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## Student Exploration: Inheritance

**Vocabulary:** acquired trait, asexual reproduction, clone, codominant traits, dominant trait, offspring, recessive trait, sexual reproduction, trait

**Prior Knowledge Questions** (Do these BEFORE using the Gizmo.)

1. How are you similar to your parents?

Eye color and height.

How are you different?

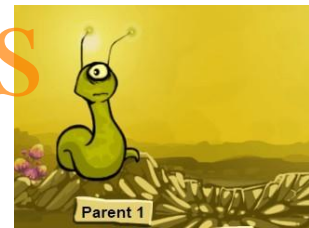
My hair and my skin.

2. A **trait** is a characteristic. Think about your physical traits (eye color, skin tone, height, hair, face, allergies, etc.) What traits do you think you inherited, or received, from your parents?

I think I received eye color, freckles, height, pollen allergies, and double joints.

### Gizmo Warm-up

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	Thick	Blue	Curly	none
Offspring	Thin	Blue	Curly	none

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? Blue

color, curly antenna, and no tattoo.

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



<p><b>Activity A:</b> <b>Inherited traits</b></p>	<p><u>Get the Gizmo ready:</u></p> <ul style="list-style-type: none"> <li>• Select <b>Sexual reproduction</b>.</li> <li>• Drop all remaining aliens (if any) in the <b>Exit</b> hole.</li> </ul>	
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**Question: Are all parental traits inherited by offspring?**

1. Observe: In **sexual reproduction**, two parents pass traits to the offspring. Create and breed a variety of aliens. Record your observations on a separate sheet of paper.
2. Form a hypothesis: Which traits do you think are passed down from alien parents to their offspring, and which traits are not? Explain. I think skin color, tattoo, and antenna shape are passed down because that's what happened in asexual reproduction.
3. Experiment: Set the **Food supply** to **2 bushes**. Create two identical parents with thick bodies, green skin, curly antennas, and triangle tattoos. Make two offspring and record their traits in the table below.

Offspring	Body type	Skin Color	Antenna shape	Tattoo
Offspring 1	medium	Green	Curly	none
Offspring 2	Medium	Green	Curly	none

4. Analyze: Compare the offspring traits to the parent traits.
  - A. Which traits were passed from parents to offspring? Skin color and antenna shape.
  - B. Which traits were *not* passed down? Body and tattoo

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

5. Investigate further: Create offspring with a few different levels of **Food supply**. How does food supply affect the body type of offspring?  
It doesn't affect it at all.
6. Think and discuss: Suppose a human child had a mother with dyed-pink hair and a father who was missing a finger (lost in an accident). Would the child inherit these traits? Explain.

No because they acquired these traits during their life, they're not genetic.

