



Institute of Biotechnology

# BIOTECHNOLOGY PROGRAM

A Magnet Academy at Santa Fe High School



# What to expect?



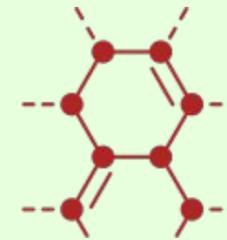
## Introductions

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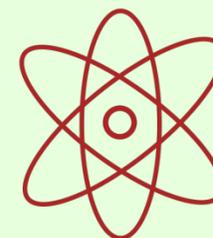
## What is Biotechnology?

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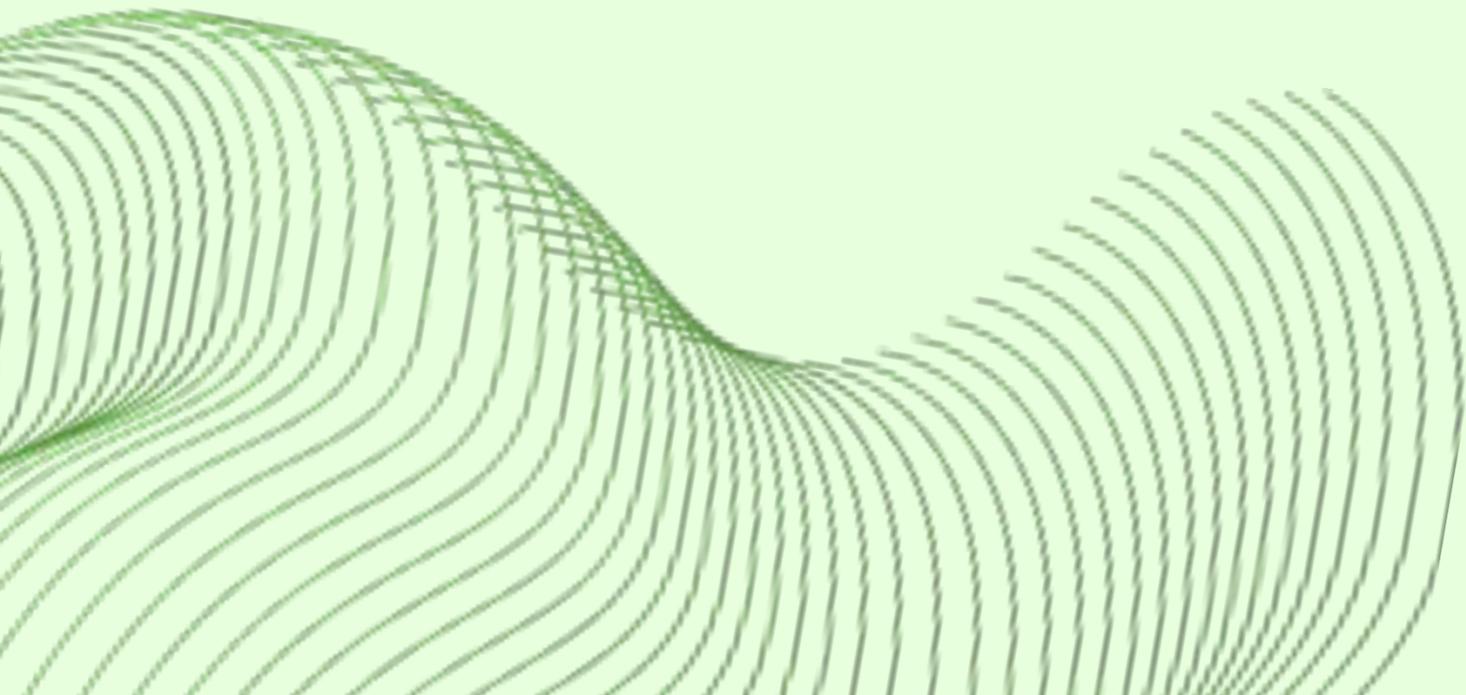


