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Quiz David Buller: Adapting Minds, Chapter 1

○ one correct answer · ▢ one or more correct answers

1. Which of the following things is a “trait”, assuming Buller’s understanding of this term?

- ▢ a. zebras having striped coats
- ▢ b. dogs having the capacity to feel pain
- ▢ c. humans having opposable thumbs
- ▢ d. chimpanzees grooming each other

2. Which aspects of biological evolution did Darwin fail to explain (according to Buller)?

- ▢ a. how traits get inherited from one generation to the next
- ▢ b. why organisms become more well-adapted to their environments from one generation to the next
- ▢ c. why there is variation in the traits of organisms
- ▢ d. that in evolution, it’s not necessarily the strongest who survive but the “fittest”
- ▢ e. that in addition to organisms’ bodies, their minds are causally influenced by evolutionary processes too

3. Which of the following claims about the relationship between an organism’s phenotype and its genes is true?

- ○ a. The phenotype causally influences the genes.
- ○ b. The genes causally influence the phenotype.
- ○ c. The phenotype and the genes mutually causally influence themselves.
- ○ d. The phenotype and the genes do not causally influence each other at all.

4. Suppose a gene increases in frequency across generations. Must further conditions be met so that the phenotype that the gene is for increases as well?

- ○ a. No, the phenotype will increase automatically.
- ○ b. Yes, the organism must be a homozygote rather than a heterozygote.
- ○ c. Yes, genetic drift must have an effect on the trait.
- ○ d. Yes, the environment must be such that the phenotype is likely to manifest.

5. What are possible causes of evolution?

- ☐ a. genetic drift
- ☐ b. genetic recombination
- ☐ c. natural selection
- ☐ d. mutations
- ☐ e. meiosis

6. Mutations are…

- ○ a. variant-introducing and non-random
- ○ b. frequency-changing and random
- ○ c. frequency-changing and non-random
- ○ d. variant-introducing and random

7. What are the conditions of natural selection?

- ☐ a. differential reproductive success
- ☐ b. phenotypic variation
- ☐ c. heredity
- ☐ d. genetic recombination
- ☐ e. micro-evolution

8. Suppose there are three organisms, A, B and C. A has one child and five grandchildren. B has two children and four grandchildren. C has three children. D has no child. Other things being equal, which of these organisms is "fittest", according to the biological definition of "fitness"?

- ○ a. D
- ○ b. C
- ○ c. A
- ○ d. B

9. The peacock's tail can be explained by…

- ○ a. sexual selection but not natural selection
- ○ b. neither natural selection nor sexual selection
- ○ c. both natural selection and sexual selection
- ○ d. natural selection but not sexual selection

10. Suppose there are green and brown beetles. Brown beetles look more similar to the trees that they inhabit. They hence get eaten less frequently by birds, and reproduce more often. The offspring of the brown beetles are brown too. The brown coloration hence becomes more common in the population over generations. Is this an example of natural selection?

- ○ a. Yes
- ○ b. No

11. An adaptation is the result of which kind of process?

- ○ a. natural selection
- ○ b. non-evolutionary processes
- ○ c. genetic drift

12. In ancestral environments fatty and sweet foods were an important source of calories for humans. In contrast, in modern Western societies, in which there is typically an abundance of food options, the human trait to prefer such foods causes many health issues. We can hence say that this trait is:

- ○ a. both adaptative and an adaptation
- ○ b. neither adaptive nor an adaptation
- ○ c. an adaptation but not adaptive
- ○ d. adaptive but not an adaptation

13. Suppose I would like to explain why male frogs croak. My explanation is as follows: Male frogs croak to solve the problem of attracting females which increased frogs biological fitness. Which kind of explanation have I given?

- ○ a. an ultimate explanation
- ○ b. both a proximate and an ultimate explanation
- ○ c. a proximate explanation
- ○ d. neither a proximate nor an ultimate explanation