

## M&M Lab: Asexual vs. Sexual Reproduction

**Kristen Covino**

The purpose of this activity is to review and highlight the differences between asexual reproduction and sexual reproduction.

**Materials:**

- 30 Ziplock bags (one per student)
- Large bag of M&Ms
- 30 copies of half-sheet handout

**Methods:** (prep work)

1. Label 15 bags "Sexual" and 15 bags "Asexual".
2. Separate out the M&M colors.
3. Load the "Asexual" bags as follows: (30 M&Ms each)

1: 30 Red	2: 30 Blue	3: 30 Green	4: 30 Orange	5: 30 Brown
6: 30 Yellow	7: 30 Red	8: 30 Blue	9: 30 Green	10: 30 Orange
11: 30 Yellow	12: 30 Blue	13: 30 Green	14: 30 Orange	15: 30 Brown

4. Load the "Sexual" bags as follows: (10 M&Ms each)

1: 1 Red & the rest various other colors	2: 2 Red & the rest various other colors	3: 4 Red & the rest various other colors
4: NO RED, various colors	5: NO RED, various colors	6: NO RED, various colors
7: NO RED, various colors	8: NO RED, various colors	9: NO RED, various colors
10: NO RED, various colors	11: NO RED, various colors	12: NO RED, various colors
13: NO RED, various colors	14: NO RED, various colors	15: NO RED, various colors

Notes:

**\*\*Red is the winning color!**

**\*\*If you have less than 30 students, make sure that you eliminate bags that you end up with one asexual group for every sexual group (ex. 20 students: 10 asexual and 10 sexual).**

**Methods:** (Lab Activity)

1. Go around the room with the grocery sack of M&M bags and have students pull out a bag randomly. Stress to them NOT TO EAT until they are told so.
2. Pass out the Asexual vs. Sexual half sheets. Have the students answer questions 1-4.
3. Have the students sit next to someone with the opposite form of reproduction. Have them answer questions 5-8.

\*\*There are two things an organism wants to do: (1) Survive and (2) Reproduce (pass on their genes). Tell them that their bag of M&Ms represents their population of organisms. They are to observe their population for the next 5 years to see what happens when the environment becomes unstable.

4. Go through the following scenarios/years:

Year1

An invasive species came into the ecosystem and took over the food source of organism orange; they all died of starvation. (Students who have orange can eat them).

Year2

A tornado forced a migrating predator into the ecosystem. It used the blue organism as a food source and eliminated all the blue organisms from the population. (Students who have blue can eat them).

Year3

A new pesticide was used in the ecosystem and destroyed all the green vegetation. This caused the green organism to no longer be camouflaged within its ecosystem. Due to being vulnerable to predators, the green organism was eliminated from the population. (Students who have green can eat them).

Year4

A new bacteria strain evolved in the yellow organism causing the yellow individuals to be sick and they all died due to lack of resistance to the new bacteria. (Students who have yellow can eat them).

Year5

The brown organism had a mutualistic relationship with the yellow organism, and due to losing its companion it no longer had a food source or protection from predators. Therefore, the brown organisms all starved to death or were eaten by predators. (Students who have brown can eat them).

5. Record what happened to your population in question 9.

6. Answer and discuss questions 10 & 11.

**Asexual Reproduction**

<b>Benefits</b>	<b>Consequences</b>
-Happens faster -Make more in a short period of time -If the environment is stable you will survive -You only need one parent	-Everyone is genetically identical -If the environment becomes unstable there is a chance that your ENTIRE population can die all at once.

**Sexual Reproduction**

<b>Benefits</b>	<b>Consequences</b>
-Genetic variation, everyone looks different -Better chance of survival if environment becomes unstable -You are less likely to become extinct	-Slower -You make less in a short period of time -Takes a lot of energy -Need two parents