Genetic Variation Lesson 1: "The Solve"

Student Handout

I. Watch the Mosa Mack Mystery.

Either on your own, in a small group or as a class (your teacher will let you know), watch Mosa Mack's episode on Genetic Variation. Then, fill out the questions below. Include a time code in your answer as evidence of where you found your answer.

Name: _____ **Date: _____**

Episode Questions

1. Why does the algae think that Paulie and Nicole are not siblings?

2. Where do traits come from?

3. There are sections of DNA called genes. What do genes do?

4. How do the algae make babies?

5. What does the chromosome suggest as one reason the frogs look different?

6. When Mosa and her team zoom in on Rose's eggs, what do they notice is different than the reproduction of the algae?

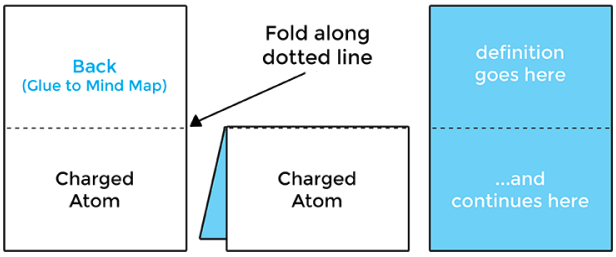
7. Why do the algae all look identical while the frogs look different?

8. Help Mosa solve the mystery. Which Frog did Mosa pick and why?

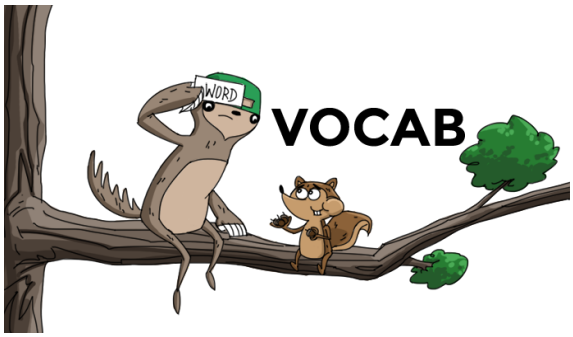
II. Vocabulary Activity

Complete the activity by following the instructions below, or complete it here online.

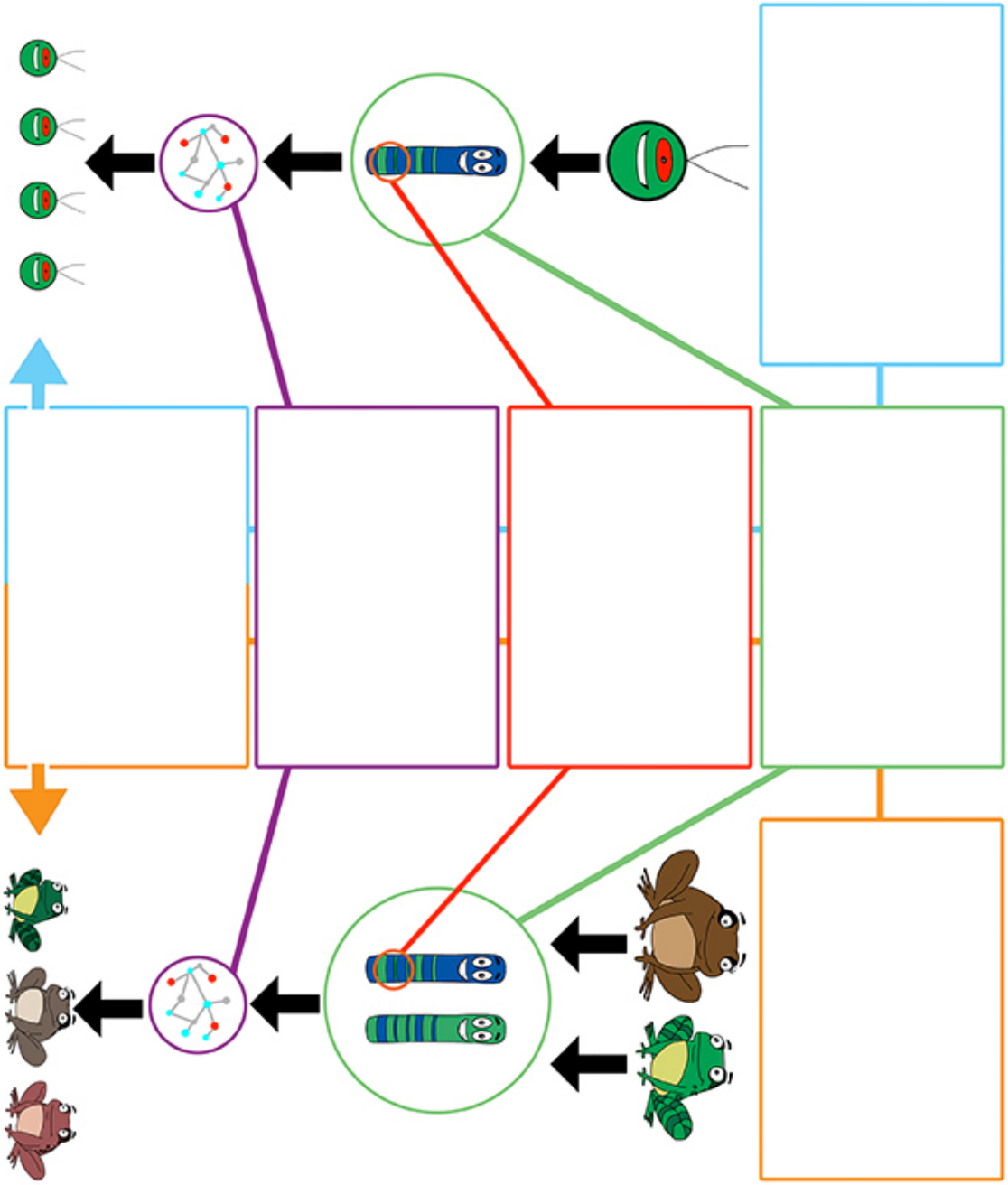
1. Using the materials at your table, cut out your vocabulary cards along the **solid lines**. Do not cut the dotted lines.
2. Fold the cards along the dotted lines.



