluene  
(transferring to University of Virginia)
  - Jolie Nyiramahirwe (Biology): The Effects of pH on Termites and Protozoans  
(transferring to Virginia Commonwealth University; summer researcher at Univ. Virginia's Astrochemistry program for minority students)
  - Shereena Sylvester (Biology): Interactions between Antibiotics and T4 Bacteriophage against *E. coli*  
(post-baccalaureate student, enrolling in graduate health program)
  - Jonathan Vaughan (Geology): The Effect of Density on the Velocity and Depositional Patterns of Turbidity Currents  
(transferring to James Madison University, planning geology major)
- \*\* No physics this year, but we have had physics projects in the past