

Alien Genetics

Can you describe the phenotypes of an alien you create?

MATERIALS



- ❖ Play-Doh (2 colors)
- ❖ Pipe Cleaners
- ❖ Googly Eyes
- ❖ Craft Sticks (6 colors)
- ❖ Plastic Cups
- ❖ Sandwich Bags
- ❖ Phenotype Sheet
- ❖ Alien Sheet
- ❖ Paper Plate
- ❖ Scissors
- ❖ Rulers
- ❖ Trait Sheets

Do the Experiment!

1. Create an alien by randomly choosing a “Mom” stick and a “Dad” stick for each physical trait (phenotype). Use your phenotype sheet to know if your alien will have a dominant trait or recessive trait. Create your alien on a paper plate. Have someone else prepare the craft sticks by writing mom and dad on the top of each color and then assigning a letter at the bottom. Remind them to make some letters capital (dominant) and some lower case (recessive). Use the phenotype sheets to help you out. For each stick color make at least five mom sticks and five dad sticks.

- The purple sticks determine body color. (Play-Doh)
- The yellow sticks determine body shape. (Play-Doh)
- The green sticks determine eyes. (Googly Eyes)
- The blue sticks determine legs. (Pipe Cleaner)
- The red sticks determine arms. (Pipe Cleaner)
- The orange sticks determine antennae. (Pipe Cleaner)

2. Although your random selection determines how many eyes your alien might have, you can still be creative on where you place the eyes. That way your alien can still be unique from other aliens! You can also determine the shape and length of the legs, the shape and number of arms and the shape and number of antennae.

3. Once done, write a story about your alien.

DID YOU KNOW...

Genetics is the study of genes, and heredity in living organisms. A **gene** is the molecular unit of heredity. **Heredity** is the passing of traits from parent to offspring. **Phenotypes** are observable traits like the color of your hair or height. Phenotypes are determined by **genotypes** which are the genetic makeup of a gene. You are who you are because of a random selection of genes given to you by your parents. Each gene has two **alleles**: one allele from your mother, the other from your father. When you selected your sticks for your alien, you were selecting alleles. If you got **AA** or **Aa**, a dominant phenotypic trait is expressed. If you got **aa**, a recessive phenotypic trait is expressed. Do you think it is possible for a recessive gene to become the



| | | |
|---|----|----|
| | B | b |
| B | BB | Bb |
| b | Bb | bb |



CHALLENGE

1. What other traits can be added to your alien?
2. Why do you think children from the same parents do not look exactly alike?
3. What are some of the observable traits you share with your family and friends?

STEAM Challenge: We chose 6 random phenotypes to display. Humans have 4,000 different observable phenotypes. How many times more traits would we need to do to equal 4,000?