

# Dominant and Recessive Genes

## First Generation



**Long-Hair Guinea Pig**

Type of genes

**RR**



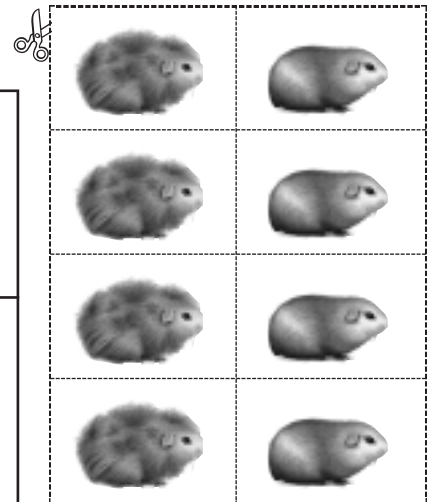
**Short-Hair Guinea Pig**

Type of genes

**rr**

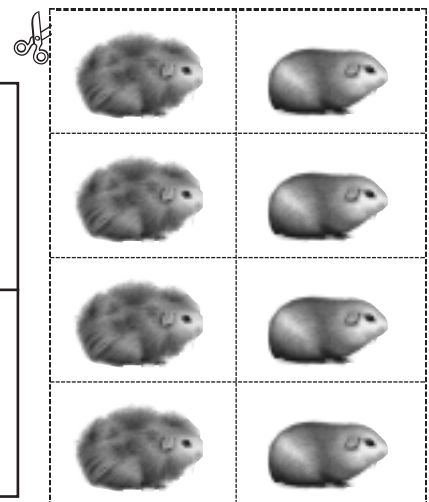
## Second Generation

	<b>r</b>	<b>r</b>
<b>R</b>	Type of genes	Type of genes
<b>R</b>	Type of genes	Type of genes



## Third Generation

	<b>R</b>	<b>r</b>
<b>R</b>	Type of genes	Type of genes
<b>r</b>	Type of genes	Type of genes



**Notes for Home** Your child has completed a Punnett square for three generations.

**Home Activity:** Discuss a family trait (such as hair or eye color) observed for several generations.

## Using Interactive Transparency 2

### Big Idea

All organisms grow and reproduce. Their dominant and recessive genes pass along traits to future generations.

### Science Background

Punnett squares help figure out the dominant and recessive genes of parents and offspring.

### Glossary

genes	recessive gene
dominant gene	hybrid

### ESL/ELD

#### Hands-On Activity

Reproduce images of the long-hair and short-hair guinea pigs shown on the transparency. Have students choose a guinea pig image to wear. Have some students figure out what genes they would probably have if they were first generation hybrids. Have the remaining students figure out what genes they would probably have if they were second generation hybrids.

### Cooperative Learning

Ask students to draw a “family portrait” showing four or five family generations with the appropriate mix of long-hair and short-hair guinea pigs based on the transmission of dominant and recessive genes.

### Teach and Apply

**1** Make a copy of the transparency for each student.

**2** Have students cut apart the long-hair and short-hair guinea pigs.

**3** Have students fill in the type of genes the offspring of the Second Generation would have using the Punnett square provided.

■ Students can draw or paste a long-hair or short-hair guinea pig in the appropriate square.

■ Have students fill in the type of genes the Third Generation offspring have in the appropriate square using the Punnett square provided.

■ Students can draw or paste a long-hair and short-hair guinea pig in the appropriate square.

**7** Emphasize how students can identify dominant and recessive genes through the use of the capital and lower case letters.

**8** As a variation, students could use a Punnett square to identify how blue eyes and brown eyes are passed along through generations.

# Dominant and Recessive Genes


**1** Give a copy of the transparency to each student.

Name \_\_\_\_\_ Date \_\_\_\_\_

**Interactive Transparency 2**  
Use with Unit A, Chapter 2.


## Dominant and Recessive Genes

**First Generation**



**Long-Hair Guinea Pig**

Type of genes RR











**Short-Hair Guinea Pig**

Type of genes rr









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**Second Generation**

	r	r		
R	 Type of genes <b>Rr</b>	 Type of genes <b>Rr</b>	✂	 
R	 Type of genes <b>Rr</b>	 Type of genes <b>Rr</b>		 

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**Third Generation**

	R	r		
R	 Type of genes <b>RR</b>	 Type of genes <b>Rr</b>	✂	 
r	 Type of genes <b>rR</b>	 Type of genes <b>rr</b>		 

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**Notes for Home** Your child has completed a Punnett square for three generations.  
**Home Activity:** Discuss a family trait (such as hair or eye color) observed for several generations.

**2** In the Second Generation, students need to fill in the Punnett square as follows: all quadrants are Rr.

**3** Students should draw or paste a guinea pig in each quadrant.

In the Third Generation, students will fill out the Punnett square as follows; upper left quadrant is RR, upper right is Rr, lower left is rR, and lower right is rr.

Students should draw or paste the short-hair guinea pig in the rr square, the others are long-hair guinea pigs.

**7** As a variation, students could use a Punnett square to identify how other traits are passed along through generations. Students should understand that the dominant and recessive traits are independent of gender, or being male and female.

Students distinguish dominant and recessive genes as evidenced by the long-hair (dominant) and short-hair (recessive) traits in this species of guinea pigs.