Unit 06: Genetics and Herdity

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 7: Genetics and DNA

Essential Questions

- How do changes in genetic information affect organisms?
- How do mutations affect gene expression?
- How do new traits affect an organism and a population?
- How does sexual reproduction produce more diversity within a population?
- How is genetic information passed from one generation to the next?
- What is the relationship between DNA, genes, and traits?

Objectives

- Account for the appearance of a novel trait that arose in a given population.
- Analyze how mutations can affect traits.
- Apply Mendel's laws to genetic problems.
- Demonstrate through modeling how the sorting and recombination of genes during sexual reproduction has an effect on variation in offspring (meiosis, fertilization).
- Describe how a disease is the result of a malfunctioning system, organ, and cell, and relate this to possible treatment interventions.
- Predict the potential impact on an organism given a change in a specific DNA code, and provide specific real world examples of conditions caused by mutations.

Standards

SCI.9-12.HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are

	supported by multiple lines of empirical evidence.
SCI.9-12.HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
9-12.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.

Instructional Tasks/Activities

- Construct a Family Pedigree: students choose a trait, record this trait in their family members, design a pedigree diagram to indicate how the trait was passed from parents to offspring according to the pattern of inheritance they determine.
- Dragon genetics activity
- Genetics and Chance – Coin Flip: students, in groups, predict the outcome for varying numbers of coin tosses. Students observe and record actual coin tosses. Students compare results with other groups. Then offer reasoning using probability concepts for the observed outcomes. Then relate to outcomes of monohybrid crosses and predict outcomes for dihybrid and other crosses.
- Monohybrid cross worksheet

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Foldables – organization of material (phases of meiosis, transcription vs. translation, DNA vs. RNA
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- PowerPoint presentation of material
- PowerPoint presentation of material
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Think, pair, share (read assigned section of text individually, discuss with a partner, present material in

pairs to class – use PowerPoint as a reference)

- 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

N/A

Resources

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