

Test Bank

Chapter 2

1. Is the male–female dichotomy an appropriate mode of defining gender? Why, or why not?

Ans: The male–female dichotomy is strongly embodied in most of cultures, religions, and even languages. However, gender is much more complex than a simple dichotomy, and it is better observed as a continuum. Biological foundations of gender are not always as straightforward as it may seem; genetic, hormonal, and somatic systems can be mutually discordant. Moreover, the behavioral component doesn't necessarily adjust to one's biological gender. Life history also influences gender expression. While there are very masculine men and very feminine women, they represent only ends of the gender continuum, with many other variations in between.

Answer Location: Sexuality and Gender

Difficulty Level: Medium

2. According to August Weisman, what is the main advantage of sexual reproduction?

- a. speed of reproduction and spreading over new territory
- b. development of new species and species variation
- c. ability to a choose partner with good genes
- d. existence of sexual competition

Ans: B

Answer Location: Sexual Reproduction and Genetic Variation

Difficulty Level: Easy

3. Natural selection

- a. is based on sexual reproduction
- b. is more important than sexual selection
- c. is independent of environment
- d. is any variation produced by sexual reproduction

Ans: A

Answer Location: Sexual Reproduction and Genetic Variation

Difficulty Level: Medium

4. Why are natural and sexual selection inseparable?

Ans: Natural selection is achieved solely via sexual reproduction. A combination of genes from both parents leads to offspring that are different from parents. Sometimes, a new trait that brings certain advantage will appear in offspring. In large populations, the production of large number of divergent offspring will lead to continual change. However, in order to be truly adaptive, an advantageous trait must enhance not only survivability but also access to more mating opportunities. Only if sexual selection happens will genes defining this trait become selected. And only this collaboration of two types of selection will lead to greater fitness and survivability.

Answer Location: Sexual Reproduction and Genetic Variation

Difficulty Level: Hard

5. The Red Queen Hypothesis is used to explain

- a. the necessity of sexual reproduction for the survival of species
- b. the evolution of aggressive behavior
- c. why some species are superior to others
- d. none of the above

Ans: A

Answer Location: Red Queen Hypothesis

Difficulty Level: Medium

6. Explain the main principles of the Red Queen Hypothesis.

A: The Red Queen Hypothesis states that “it takes all the running you can do to keep in the same place.” According to this hypothesis, advantageous traits that develop through natural selection don’t provide a net advantage in the long run. This is because other species evolve as well, and each species’ environment constantly changes. Therefore, while one trait can be adaptive at a certain point, new adaptations of rival species call for new responses—that is, new adaptive traits—only to maintain the current state. Since each species acquires adaptations at the expense of other species, other species must also adapt, producing new challenges for recently adapted species. Perhaps the best example of this is bacteria and other parasites, which constantly evolve, making the human (and other species’) immune system(s) constantly change as well. Moreover, newly evolved adaptive traits often enhance survivability in one domain but can present a challenge themselves in other domains.

Answer Location: Red Queen Hypothesis

Difficulty Level: Medium

7. Sexual competition is competition between

- a. males and females of the same species
- b. males of different species
- c. males of same species
- d. individuals of the same sex and the same species

Ans: D

Answer Location: Sexual Competition

Difficulty Level: Hard

8. Explain sperm competition.

Ans: In most of the species, males produce many sperm cells while females produce far fewer egg cells, some of them even one per ovulatory cycle. This makes female eggs more valuable in a reproductive sense and also a point of competition for males of the same species. Males develop different strategies in order to enhance their reproductive success, and one of them is sperm competition—the development of certain characteristics of male genitals that enhance reproductive chances. Penis and testes size are often indicative of sperm competition. For example, in silverback gorillas, a species that is polygynous, males have small penises because they have exclusive access to a harem of females and don’t have to be efficient in copulation. Chimpanzees, which are very promiscuous, have large penises and even more prominent testicles, as they engage in more competition, and a larger sperm count gives them many benefits.

Answer Location: Sperm Competition

Difficulty Level: Easy

9. Which of these characteristics are related to sperm competition?

- a. larger testes and penis

- b. sperm count and motility
- c. sperm cells that act as blockers of other males' sperm
- d. all of the above

Ans: D

Answer Location: Sperm Competition

Difficulty Level: Medium

10. Which of these findings supports the existence of sperm competition in humans?

- a. presence of SEMG2 gene
- b. size of midpieces in human sperm
- c. frequency of extrapair conception
- d. prevalence of monogamy in human societies

Ans: A

Answer Location: Sperm Competition

Difficulty Level: Medium

11. Why was the work of Dr. Rushton deemed racist by some? Are there arguments against this position?

Ans: Dr. Rushton claimed that r/K selection principles can be applied to humans—more precisely, to human races. These principles link the reproductive style to physical, familial, and cognitive differences. According to him, Africans employ r strategy, characterized by earlier physical maturity, larger number of offspring, and less parental care. Moreover, they have smaller brains and lower IQs. On the other hand, eastern Asians employ K strategy; they have fewer children, more parental care is present, and they have higher IQs and larger brains. According to Dr. Rushton's research, Caucasians fall in between eastern Asians and Africans. Dr. Rushton's work caused great controversy, as many researchers rejected his findings, along with stating that race is nothing more than a socioeconomic construct. Moreover, his work was deemed racist, as he basically stated that there are evolved differences between races, and some races have traits that are highly valued, such as higher IQ. However, rejecting objectively collected data solely because they are in contradiction with the standards and norms of a society is not justified from a scientific point of view. In addition, while the K strategy is favored by society, from an evolutionary perspective, none of these two strategies is considered moral or immoral, good or bad, or superior; they can only be more or less successful in certain environments.