## Program of Study

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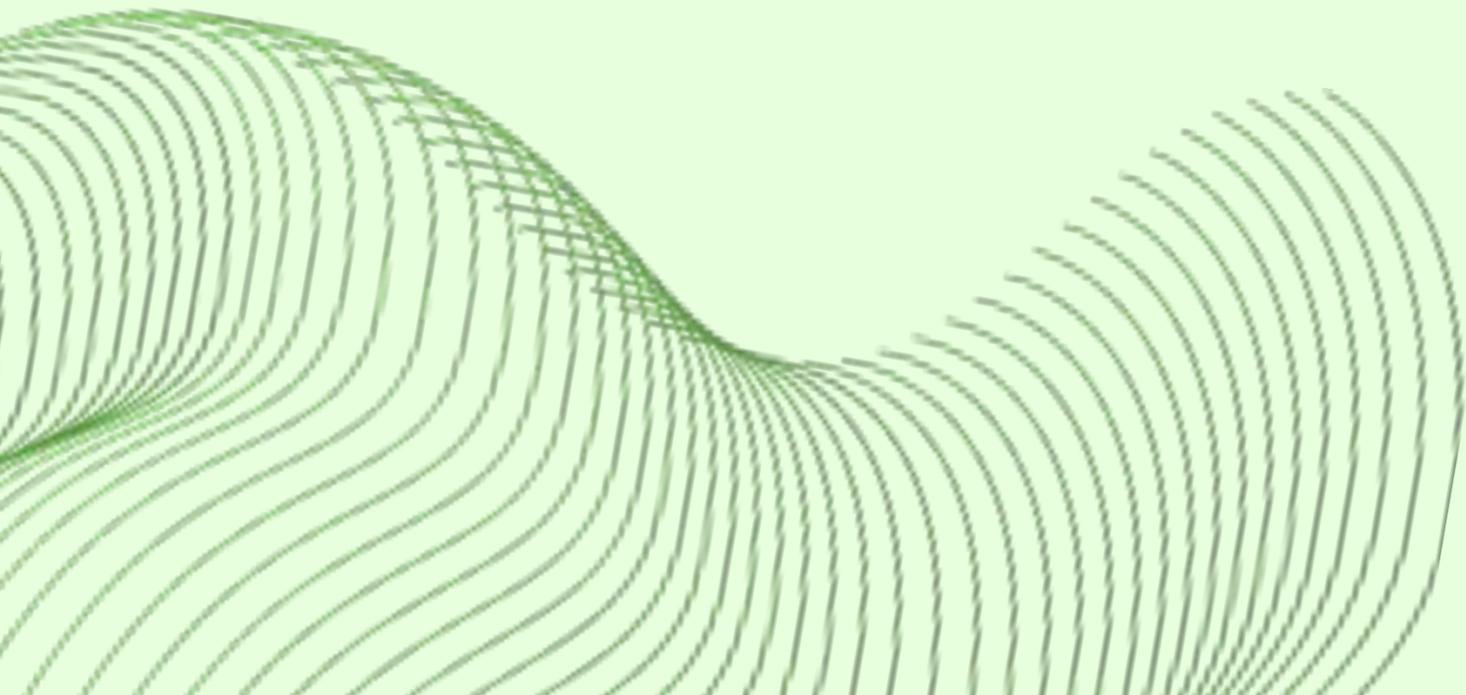
## Questions and Comments





# What is Biotechnology?

*Manipulation of living things for the benefit of mankind*



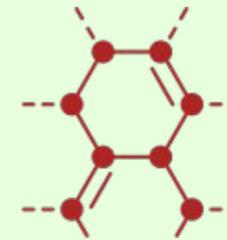
Agriculture

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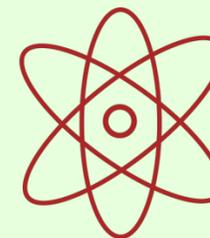
Medical/Health/Pharmaceutical

