

**Overview of Animal Reproduction**

1. Distinguish between asexual and sexual reproduction.
2. List and describe four mechanisms of asexual reproduction.
3. Describe several adaptive advantages of asexual reproduction. Discuss the conditions that may favor the occurrence of asexual reproduction.
4. Explain the advantages of periodic reproduction. Describe factors that may control the timing of reproductive events.
5. Describe an example of an animal life cycle that alternates between asexual and sexual reproduction.
6. Define parthenogenesis and describe the conditions that favor its occurrence. Note examples of invertebrate and vertebrate species that use this form of reproduction.
7. Explain how hermaphroditism may be advantageous in sessile or burrowing animals that have difficulty encountering a member of the opposite sex.
8. Distinguish between male-first and female-first sequential hermaphroditism. Note the adaptive advantages of these reproductive systems.

**Mechanisms of Sexual Reproduction**

9. Describe mechanisms that increase the probability that mature sperm will encounter fertile eggs of the same species in organisms that use external fertilization.
10. Explain the function of pheromones in mate attraction.
11. Compare reproductive systems using internal and external fertilization on the basis of the relative number of zygotes and protection of the embryos.
12. List and describe various methods of egg and embryo protection.
13. Compare the reproductive systems of a polychaete worm, a parasitic flatworm, an insect, a common nonmammalian vertebrate, and a mammal.

**Mammalian Reproduction**

14. Using a diagram, identify and give the function of each component of the reproductive system of the human male.
15. Using a diagram, identify and give the function of each component of the reproductive system of the human female.
16. Describe the two physiological reactions common to sexual arousal in both sexes.
17. Describe the four phases of the sexual response cycle.
18. Compare menstrual cycles and estrous cycles.
19. Describe the stages of the human female reproductive cycle.
20. Explain how the uterine cycle and ovarian cycle are synchronized in female mammals. Note in detail the functions of the hormones involved.
21. Describe human oogenesis.
22. Describe spermatogenesis and the structure and function of mature sperm.
23. Describe three major differences between oogenesis and spermatogenesis.
24. Describe human menopause. Describe a possible evolutionary explanation for human menopause.
25. Describe the influence of androgens on primary and secondary sex characteristics and behavior.
26. Compare the patterns of hormone secretion and reproductive events in male and female mammals.
27. Define conception, gestation, and parturition.
28. Compare the length of pregnancies in humans, rodents, dogs, cows, and elephants.
29. Describe the changes that occur in the mother and the developing embryo during each trimester of a human pregnancy.
30. Explain the role of embryonic hormones during the first few months of pregnancy.

31. Describe the stages of parturition.
32. Describe the control of lactation.
33. Describe mechanisms that may help prevent the mother's immune system from rejecting the developing embryo.
34. List the various methods of contraception and explain how each works.
35. Describe techniques that allow us to learn about the health and genetics of a fetus.
36. Explain how and when in vitro fertilization, zygote intrafallopian transfer, and gamete intrafallopian transfer may be used.