

**A105 quiz 6 choose the one best answer:**

**1. Charles Darwin knew his own theory was incomplete because it lacked explanations both of how inheritance worked, and of why:**

- A. dominant genes were more common.    B. variation did not disappear.    C. all mammals have nipples.  
D. human anatomy was similar to that of apes.    E. evolution was slow and gradual.

**2. Which one was NOT part of Darwin's theory of evolution?**

- A. Inheritance of acquired characteristics    B. Natural selection  
C. Descent from a common ancestor    C. Adaptation of a species to environmental change  
E. Variation among members of a species    D. Differential reproduction (some reproduce more)

MATCH one to one

**GENOTYPE                      PHENOTYPE                      ALLELE                      POLYGENIC INHERITANCE**  
**GAMETE                      MENDELIAN INHERITANCE**

- \_\_\_\_\_ a haploid cell with 23 chromosomes (in humans) such as sperm  
\_\_\_\_\_ the visible characteristics of an individual; what we can see and test for  
\_\_\_\_\_ the genetic makeup of an individual  
\_\_\_\_\_ an alternate form of a gene at a locus; its recipe may produce a different protein  
\_\_\_\_\_ one gene (locus) controls one trait, such as sickle cell in humans or dwarfism in pea plants  
\_\_\_\_\_ a characteristic that is influenced by many genes at different loci, such as human eye color.

Match one to one

**HEMOGLOBIN                      AMINO ACID                      DNA                      MITOSIS                      MEIOSIS**

- \_\_\_\_\_ contains recipes for making proteins  
\_\_\_\_\_ small molecules which are strung together by a cell in protein synthesis  
\_\_\_\_\_ type of cell division that produces gametes  
\_\_\_\_\_ cell division of diploid cell into two diploid cells  
\_\_\_\_\_ the protein that carries oxygen in a red blood cell

**We are again going to explain the evolution of the long neck of giraffes in a new environment of tall acacia trees using Darwin's idea of Natural Selection.**

1. What is the variation in this example?
2. Explain how the variation and the environment together produce a differential reproduction:
3. Now we can introduce genetics; parts 1 & 2 will produce giraffes in a few generations that have longer necks than any of their ancestors, because it brings out the hidden variation by recombining genes as the selection proceeds. But this can only go so far because the gene pool is limited; how can the addition of mutations eventually produce a new and taller species of giraffes in this case?

first name \_\_\_\_\_ last name \_\_\_\_\_

bonus: why are many common infectious bacteria now resistant to the antibiotics that would have killed them a couple of decades ago?

A105 quiz 6a Choose the ONE best answer:

**1. If you get a different allele of a certain gene from each parent, you are said to be:**

- A. Mutant    B. homozygous    C. heterozygous    D. Mendelian    E. polygenic

**2. The meaning of "Creation Science" (or "Scientific Creationism") in the video we saw is:**

- A. The belief that God is responsible for the Big Bang 10 billion years ago.  
B. The knowledge gained from reading the Bible.  
C. The attempt to gather scientific evidence to support the hypothesis that the earth is only about 10,000 years old.  
D. Any belief in a creation by a superior being.  
E. The modern theory of evolution based on Darwin and genetics.

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

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

**4. Which is true about mutations?**

- A. when the environment changes, beneficial mutations always occur to prevent extinction.
- B. When the environment does not change, no mutations will occur.
- C. Mutations are the source of new variations
- D. mutations that happen to adults during mitosis will be passed on to their children
- E. All of these are true

**5. Which is FALSE?**

- A. natural selection cannot operate without variation
- B. dominant alleles are always more common in a gene pool
- C. recessive alleles are not expressed in an individual unless he is homozygous
- D. genetically it is the father that determines the sex of a child.
- E. Your adult height is a result of both genes and environment.

**6. In the video we saw, the “human footprints” they found with dinosaur prints turned out to be:**

- A. Real (humans did walk with dinosaurs)
- B. fakes placed under water
- C. miracles
- D. 3-toed dinosaur prints with a deep heel impression
- E. prints of alien visitors from another planet

**7. In the 1920's, Tennessee schoolteacher Scopes was tried for teaching evolution; what happened?**

- A. He was convicted, the law stood up, and teaching evolution continued to be illegal in many states for decades.
- B. He was found innocent, and teaching evolution was then legal.
- C. The jury was deadlocked, so the US Supreme Court found Scopes innocent and overturned the law in 1925.
- D. He was found innocent, but all courts ruled that creationism must be taught alongside evolution in public schools

**8. If the allele for brown eyes is dominant to the allele for blue eyes in parrots, and a pair of brown eyed parrots have a blue eyed chick, then:**

- A. Mom is in trouble, this cannot be the child of two brown eyed birds.
- B. Both parents are heterozygous.
- C. The chick is heterozygous
- D. Both parents are homozygous recessive
- E. Both parents are homozygous dominant

Match one to one:

**MUTATION**

**GENE FLOW**

**RANDOM GENETIC DRIFT**

**NATURAL SELECTION**

**GENE POOL**

- \_\_\_\_\_ is not one of the four factors that cause evolutionary change
- \_\_\_\_\_ is the differential reproductive success of certain phenotypes relative to others
- \_\_\_\_\_ is any change in the DNA
- \_\_\_\_\_ the exchange of genes between populations by migration from place to place
- \_\_\_\_\_ changes in allele frequencies over generations due to sampling errors such as the Founder Effect; the smaller the population, the more likely it will have an effect.

Your First Name \_\_\_\_\_ Last Name \_\_\_\_\_

BONUS Q: WHEN Mendel crossed hybrid tall pea plants (ones that had one short parent), what percentage of the seeds from the hybrid x hybrid cross grew into short plants the next year?