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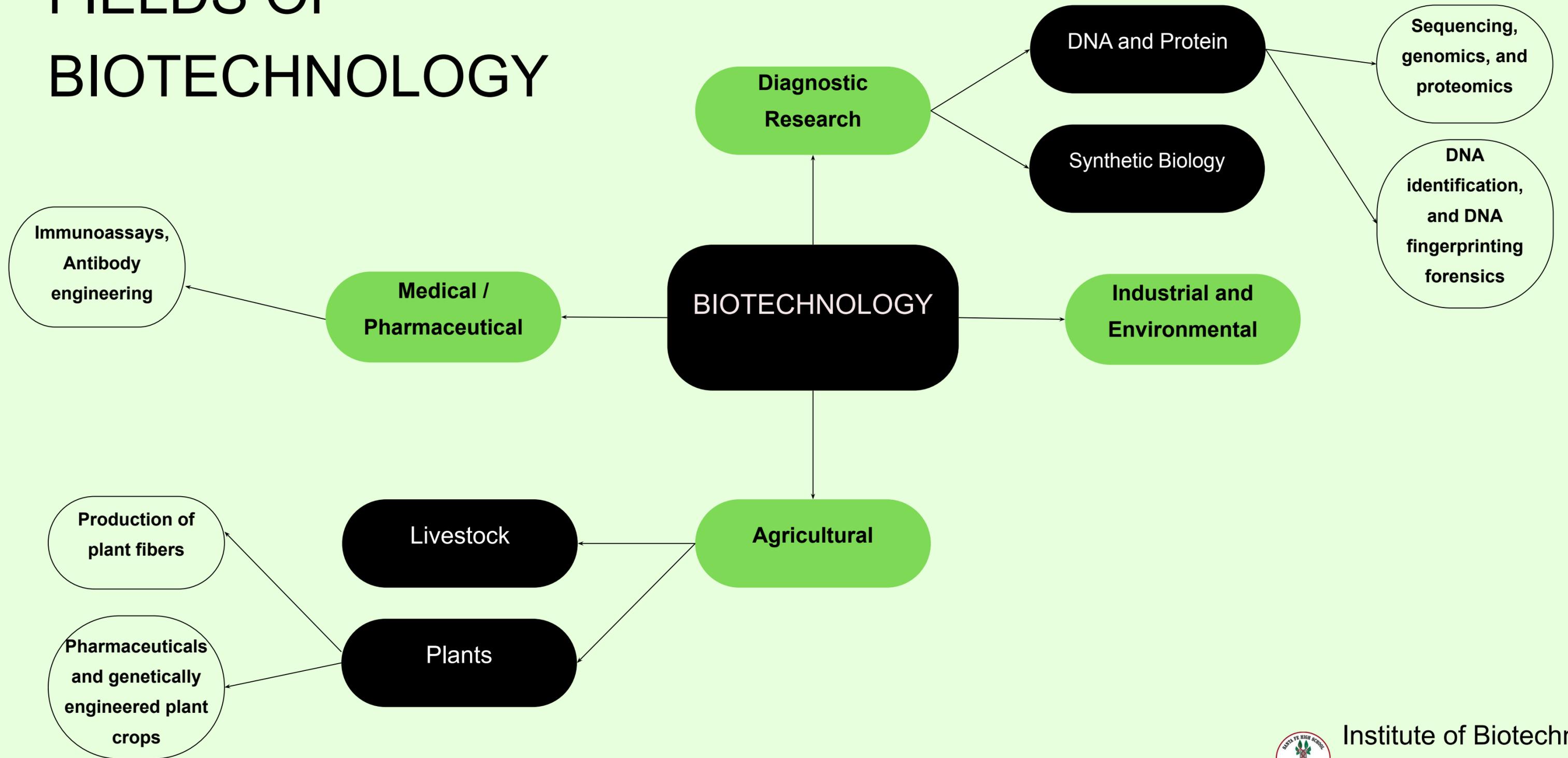
Food & Research

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Industry/Environmental

# FIELDS OF BIOTECHNOLOGY



# Potential Career Paths

Medical

Forensic Scientist

Engineering (Biological Industrial)

Pharmacy

Lab Researcher

Lawyer / Accountant

Anthropologist

Lab Technician

Agricultural

Surgeon



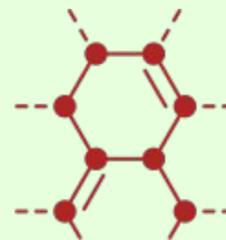
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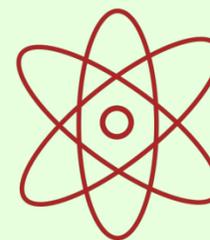
Introductions



