

Name _____

AP Biology

Chapter 14 - Mendel and the Gene Idea

Guided Reading Assignment Campbell's 10th Edition

Essential Knowledge:

3.A.3 The chromosomal basis of inheritance provides an understanding of the pattern of passage (transmission) of genes from parent to offspring

4.C.2 Environmental factors influence the expression of the genotype in an organism

4.C.4 The diversity of species within an ecosystem may influence the stability of the ecosystem

LO 3.12 The student is able to construct a representation that connects the process of meiosis to the passage of traits from parent to offspring.

LO 3.13 The student is able to pose questions about ethical, social or medical issues surrounding human genetic disorders.

LO 3.14 The student is able to apply mathematical routines to determine Mendelian patterns of inheritance provided by data sets.

1. Who were the two strong influences on Mendel's education?
2. Define the following terms:
 - a. Trait
 - b. True-breeding
 - c. Hybridization
 - d. P generation
 - e. F1 generation
 - f. F2 generation
 - g. Alleles
 - h. Homozygous
 - i. Heterozygous
 - j. Phenotype
 - k. Genotype

3. In your own words, what is Mendel's Law of Segregation?
4. Give an example of a monohybrid cross and a dihybrid cross.
5. What is the Law of Independent Assortment and how does this "law" relate to meiosis?
6. Write your own example for the Law of Independent Assortment.
7. Define and then explain in your own words both the Rules of Multiplication and the Rules of Addition.
8. Contrast codominance and incomplete dominance.
9. Why do we need to look at genetics at both organismal and the molecular level?
10. Does having a dominant allele mean that it will be found in greater frequency in the population?
11. What are multiple alleles?

12. What does the term Pleiotropy mean?
13. In your own words, explain epistasis.
14. What would be your “clue” that a character would have polygenic inheritance pattern?
15. What is a pedigree and how does it help in our understanding of genetics?
16. Describe and discuss the genetics of the following inherited disorders:
 - a. Cystic Fibrosis
 - b. Sickle cell disease
 - c. Achondroplasia
 - d. Huntington's disease
17. Contrast amniocentesis and chorionic villus sampling