Answer Location: r/K selection

Difficulty Level: Hard

12. One of the basic postulates of r/K strategies theory is _____.

- a. gender inequality
- b. the superiority of one race over the other
- c. the intentional nature of strategies
- d. the coevolution of traits

Ans: D

Answer Location: Interview With Dr. J. Philippe Rushton

Difficulty Level: Hard

13. The difference in size between males and females and the presence of copious fat stores in human females are examples of what? Explain.

Ans: These are examples of sexual dimorphism. The more anatomically different males and females of one species are, the more sexual dimorphism is present in that species. Sexual dimorphism is especially pronounced in species that face harsh sexual competition. Characteristic traits evolve to become more attractive to the opposite sex. In species that don't face harsh sexual competition, sexual dimorphism is less pronounced because traits that enhance one's chances for attracting a mate are of less importance. Clearly, since there is pronounced sexual dimorphism in humans, there is also relatively harsh sexual competition.

Answer Location: Sexual Dimorphism

Difficulty Level: Hard

14. Which of the following statements concerning monogamy is true?

- a. Sexual monogamy equals pair bond.
- b. There are species that are exclusively monogamous.
- c. Monogamy does not have an evolutionary explanation.
- d. None of the above.

Ans: D

Answer Location: Monogamy

Difficulty Level: Medium

15. What is the evidence that disproves Ryan and Jetha's claim that pair bonding is neither adaptive nor a very old trait in humans?

Ans: Ryan and Jetha claim that pair bonding is a relatively late mode of mating, a consequence of agricultural societies. According to them, sex was previously a communally shared resource. However, there are several findings that disprove their claims. Biologically, this completely rigid maintenance of intragroup sex would lead to the creation of new hominid subspecies and species, and there is no evidence for that. Also, if sex were a communally shared resource, there would be strong evidence for sperm competition in humans, which is also not the case. Pair bonds are also seen in all hunter-gatherer societies, and beside their main purpose—raising healthy offspring—they were also used to create cooperation between tribes.

Answer Location: Pair Bonding

Difficulty Level: Easy

16. Explain possible reproductive strategies in human males.

Ans: One of the basic reproductive strategies of males is impregnating as many women as possible, without further investment in women and offspring. While this strategy might result in a large number of offspring, it doesn't guarantee paternal security, nor does it guarantee the survival of offspring. Parental care provides the best chances for offspring to survive, which is why pair bonding is the optimal mating strategy in humans. In pair bonding, a male invests resources (protection and material resources) in offspring, and he also loses the freedom to court other women, but he becomes more certain of his paternity of offspring, and his chances for producing healthy offspring are higher. Still, mating outside a pair bond is far more beneficial for men than for women, which is why they tend to seek extrapair sex while still maintaining a primary pair bond or relationship.

Answer Location: Relationship

Difficulty Level: Medium

17. Sexual dimorphism is a product of _____.

- a. intrasexual selection

- b. intersexual selection
- c. natural selection
- d. all of the above

Ans: B

Answer Location: Sexual Selection

Difficulty Level: Easy

18. What are the two manifestations of sexual selection? Can one trait be a product of both intersexual and intrasexual selection?

Ans: Two manifestations of sexual selection are intersexual and intrasexual selection. Intrasexual selection is the evolution of traits that provide the advantage in competing with members of the same sex. Those could be physical traits; some of the most important are surely the size of males and their behavioral traits (e.g., aggressiveness). Intersexual selection is the evolution of traits (secondary sexual characteristics) that help attract the opposite sex. Since males more often compete for access to females than vice versa, often, males are characterized by more physical traits that attract females and mark reproductive success. Size is one of the examples of traits that are important for both manifestations of sexual selection. While in many species, including humans, larger males are more attractive to females, they are often also stronger and dominant and, therefore, more successful in fighting other males of the same species.

Answer Location: Sexual Selection

Difficulty Level: Hard

19. What is the Zahavian principle? Give some examples.

Ans: The Zahavian principle represents a paradox that animals often, in order to demonstrate their genetic fitness, tend to engage in self-handicapping behaviors. One of the examples of this principle is testosterone in males; increased levels of testosterone in males are related to the masculinization of certain traits that make males more attractive to females, especially for short-term mating. However, high levels of testosterone in males are also correlated with reduced immunity and a shorter life span.

Answer Location: Sexual Selection

Difficulty Level: Easy

20. Polyandry, which is present in some societies, is explained by _____.

- a. evolutionary reasons
- b. religious reasons
- c. economic reasons
- d. paternal security reasons

Ans: C

Answer Location: Polyandry

Difficulty Level: Easy