

Introducing High School Students to Food Safety Microbiology Research Methods in a Hands-on Laboratory Setting

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Purpose

Local high school students conduct an independent research project under the supervision of a graduate student research assistant, to earn advanced science credits at the high school level. Completed projects are presented at the Lafayette Regional Science Fair.

Stakeholders

Purdue University Food Microbiology Laboratory

- Dr. Haley F. Oliver
- Graduate Assistant Susan Hammons

Lafayette Jefferson High School

- Life Sciences Teacher, Mr. Joe Ruhl
- Participating high school students

International Science and Engineering Fair

Lafayette Regional Science Fair

Support

USDA NIFA funded grant entitled "A National Food Safety Education Program: building a multidisciplinary food safety training pipeline from K-12 to graduate school" (NIFA 2010-04502) awarded to H.F. Oliver, M. Wiedmann, K. Nightingale, L. Jaykas, S. Ebrahim, A. Roberts, and K. Bohr. Additional support from the American Meat Institute Foundation (AMI) and Food Marketing Institute Foundation (FMI) grants awarded to H.F. Oliver. Graduate salary supported by Purdue University Andrews Fellowship awarded to S. Hammons.

Student Projects

- Listeria in Retail Delis (Year One & Two)
- Description of Bacteria Found in Retail Delis
- Identification of Psychrotrophic Microorganisms from Retail Delis

Outcomes & Gains

High School

Student

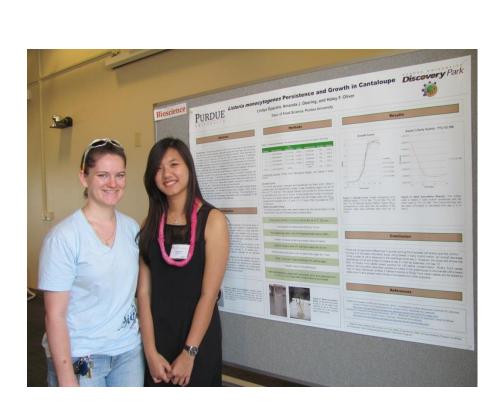
Participant





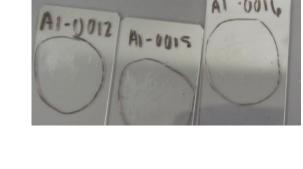


- Broader Technical Skills
- Procedure development
- Teaching Techniques
- Setting expectations
- Identifying learning outcomes
- Developing lesson plans
- Modifying procedures to match student needs, limitations, & skills
- Soft Skills
- Communication
- Time management
- How to be a mentor









 Record keeping Data analysis

Scientific results

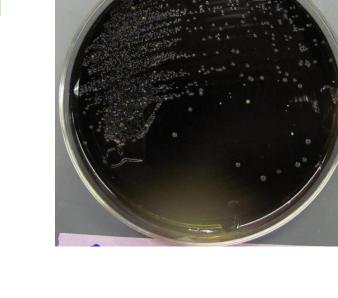
Hands-on Lab Skills

Aseptic technique

Media preparation

Molecular methods

- Practical significance
- Technical Writing
- Technical Presentation
- Soft Skills
- Time management
- Communication
- Self-motivation/Initiative
- Critical Thinking/Problem Solving
- **Explore Career Interest**
- Research experience









Oliver Lab

- Complete deliverables for AFRI
- Graduate Student Development
- Exploratory Projects

Graduate

Student

Mentor

- Add details to current projects
- Preliminary data for future projects



Timeline

Summer

Students paired with research

mentors

procedures

 Observe lab Safety training

August

 Hazards assessment Research plan

September

 Begin experiments

October

 Preliminary raw data summary

November

 Continue data collection

December

 Write abstract & final report

January

 Develop poster presentation

February

 Lafayette Regional Science

Early March

Mar-May

 HS student observes and assists lab