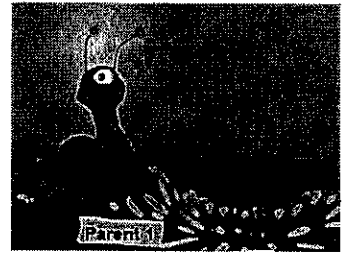


Student Exploration: Inheritance

Part A

In the *Inheritance Gizmo*™ you can create and breed aliens on an imaginary planet. Select **Asexual reproduction**. During **asexual reproduction**, a single parent produces **offspring** (children).



1. Click **Create alien** and create your own alien. Describe its traits in the **Parent** row of the table:

Alien	Body type	Skin Color	Antenna shape	Tattoo
Parent				
Offspring				

2. Drag the parent over to the **Parent 1** space and press **Reproduce**. Fill in the **Offspring** traits on the table above. What traits appear to be inherited from the parent?

Because this offspring inherits its traits from one parent, it is called a **clone**.

3. Drop all created aliens into the exit hole.

Part B

1. Select **Sexual reproduction**.
2. In **sexual reproduction**, two parents pass traits to the offspring.
3. Create **two identical parents** with thick bodies, green skin, curly antennas, and triangle tattoos.
4. Make 3 Offspring and record their traits below:

Offspring	Body type	Skin Color	Antenna shape	Tattoo
Offspring 1				
Offspring 2				
Offspring 3				

- A. Which traits were passed from parents to offspring? _____
- B. Which traits were **not passed down (inherited)**? _____

Traits that are not passed down (not inherited) are called **acquired traits**.

What are **acquired traits**? _____

Part C: Skin Color

1. Clear all aliens from Part B into the exit hole.
2. Create a green alien and a pink alien, with thick bodies, and straight antenna.
3. Create 3 offspring for the green alien and pink alien and record their skin color trait below:

Offspring	Body type	Skin Color	Antenna shape
Offspring 1			
Offspring 2			
Offspring 3			

When offspring show a mixture of parent traits, the traits are called **codominant traits**.

What is a **codominant trait**?

4. Clear all the aliens into the exit hole

Experiment: Follow the steps below.

- Place a green alien and a pink alien in the locations for **Parent 1** and **Parent 2**.
- Breed these parents twice. Drag both offspring to the spaces below the **Nest**.
- Drag the two green-and-pink offspring up to become the new **Parent 1** and **Parent 2**.
- Breed these aliens 10 times. Record the color of each offspring below (Example Green, Pink, or Green and Pink)

Offspring #	Skin color
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Analyze: Look at the results of your experiment.

- A. What kind of skin did most of the offspring have? _____
- B. Did *all* of the offspring have green and pink skin? _____

Part D: Antenna Shape

1. Clear all aliens by dropping them into the **Exit** hole.
2. Create two aliens – one with straight antenna and one with curly antenna.
3. Create 10 offspring and record the antenna type below

Offspring #	Antenna Type
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Sometimes when two traits are combined, one is a **dominant trait** and the other is a **recessive trait**. If both traits are present, only the dominant trait is seen in the offspring.

- A. Which trait is dominant, straight antenna or curly? _____
 - B. Which trait is recessive? _____
2. Take two of the **straight-antenna offspring** and breed them together to produce 10 new offspring. Record the antenna type of each offspring.

Offspring #	Antenna Type
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

- A. What happened? _____
- B. Did the recessive trait disappear? _____
- C. How can a trait skip a generation? _____
- _____

Part E: Multiple Traits

1. Create a Blue Skin Parent Alien with a thick body type, straight antenna, and a triangle tattoo.
2. Create a Pink Skin Parent Alien with a thin body type, curly antenna, and a Mom tattoo.
 - Breed these parents twice. Drag both offspring to the spaces below the **Nest**.
 - Drag the two offspring up to become the new **Parent 1** and **Parent 2**.
3. Breed these two **offspring aliens** 10 times. Recording the traits for each offspring below.

Offspring #	Skin color	Antenna Type	Body Type	Tattoo Type (If any)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

- A. How many aliens had pink skin? _____
- B. How many aliens had blue skin? _____
- C. How many aliens had pink skin and blue skin? _____
- D. What can you tell about the trait for skin color?

- E. How many aliens had straight antenna? _____
- F. How many aliens had curly antenna? _____
- G. What can you tell about the trait for antenna type?

- H. How many aliens had a tattoo? _____
- I. What can you tell about the trait for tattoos? _____