

Biotechnology and Genetics



Description

In this project-packed curriculum, students get a taste of a wide range of biotechnological concepts, processes, and uses. They set up and complete a hydroponics experiment and grapple with tough bioethics case studies. Students learn about basic genetics and how DNA works. They learn to analyze biochemical compounds in materials using chromatography and to use enzymes to cause biological reactions. In addition, they are asked to observe the fermentation process and explore common biological pharmaceutical products. Students also complete blood typing experiments. Plus, with the Biotech and Genetics curriculum, students receive valuable practice with a number of biotechnology tools, including a microscope.

Skills

- Prepare microscope slides and set up and use a compound microscope
- Run chromatography strip for chemical identification
- Interpret outcomes of experiments through reasoning

Knowledge

- Chemical reactions associated with fermentation
- How enzymes act as catalysts
- The role of DNA in genetics
- Ethical issues in biotechnology
- Blood types and blood typing techniques
- Principles and uses of hydroponics

Activities

- Activity 1 - Introduction
- Activity 2 - The Scientific Method
- Activity 3 - Fermentation
- Activity 4 - Enzymes
- Activity 5 - Blood-Typing
- Activity 6 - Genetics
- Activity 7 - The Microscope
- Activity 8 - DNA Extraction
- Activity 9 - Advanced Biotech
- Activity 10 - Post-Test and Wrap-up
- Activity 11 - Bonus Activities
- Activity 12 - Challenge
- Activity 13 - Open-Ended Challenge
- Activity 14 - Careers
- Activity 15 - Internet

Standards

Math/Measure Science Problem Solving Reading

Module Includes:

DEPCO Biotech and Genetics Student Workbook, DEPCO Biotech and Genetics Instructor's Manual, DEPCO Biotech and Genetics Installation CD, Microscope, Electronic Scale, Electronic Timer, Beaker Warmer, 25 ml Graduated Cylinder, 100 ml Graduated Cylinder, 150 ml Beaker, Plant Light House, Scoop, Tweezers, Prepared Slides, Ruler, Scissors, Thermometer, Funnel, Wash Bottle (2), Vials (50), Test Tube Rack, Storage Trays (2), Safety Glasses (2), Lab Coats (2), Microscope Poster, Headphones (2), Biotech and Genetics Supply Kit for 24 Students

Requirements

Students will be required to have access to a water supply.
Computer and supplies are required and sold separately.

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Technology Education Concepts

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