Student Guide

Investigating the History of Biotechnology

Introduction: This activity examines the history of biotechnology from 1920 to present day and its impact on human health. You will rotate through a series of ten stations to read about biotechnology achievements over the decades and answer questions at each station.

Deoxyribonucleic acid (DNA) is the biological molecule that gives each organism its unique genetic blue print. It consists of a double stranded helix that measures 3about 2-3 nanometers in diameter and is composed of four nucleotide bases, adenine, guanine, cytosine, and thymine that are arranged in specific sequences called genes. DNA, located in the nucleus of the cell, controls all of the cell's activities.

Along with being the genetic code, DNA has been manipulated throughout history for food and pharmaceutical production. Along with food production, DNA biotechnology has been expanded to organisms to change their genome to make them grow faster, larger, more nutritious, and disease-resistant. While DNA biotechnology has increased and enhanced human lives, there are many ethical concerns with using it.

Materials: There will be ten stations to explore the History of Biotechnology from 1920 to the present day. You should have access to a computer to complete the questions.

Procedure for the Activity: For each station, record your answers in your lab notebook or as instructed by your teacher. Below is a list of the stations you will visit.

- Station 1: 1920s (Penicillin)
- *Station 2: 1950s (Eradicating Polio)*
- *Station 3: 1950s (Discovering DNA's function)*
- *Station 4: 1960s (Discovering DNA's Structure)*
- *Station 5: 1970s (Recombinant technology)*
- *Station 6: 1980s (PCR)*
- *Station 7: 1996-2005 (GMOs-plants)*
- *Station 8: (GMOs-animals)*
- *Station 9: Enter CRISPR*
- *Station 10: Present Day (Who Owns the Genome)*

Draw Conclusions:

1. How has biotechnology impacted human life?
2. How have you benefitted?
3. What do you think the future will be for nano-biotechnology?