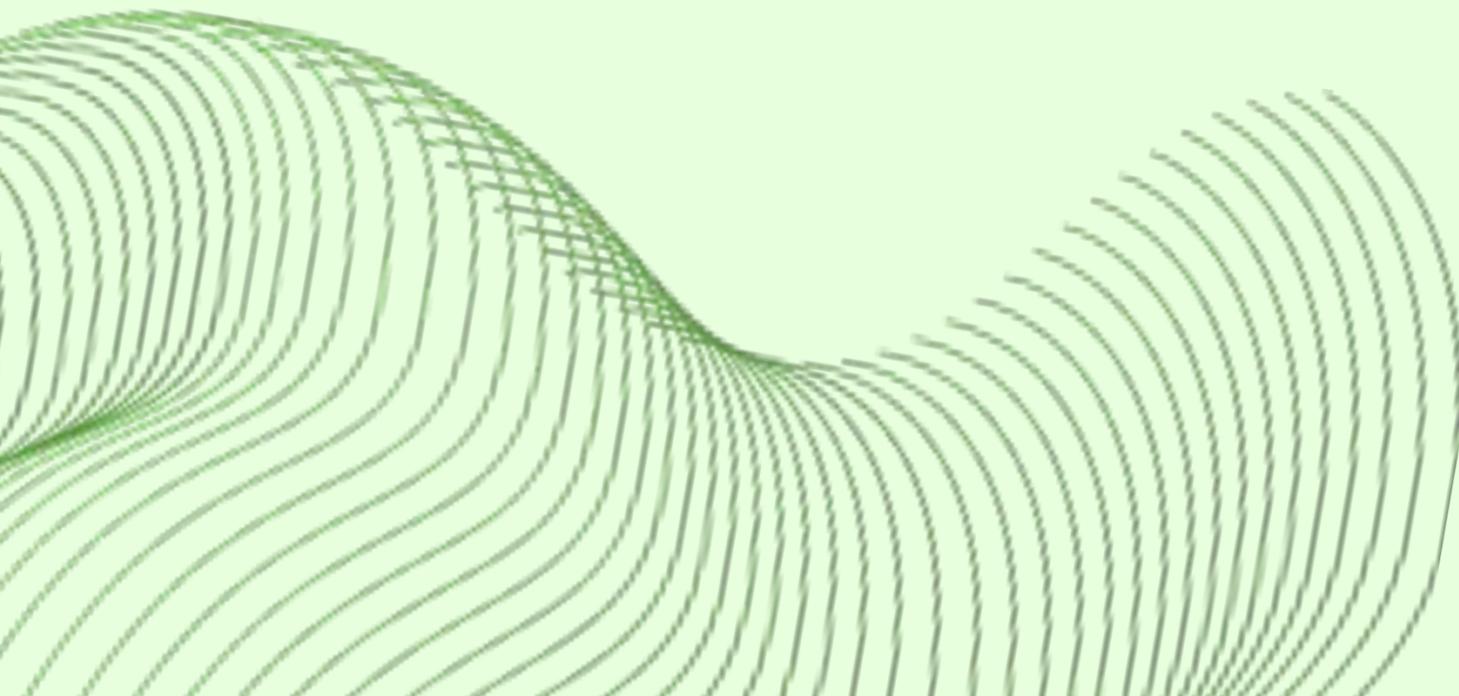
What is Biotechnology?



Program of Study



Questions and Comments





# The Curriculum

Three year program with a fourth year option.

Currently offer 4 industry certifications, which makes students eligible for an additional CAPE Bright Futures Scholarships



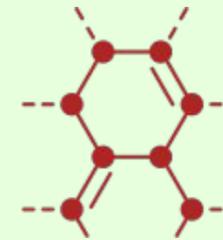
## BIOTECHNOLOGY ONE

1st Year



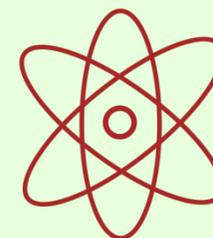
## BIOTECHNOLOGY TWO

2nd Year



## BIOTECHNOLOGY THREE

3rd Year



## MANUFACTURING DIRECTED

## STUDIES (MDS)

4th Year (optional)



- Exploring biotechnology and its applications
- Basics of life Science (cells, macromolecules)
- Basics of Chemistry (atoms, pH, buffers, etc.)
- How to keep a Lab Notebook
- Lab Basics
  - Safety
  - Aseptic technique
  - Glassware
  - Work ethics
- Basic biotech equipment function and proper use
- Project Management & Entrepreneurship  
(New Certifications for 23-24)

# Biotechnology

# One

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Freshman Year



# Biotechnology

## Two

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Sophomore Year

In this level you are presented with your very own lab coat.

