Hot Science

Evolution of Beauty

Hot
Science
Cool Activities

A Taste for the Beauty

Animals are more likely to mate if they have characteristics that allow them to stand out. In Dr. Michael J. Ryan's research, if an animal stands out from the competition, they are more likely to mate. Unfortunately, standing out means predators can find the animal more easily as well! Today we will be exploring an example where beauty kills by observing M&M's in their natural habitat.

Materials

- Orange or red piece of construction paper (cloth works too). This is our habitat where all the M&Ms live.
- A large collection of M&Ms (about $15 - 20$ M&M's per color). These are our prey.
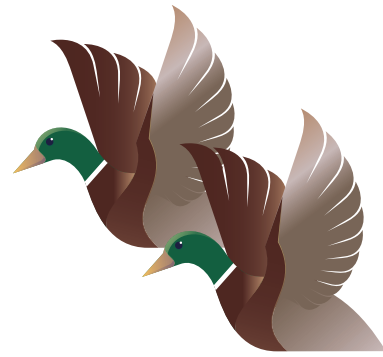- Timer
- Something to write with.

Table 1: Predation and Reproduction

Write out a table that looks something like this to record how many M&M's you have after each round!

	Red	Orange	Yellow	Blue	Green	Brown	Total
Before Predation							
After Predation							

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Feeding Frenzy

Teamwork makes the dream work!

With a partner, decide who is going to be in each role.

1. The Predator: You will be the main predator of the M&M's. You hunt like a bird of prey. You quickly and precisely pick up, one at a time, the first prey you see and remove them from the paper with your fingers.

2. The Biologist: You are a biologist studying the M&M's population. You will document any changes in the population.

Feeding Frenzy

1. Setting up: place a handful of M&M's on the construction paper and count how many M&M's there are of each color in Table 1 under the "Before Predation" row.

2. Biologist: set a timer for 20 seconds for the feeding frenzy.

3. Predator: During the 20-second timer, use your fingers to begin "eating" the M&M's (don't actually eat them yet!) by grasping an M&M's and setting them in a pile in front of you. Remember, you are like a bird of prey. You single out and strike the first critter you see with speed and precision.

    a. When the timer goes off, STOP!

4. Biologist: count the number of M&M's of each color that are left on the construction paper and record it in Table 1 under the "After Predation" row.

5. Answer questions 1-3.

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Questions to Ponder

1. Which colors of M&M's were most likely to get eaten by the predator? Why?

2. How did the number of each color change over the course of the activity? Did any colors go extinct?

3. Natural selection is a process in which some organisms survive better in an environment and are able to reproduce and pass on their genes. What do these surviving M&M's need to do in order to pass on their genes?

Evolution of Beauty: watch the episode!

A. Watch the Hot Science episode, "Evolution of Beauty".

  a. https://www.hotscience.tv/show/evolution-of-beauty

  b. **Or scan the QR code**

B. Sexual selection: A form of natural selection where a certain sex (can be male or female) is attracted by specific characteristics or behaviors.

C. Answer questions 4-6.

4. If female M&M's prefer mates that are easier to find, who is more likely to reproduce: the blue M&M's or the red M&M's?

5. What predictions might you make about the future M&M's populations? Will some colors be more common than others?

6. What do you think would happen to the M&M's if they were moved to a new environment that is mostly green? Explain your answer.

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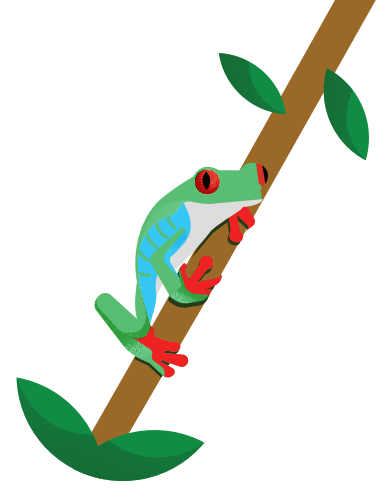
Extension
Ideas

Want to go further?

Keep going! Have your M&M's reproduce and repeat a predation cycle. Are the results similar?

Calculate the percentage of each color for each generation.

Research some examples of organisms where the males and females look different. Make a hypothesis on why you think they look different.

Sources

https://www.hotscience.tv/episodes/dangerous-beauty

https://www.esi.utexas.edu/files/116_Lesson-Plan-1.pdf

https://www.esi.utexas.edu/talk/beautiful/

https://depts.washington.edu/astrobio/drupal/sites/default/files/F431_UWABLabManual.pdf

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