3. Write the definition of each term on the inside of the card using the definitions below.
4. Use the clues from the Vocabulary Mind Map to place the cards in the correct location. Explain your thinking to your group as you go.
5. When you're ready to glue or tape, raise your hand so your teacher can check your Mind Map.
6. Use glue or double-sided tape to connect the back of the vocabulary card to the correct place on the Mind Map.
7. Discuss with your group:
   a. What are some clues that could tell you if an organism reproduces sexually or asexually?
   b. What are two different reasons for genetic variation, or differences in traits?
   c. What is the difference between a gene and a trait?



Genetic Variation Mind Map:



Genetic Variation Vocabulary Cards:

Proteins	Chromosome	Asexual Reproduction
Traits	Gene	Sexual Reproduction

Genetic Variation Vocabulary Definitions:

- **Protein:** the basis of living tissues, made from genetic instructions
- **Gene:** a section of DNA; controls proteins created, and thus what traits an organism has
- **Chromosome:** made of genes; carry hereditary information
- **Trait:** characteristic or feature of an organism
- **Asexual Reproduction:** the production of offspring from only one parent
- **Sexual Reproduction:** the production of offspring by combining male and female sex cells.

III. Quiz: Check for Understanding

Complete the exit ticket below *or* you can take the quiz online!

Name: _____ **Date: _____**

1. What is the term for a sequence of DNA that codes for a certain protein?
    a. Chromosome
    b. Trait
    c. Gene
    d. DNA

2. The Volvox algae all look identical. What type of reproduction do they do?
    a. Asexual
    b. Sexual
    c. Individual
    d. Combined

3. Genetic variation describes offspring that have different traits, such as Paulie and Nicole. Offspring with different traits must be a result of:
    a. Asexual reproduction
    b. Sexual reproduction

4. Why do Paulie and Nicole have so many different traits?
    a. Paulie got more DNA from their mom, while Nicole got more DNA from their dad.
    b. Paulie and Nicole both got half their DNA from mom and half from dad, but they got different genetic combinations.
    c. Paulie and Nicole are not actually related.
    d. Paulie's DNA has a lot of mutations, which are very common.

5. What is another reason for genetic variation besides sexual reproduction?
    a. Partial mating
    b. Asexual reproduction
    c. Unequal chromosome distribution
    d. Mutation