- Microbiology & Microscopy

- Bacteria cultures, transformations, & staining

- DNA

- Extraction

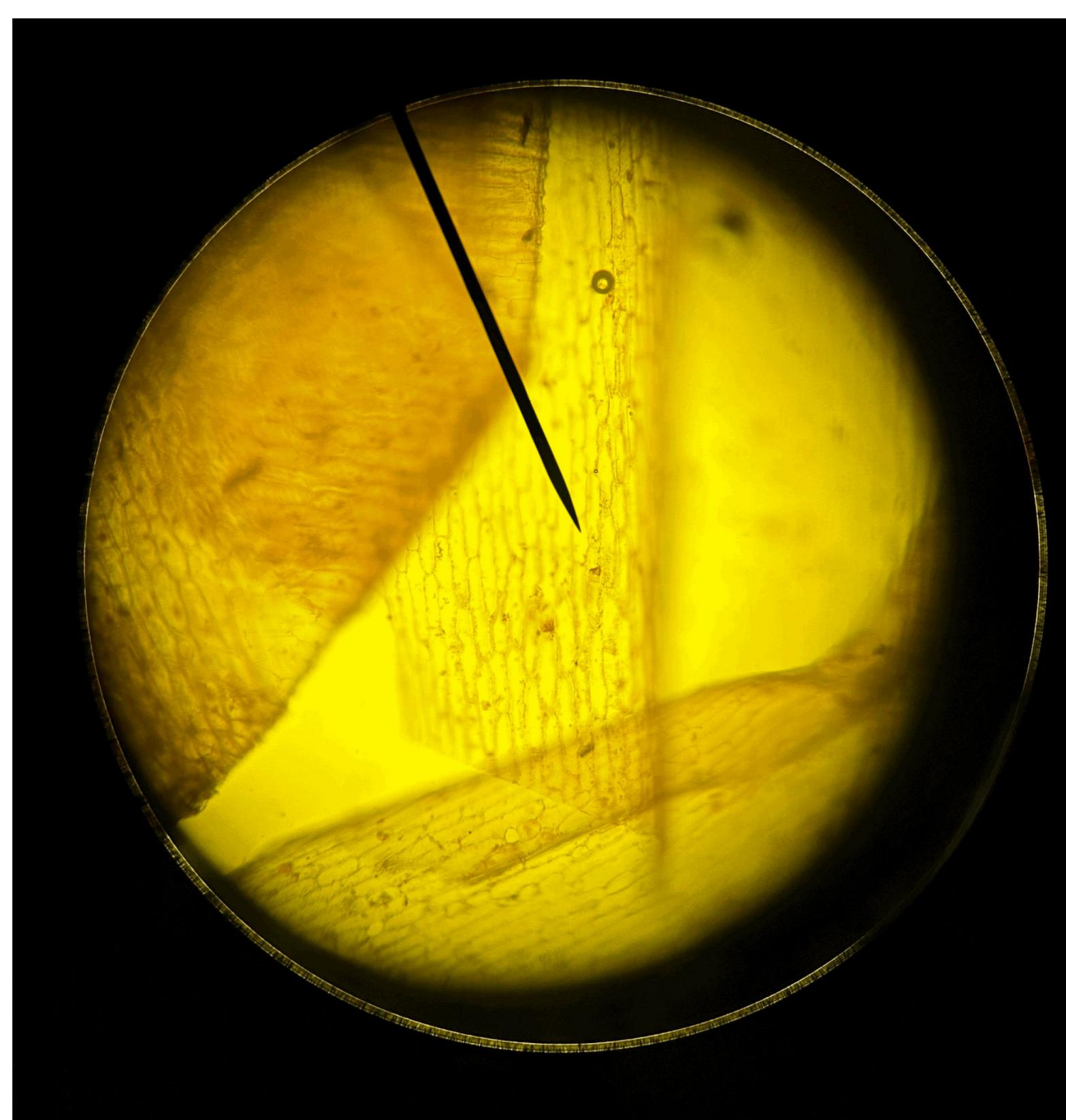
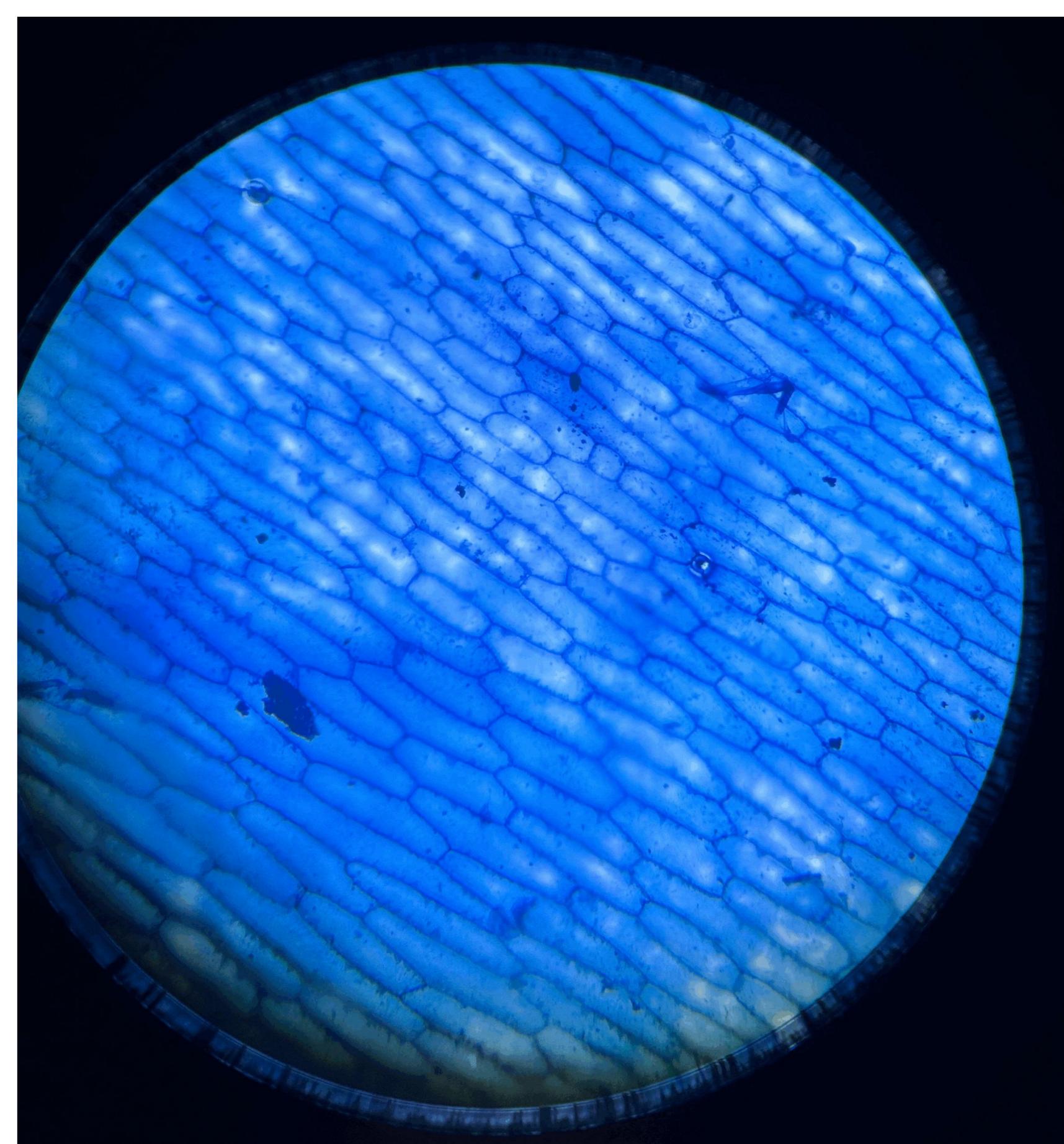
- Isolation

