

# Variation and Heredity

#### Objectives

You will be able to

- Identify human traits.
- Identify the influence of genetic and environmental factors on human traits.
- Make an argument from evidence about whether humans are more similar to each other or more different from each other.
- Collaborate with your teammates to identify human traits.
- Identify the plot, theme, setting, characters, and engaging characteristics of a children's book.



How do the environment and genetics affect who we are and how we are similar or different?

#### **Evaluation and Feedback**

To evaluate your work, you will

- Use the "Engaging in Arguments from Evidence" row of the Science and Engineering Practices Rubric.
- Use other criteria determined by your teacher.

# Lift-Off Task: A Storied Life and Human Traits

#### As a group:

- Listen to and analyze a children's story.
- Identify your own human traits.
- Compare your own traits to those of the rest of the class.
- Decide how genetics and the environment contribute to your traits.

#### Vocabulary

- characteristic
- dominant
- environment
- gene
- heredity
- inheritance, inherited
- plot
- recessive
- theme
- trait
- variation

### Connect to the Culminating Project

Plan and organize your children's book in your Individual Project Organizer:

- Create your main character.
- Describe your main character's traits, personality, and interests.



### Introduction

Over the course of this unit, you will be designing and writing a children's book with the theme of variation and heredity. You will create your own characters, setting, and plot. It will be your job to teach readers about a character who goes through life, struggles to survive, has offspring, and is influenced by their environment. In order to do this, you first need to think about what makes a good story and what heredity is.

### Part I • Example of an Engaging Story with a Message

- 1. Listen to a children's story and then discuss the following questions with your group.
  - What big ideas, themes, or messages do you think the author wants you to understand?
  - What are the different parts of the story: setting, characters, and plot?
  - What are some examples of cause and effect in the story?
  - What is on a typical page of the book that makes the story fun and interesting?

### Part II • Identify Human Traits

- 1. Identify your traits by circling the appropriate trait on the Your Traits and Your Classmates' Traits chart.
- 2. Gather data about your classmates' traits and fill in the last two columns of the chart.



#### Your Traits and Your Classmates' Traits

Trait	Circle Your Trait	Number of Students in Your Class with Each Trait	
Earlobes		Detached	Attached
Tongue Rolling		Tongue Roll	No Tongue Roll
Widow's Peak		Widow's Peak	Straight Hairline
Mid-Digit Hair		Mid-Digit Hair	No Mid-Digit Hair
Hitchhiker's Thumb		Hitchhiker's Thumb	Straight Thumb



# A Storied Life and Human Traits

Trait	Circle Your Trait	Number of Students in Your Class With Each Trait	
Dimples		No Dimples	Dimples
Hand Clasping		Right Over Left	Left Over Right
Cleft Chin		Cleft Chin	No Cleft Chin
Face Freckles		Freckles	No Freckles
Handedness		Left Dominant	Right Dominant



## A Storied Life and Human Traits

Trait	Circle Your Trait	Number of Students in Your Class With Each Trait	
Eye Color		Brown Blue	Green Hazel
Hair Color		Black Brown	Red Blond
		Brown	Blond

3. Discuss the following three questions and write your answers in your science notebook.



- All the traits you identified are inherited. What does *inherited* mean to you?
- Which traits on the chart can you change over your lifetime? How?
- Give two examples of traits (not found on the chart) that can change over your lifetime due to environmental influences.
- 4. Fill in the following chart to answer this question: Are humans more similar to each other or more different from each other?



#### Claim, Evidence, and Reasoning

Are humans more similar to each other or more different from each other?
Claim
Evidence (data from the Your Traits and Your Classmates' Traits chart)
Reasoning (Use a science concept to justify that your evidence supports your claim.)



### REFLECT

How has your idea of what a trait is changed over the course of this task? In particular, do you still have the same ideas about where traits come from?

# Part III • Connect to the Culminating Project and Assessment

Complete the Individual Project Organizer for this task.

