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Module 09: Human-Animal Interactions

Urban EcoLab

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Student Activity - Marshmallow Mutt

Center for Urban Resilience

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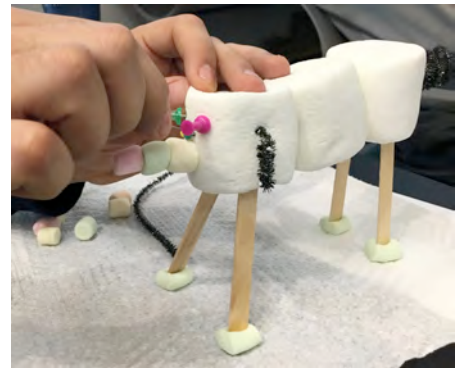
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Marshmallow Mutt

Directions: You will create (construct) a puppy of heterozygous parents using the principles of Mendel's genetics.



Procedure:

1. Work with a partner. Each of you represents a parent of your offspring.
2. Inside your envelope are both female and male alleles for genes found on the chromosomes. Remove and place them on your table so no letters are showing (face down).
3. If you are the female, select one pink paper representing each shape. If you are the male, do the same with the blue shapes. Put the unselected papers back into the envelope. They won't be used. Think about what this represents.
4. The papers out on the table represent the alleles on the chromosomes in the egg and sperm. When they unite, they form a zygote. Match up the homologous pairs of chromosomes (match up the shapes) and turn over your pairs of chromosomes.
5. Use the chart below to determine the characteristics of your offspring.

Genotype table:

Genotype	Phenotype	Genotype	Phenotype
AA	Long tongue	Aa	Spotted tongue
aa	Short tongue	MM	Short body
Mm	Average length body	mm	Very long body
QQ	Black nose	Qq	Spotted nose
qq	Brown nose	TT, Tt	Curly tail
tt	Straight tail	EE, Ee	Same color eyes
ee	Different color eyes	LL, Ll	Long legs
ll	Short legs	DD, Dd	Floppy ears
dd	Rigid ears		

9. Record the genotypes of your offspring by highlighting on the table above.
10. Build your puppy using the materials provided. Get creative in how you want to use the materials available to represent each body part.

Discuss:

1. Compare your offspring with those from other pairs of parents.
2. Were any of the offspring identical?
3. Is there any trait that showed up in every offspring?
4. What does it mean when an organism is homozygous or heterozygous for a trait?