

Unit 4: Genetics and Information Transfer

Content Area: **Template**

Course(s):

Time Period:

Length:

Status: **Published**

State Mandated Topics Addressed in this Unit

| <u>State Mandated Topics Addressed in this Unit</u> | |
|---|-----|
| N/A | N/A |

Genetics and Information Transfer (~9 Weeks)

Learning Objectives

- Cell Cycle and Mitosis
- Chromosomal Abnormalities
- DNA: Structure and History
- Explain how variation exists between individuals.
- From Gene to Protein
- Genetic Engineering
- Genetics
- How do cells regulate the control of cell division?
- Meiosis
- Mendelian Genetics

Essential Skills

- 3A.1
- 3B.1
- 3C.1
- 4A.1
- Big Idea 1
- Big Idea 3
- Science Practice 1
- Science Practice 2

- Science Practice 3
- Science Practice 4
- Science Practice 5
- Science Practice 6
- Science Practice 7

Standards

Instructional Tasks/Activities

Please note: Some activities, labs, and/or projects are subject to change, activity with numbers in parentheses indicates AP Biology required lab.

- Activity: History of DNA, Experiments, Design, and Key Contributors
- AP Free Response Questions
- Bioethics of Biotechnology Debate
- Biotechnology: Restriction Enzyme Analysis of DNA (9)
- Biotechnology: Transformation Lab (8)
- Cellular Division: Mitosis and Meiosis (7)
- Chi Squared Analysis Practice
- Cloning Activity: Students will explore the scientific, moral, and ethical aspects of whole animal cloning. They will explore topics such as: somatic cell nuclear transfer, cloning to preserve endangered species, cloning of extinct animals, and human cloning.
- Genetic Counseling Activity: Work in groups to explore the role of genetic counselors in guiding people with their decisions about reproduction in the face of potential genetic disorders in their children. Students will provide their knowledge, experience, and perspectives, compare and contrast the input of other group members, and collaborate in the formulation of a group response.
- Genetics Practice Problems
- Lac Operon Clay Model Simulation: Regulatory Methods of protein synthesis in prokaryotes.
- Onion Root Tip Lab
- Simulated Genetics Activity
- Simulated Protein Synthesis Activity
- Unit Test: Mitosis and Cell Cycle, Meiosis, Mendelian Genetics, Gene to Protein
- Video: The Secret of Photo 51- Women in Science and Bioethics.

Assessment Procedure

- Classroom Total Participation Technique
- Classwork

- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5