

1. Two individuals who are heterozygous for the sickle cell allele marry; which is true?

- A. They can produce children of four different genotypes for the hemoglobin gene
- B. 25% of their kids are likely to be victims of full blown sickle cell anemia disease
- C. All of their children will be carriers of the sickle cell trait
- D. Only Africans and their descendants are carriers.
- E. Half of their kids are likely to be homozygous for the normal form of hemoglobin

2. Sickle cell anemia persisted in high malaria environments for thousands of years because:

- A. natural selection favored heterozygous carriers there
- B. People with normal hemoglobin were not as fit there
- C. humans changed the environment through farming, and that caused an evolutionary response in humans
- D. The malaria plasmodium cannot thrive in slightly anemic people.
- E. all of the above are part of the chain of causality.

3. The Allele for shortness in peas is a recessive. When Mendel crossed pure-bred tall pea plants with short ones, the hybrids were:

- A. all tall
- B. all short
- C. in the ratio of 3 tall to 1 short
- D. two-thirds tall, one third short
- E. All intermediate

4. When Mendel crossed hybrid (heterozygous) pea plants with hybrid (heterozygous) pea plants, the next generation were:

- A. all tall
- B. all short
- C. in the ratio of 3 tall to 1 short
- D. two-thirds tall, one third short
- E. All intermediate

5. Human sperm are examples of:

- A. zygotes
- B. cells produced by mitosis
- C. gametes
- D. cells with 46 chromosomes
- E. diploid cells

6. Which is true about mutations?

- A. when the environment changes, all the mutations that occur will be beneficial.
- B. When the environment does not change, no mutations will occur.
- C. Mutations are the source of new variations
- D. Mutations only happen during protein synthesis
- E. All of these are true

7. The fact that hidden recessives can reappear in future generations is proof that inheritance is:

- A. Irreversible blending
- B. Particulate in nature
- C. Acquired characteristics
- D. All of these

8. Which is TRUE about PROTEINS?

- A. A different allele of a gene can produce a different version of a protein
- B. Every gene is a recipe for making a protein
- C. A protein is a molecule made up of a long string of amino acids
- D. Some proteins are structural (such as collagen), the building blocks of cells and tissues
- E. Some proteins are enzymes and hormones, molecules that control physiology
- F. All of these are true

9. Which is FALSE?

- A. DNA stands for deoxyribonucleic acid
- B. The arms of chromosomes are DNA in the form of a long ladder wound in a helix
- C. In protein synthesis, messenger RNA carries code outside the nucleus to where proteins are made
- D. Transfer RNA are the molecules that assemble the string of amino acids from the mRNA code
- E. Evolution is affected mostly by mutations that happen in mitosis, not meiosis.

10. This refers only to an allele that is always expressed in a heterozygous individual:

- A. Homozygous
- B. Mutation
- C. Dominant
- D. Recessive
- E. Zygote

Print name _____

bonus The process by which genes are spread from one semi-isolated population ("deme") to another is called:

- a. random genetic drift
- b. gene flow
- c. gene pool
- d. gene running