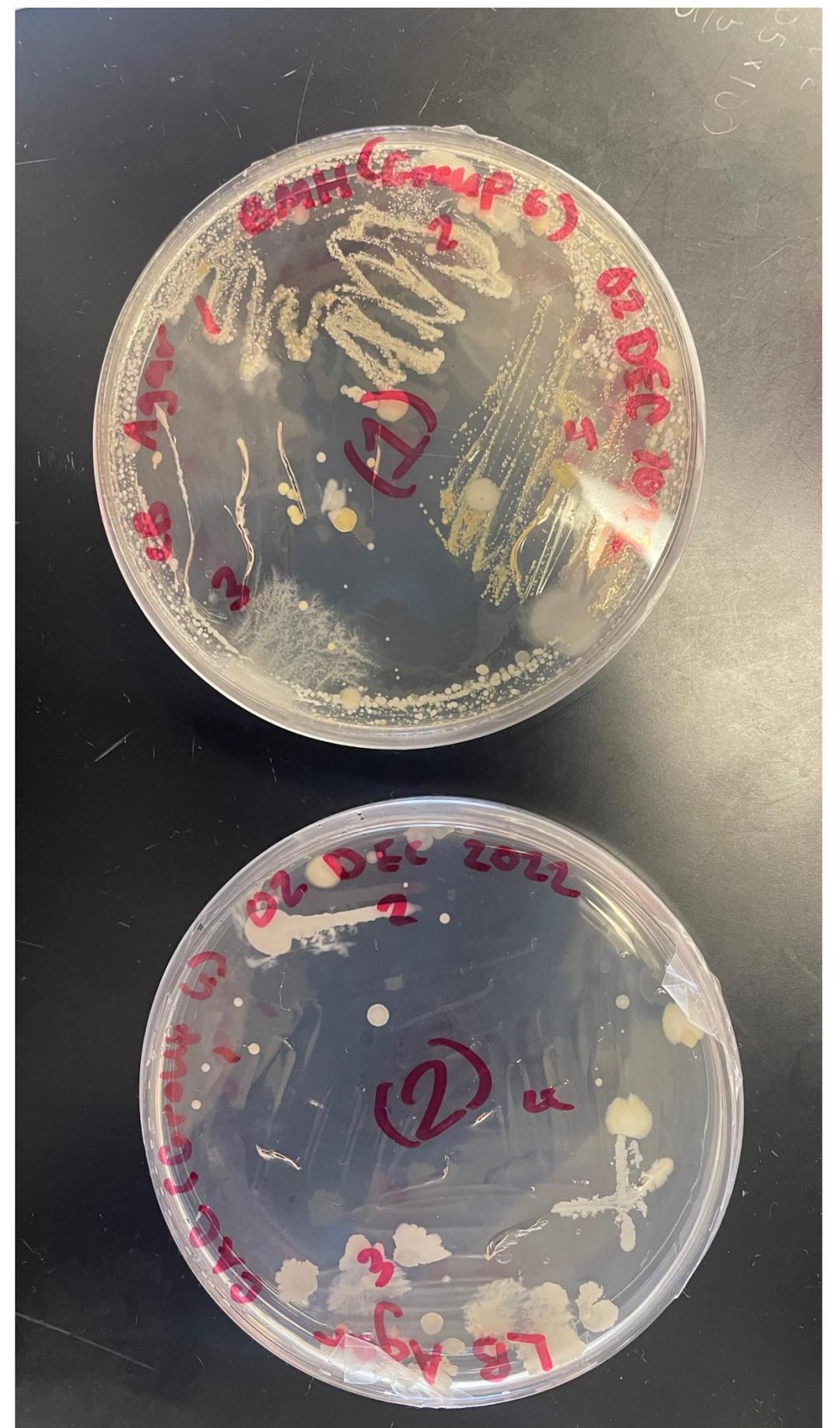
- Purification

- Recombinant DNA, GMOs

- Agricultural Biotechnology

- Continuing to build lab skills and an understanding of techniques and safety





# BIOTECHNOLOGY THREE

In this level, students receive an official **lab notebook**.

At the end of the year, students have the option to embroider their lab coats that they received in BT2.

- **Proteins**

- Function and structure
- Production and detection
- Isolation Techniques
- Protein Assays and PAGE

- **Refining lab skills and safety**

- Resume Building
- Interview Prep

- **Review and Preparation for AEST Ag Biotechnician & BACE Exams**

- Biotechnician Certification Exam taken near the end of the year
- Industry Certification





