

Intro to Genetics

(9th – 12th Grade Rotational Version)

Morning Learning Stations for Students –

STATION 1: What is DNA (Needs 2 Adults)

- (10 min) DNA overview
 - o Discuss how DNA is the “blueprint” for all living things
 - o Understand the different DNA bases
- (25 min) Gumdrop DNA Molecule Activity
 - o Learn that three DNA bases make up a codon
 - o Understand how codons create the proteins for traits
 - o Explore the importance of DNA to code for life
- (10 min) Trait Variation Discussion
 - o Learn how trait variations occur (new combinations in meiosis, errors in replication, mutations from environment)
 - o Understand the role trait variations play on a species

STATION 2: DNA Extraction Lab (Needs 2 Adults)

- (10 min) Pre-Lab
 - o Understand the importance of DNA
 - o Examine DNA pre-lab questions
- (25 min) Strawberry DNA Lab
 - o Learn about ploidy of living things
 - o Explore how ploidy can make DNA visible
- (10 min) Post-Lab
 - o Understand the role of pollinators

LUNCH BREAK

Afternoon Learning Stations for Students –

STATION 3: Explore IQhub & Drive Tractor Simulator (Needs 2 Adults)

- (60 min) IQhub Scavenger Hunt (2 students at a time go drive tractor simulator)

STATION 4: Punnett Squares (Needs 2 Adults)

- (10 min) Genetic Vocabulary
 - o Review important genetic terms
- (20 min) Monohybrid Cross/ Punnett Squares Activity
 - o Understand how a Punnett Square works for a single trait
 - o Examine how Punnett Squares can determine the probability of passing on a certain trait
- (20 min) Dihybrid Cross/ Punnett Squares Activity
 - o Understand how a Punnett Square works for two traits
 - o Examine how Punnett Squares can determine the probability of passing on certain traits
- (10 min) Wrap-up and Analyze
 - o Understand why DNA is important

Michigan Learning Standards for today's IQhub visit –

- Science Standards:
 - HS-LS1-1 Genes, Proteins and Tissues
 - HS-LS3-1 Chromosomal Inheritance
 - HS-LS3-2 Inheritable Genetic Variation
 - HS-LS3-3 Variation and Distribution of Traits
 - HS-LS4-2 Four Factors of Natural Selection
 - HS-LS4-3 Adaptation of Populations
 - HS-LS4-4 Natural Selection Leads to Adaptation
- Math Standards:
 - HS-S-CP Conditional Probability and the Rules of Probability
 - HS-S-MD Using Probability to Make Decisions
- Career Preparation for 9th – 10th Grade:
 - Target 3: Build Knowledge about Careers, Postsecondary, and Employment Opportunities
 - Soft skills/work ethics
- Career Preparation for 11th – 12th Grade:
 - Target 3: Continue to Build Knowledge about Careers, Education, and Employment Opportunities
 - Business tours
 - Soft skills/work ethics
 - Have local employers visit students to discuss top employability skills

Possible Careers Discussed in today's IQhub visit –

- Farmer
- Botanist
- Horticulturist
- Landscaper
- Environmentalist
- Ecologist
- Geneticist
- Mechanic
- Soil Scientist
- Agronomist
- Entrepreneur