Unit 4: Applications and Biotechnology

Content Area: **Science**
Course(s): **Modern Genetics**
Time Period: **Semester 1**
Length: **5 Weeks**
Status: **Published**

Standards

	Asking Questions and Defining Problems
	Obtaining, Evaluating, and Communicating Information
SCI.HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
SCI.HS.LS1.A	Structure and Function
	Developing and Using Models
SCI.HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
SCI.HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
SCI.HS.LS3.B	Variation of Traits
SCI.HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

Essential Questions

1. How has genetic research been used to change human life?

2. How does changing DNA relate to the changing of a protein and how can this process be used for gene therapy?

3. How can topics learned about in this course be used to solve problems related to genetic engineering and genetic technology?

4. What are applications for modern types of genetic research?

5. How are these applications being used to improve the quality of human life?

Enduring Understandings

1. Modern technology has devised methods of altering genes. Gene altering has applications in food production, pharmaceuticals, and treating health conditions.

2. DNA fingerprinting has applications in solving crimes and in identifying peoples based on their specific genetic code.

3. Genetic research is advancing rapidly and has allowed for the invention of new types of vaccines and ways of editing a persons genome to treat genetic disorders.

Knowledge and Skills

Knowledge:

1. Students will know applications for modern types of genetic research.

2. Students will know how these applications are being used to improve the quality of human life.

Skills:

1. Develop and use models to display understanding and convey ideas.

2. Identify problems by asking questions and work on designing solutions to these problems

3. Conduct an investigation based on a given problem.

4. Construct an explanations based on evidence gathered from a scientific investigation.

Assessments

https://docs.google.com/document/d/1wR7bQF-8AQoRrt0g4C3hKja0yjwDjC9_BiAmONWbTcI/edit?usp=sharing

Modifications

https://docs.google.com/document/d/1ODqaPP69YkcFiyG72fIT8XsUIe3K1VSG7nxuc4CpCec/edit