Multiple Choice Review Questions

1. _____ can be described as the process of humans identifying desirable traits in plants and then purposefully breeding individual plants with these characteristics to each other.

    A. artificial selection
    B. natural selection
    C. transgenic selection
    D. sexual selection

2. Which of the following are potential achievements of historical and modern plant breeding and genetics? (Choose all that apply)

    A. increasing crop yield to feed a growing global population
    B. changing crops to improve taste
    C. only creating produce that can be sold under an organic label
    D. changing crops to improve nutrient values
    E. creating radioactive plants

3. Which of the following is true about historical agricultural practices?

    A. They select for certain phenotypes, thereby selecting for certain genes
    B. They resulted in little change to crop plants
    C. They are able to individually target specific genes
    D. They have little effect on our current diet and the selection of crops currently available

Multiple Choice Questions (These also appear in the slideshow)

1. The genes responsible for the traits that are expressed are described as an organism's _____.

    A. phenotype
    B. alleles
    C. genotype
    D. zygote

2. What does the notation Mm represent?

    A. two dominant alleles
    B. one unknown and one known allele
    C. two recessive alleles
    D. one dominant and one recessive allele

3. An allele is

    A. the recessive form of a gene.
    B. a type of chromosome.
    C. the dominant form of a gene.
    D. a different form of a gene.

4. Factors that control traits are called

    A. genes
    B. purebreds
    C. recessives
    D. parents

5. What is a mutation?

    A. a harmful change to an organism's DNA
    B. any change to an organism's DNA
    C. a helpful change to an organism's DNA
    D. a phenotypic change to an organism

6. An organism that has two identical alleles for a trait is _____.

    A. heterozygous
    B. short
    C. homozygous
    D. codominant

7. A recessive trait will be observed in individuals that are _____ for that trait.

    A. homozygous
    B. diploid
    C. homozygous or heterozygous
    D. heterozygous

8. The observable traits expressed by an organism are described as its _____.

    A. phenotype
    B. alleles
    C. genotype
    D. Zygote

Content Essay Questions

1. After playing the game one or more times, did you develop a strategy for choosing your tomato modifications? If so, what was your strategy?
2. What is one new trait that you would like to give to tomatoes? You can make this realistic or not, but need to explain how it would affect the plant and why you are choosing it.
3. Research a different crop plant that has been genetically modified. What crop did you choose? Answer the following questions about that crop:
   a. How has this crop been modified? What techniques were used? If genetic engineering was involved, what genes were modified?
   b. What traits were changed? How are they more desirable to consumers than the previous traits?
   c. Is this crop available commercially? Would you purchase this crop?
   d. What is one additional change that you would make in this crop? Why?

Reflection Questions

1. After this module and playing the game, have your thoughts and ideas on GMOs changed at all? Explain
2. Some countries and governments are starting to use the term "Bioengineered" in place of "Genetically Modified" when referring to plants that have been altered via laboratory techniques instead of selective breeding. Do you think this is a helpful term and an important distinction to make? Why or why not?
3. After playing the game one or more times, did you develop a strategy for choosing your tomato modifications? If so, what was your strategy?
4. What is one new trait that you would like to give to tomatoes? You can make this realistic or not, but need to explain how it would affect the plant and why you are choosing it.
5. If you were a farmer, would you choose to grow genetically modified crops? Why or why not?
6. Do you think that packaged products and fresh produce should have labels indicating the presence of GMOs? Why or why not?

Feedback Questions

1. Which part of this module was most interesting?
2. What part of this module surprised you?
3. Which way of playing the game did you like the best? Why?
4. What are two changes that you would make to the game? This can include another way to play the game (different ways to count tomatoes, different amounts of money, etc)
5. What is one scenario (for either the growing season or the selling season) that you think could be added to the game? You don't have to give a lot of details for the scenario-a general topic or idea is great!
6. What is one exam question that you can think of that would cover content from today? Can be multiple choice or essay. Please include the answer to your question.