# Manufacturing Direct-Study

Lab Management /  
Organization

Application of Learning

- Design research projects based on students interests
- Internships



# BT4 Zebrafish “How far I’ll glow”

*Mechanisms to make fish glow under UV*

Zebrafish & pGLO gene

Bioethics & Experimental  
design



# BT4 “Fun Guys in all types of Places”

Fungal Spore growth in  
different Mediums

Experimental design



## ARTICULATION

- Credits are transferable to most universities

## INDUSTRY CERTIFICATIONS

- “Biotechnician Assistant Certification” National Certification
- AEST - Agricultural Biotechnology Certification
- Project Management Ready (New 23-24)
- Entrepreneurship & Small Business (New 23-24)

# Benefits

of the Biotechnology program



# Gold Seal CAPE Scholarship

## Requirements

- Complete 5 credit hours through Industry Certifications
- 30 service hours
- Graduate

## Benefits

- Can be used towards A.S. and certificate programs
- Provides extra money towards college!



# Other aspects of the Program

Meet & Greets

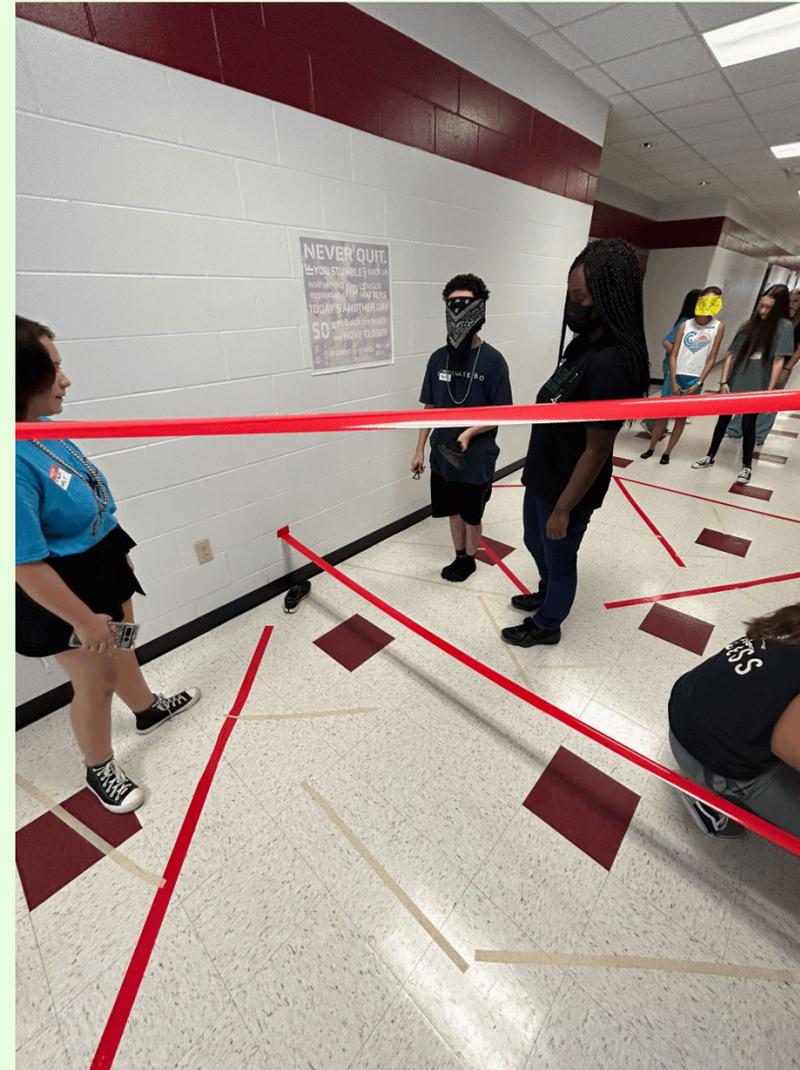
Field Trips

Socials

Mentor/Mentee

“Right of Passage” Rewards

End of the Year Trips



# Looking to the Future (2024/25 & Beyond)

\$118,000 grant for updated equipment

Food Science & Safety Credential

Increased Funding through Certifications

Biomedical Science “Track” for BT4





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# Questions?



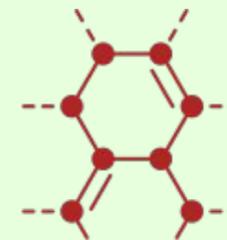
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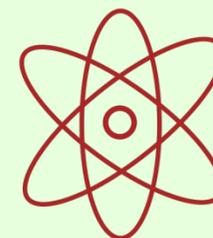
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**Questions and Comments**