Chapter 33 Exercises

Review Questions

1. Which type of animal maintains a constant internal body temperature?
- **a.** endotherm
- **b.** ectotherm
- **c.** coelomate
- **d.** mesoderm

2. The symmetry found in animals that move swiftly is _____.
- **a.** radial
- **b.** bilateral
- **c.** sequential
- **d.** interrupted

3. What term describes the condition of a desert mouse that lowers its metabolic rate and "sleeps" during the hot day?
- **a.** turgid
- **b.** hibernation
- **c.** estivation
- **d.** normal sleep pattern

4. A plane that divides an animal into equal right and left portions is _____.
- **a.** diagonal
- **b.** midsagittal
- **c.** coronal
- **d.** transverse

5. A plane that divides an animal into dorsal and ventral portions is _____.
- **a.** sagittal
- **b.** midsagittal
- **c.** coronal
- **d.** transverse

6. The pleural cavity is a part of which cavity?
- **a.** dorsal cavity
- **b.** thoracic cavity
- **c.** abdominal cavity
- **d.** pericardial cavity

7. How could the increasing global temperature associated with climate change impact ectotherms?
- **a.** Ectotherm diversity will decrease in cool regions.
- **b.** Ectotherms will be able to be active all day in the tropics.
- **c.** Ectotherms will have to expend more energy to cool their body temperatures.
- **d.** Ectotherms will be able to expand into new habitats.

8. Although most animals are bilaterally symmetrical, a few exhibit radial symmetry. What is an advantage of radial symmetry?
- **a.** It confuses predators.
- **b.** It allows the animal to gather food from all sides.
- **c.** It allows the animal to undergo rapid, purposeful movement in any direction.
- **d.** It allows an animal to use its dorsal surface to sense its environment.

9. Which type of epithelial cell is best adapted to aid diffusion?
- **a.** squamous
- **b.** cuboidal
- **c.** columnar
- **d.** transitional

10. Which type of epithelial cell is found in glands?
- **a.** squamous
- **b.** cuboidal
- **c.** columnar
- **d.** transitional

11. Which type of epithelial cell is found in the urinary bladder?
- **a.** squamous
- **b.** cuboidal
- **c.** columnar
- **d.** transitional

12. Which type of connective tissue has the most fibers?
- **a.** loose connective tissue
- **b.** fibrous connective tissue
- **c.** cartilage
- **d.** bone

13. Which type of connective tissue has a mineralized different matrix?
- **a.** loose connective tissue
- **b.** fibrous connective tissue
- **c.** cartilage
- **d.** bone

14. The cell found in bone that breaks it down is called an _____.
- **a.** osteoblast
- **b.** osteocyte
- **c.** osteoclast
- **d.** osteon

15. The cell found in bone that makes the bone is called an _____.
- **a.** osteoblast
- **b.** osteocyte
- **c.** osteoclast
- **d.** osteon

16. Plasma is the _____.
- **a.** fibers in blood
- **b.** matrix of blood
- **c.** cell that phagocytizes bacteria
- **d.** cell fragment found in the tissue

17. The type of muscle cell under voluntary control is the _____.
- **a.** smooth muscle
- **b.** skeletal muscle
- **c.** cardiac muscle
- **d.** visceral muscle

18. The part of a neuron that contains the nucleus is the _____.
- **a.** cell body
- **b.** dendrite
- **c.** axon
- **d.** glial

19. Why are intercalated discs essential to the function of cardiac muscle?
- **a.** The discs maintain the barriers between the cells.
- **b.** The discs pass nutrients between cells.
- **c.** The discs ensure that all the cardiac muscle cells beat as a single unit.
- **d.** The discs control the heart rate.

20. When faced with a sudden drop in environmental temperature, an endothermic animal will _____.
- **a.** experience a drop in its body temperature
- **b.** wait to see if it goes lower
- **c.** increase muscle activity to generate heat
- **d.** add fur or fat to increase insulation

21. Which is an example of negative feedback?
- **a.** lowering of blood glucose after a meal
- **b.** blood clotting after an injury
- **c.** lactation during nursing
- **d.** uterine contractions during labor

22. Which method of heat exchange occurs during direct contact between the source and animal?
- **a.** radiation
- **b.** evaporation
- **c.** convection
- **d.** conduction

23. The body's thermostat is located in the _____.
- **a.** homeostatic receptor
- **b.** hypothalamus
- **c.** medulla
- **d.** vasodilation center

24. Which of the following is *not* true about acclimatization?
- **a.** Acclimatization allows animals to compensate for changes in their environment.
- **b.** Acclimatization improves function in a new environment.
- **c.** Acclimatization occurs when an animal tries to re-establish a homeostatic set point.
- **d.** Acclimatization is passed on to offspring of acclimated individuals.

25. Which of the following is *not* a way that ectotherms can change their body temperatures?
- **a.** sweating for evaporative cooling
- **b.** adjusting the timing of their daily activities
- **c.** seek out or avoid direct sunlight
- **d.** huddle in a group

Critical Thinking Questions

26. How does diffusion limit the size of an organism? How is this counteracted?

27. What is the relationship between BMR and body size? Why?

28. Explain how using an open circulatory system constrains the size of animals.

29. Describe one key environmental constraint for ectotherms and one for endotherms. Why are they limited by different factors?

30. How can squamous epithelia both facilitate diffusion and prevent damage from abrasion?

31. What are the similarities between cartilage and bone?

32. Multiple sclerosis is a debilitating autoimmune disease that results in the loss of the insulation around neuron axons. What cell type is the immune system attacking, and how does this disrupt the transfer of messages by the nervous system?

33. When a person leads a sedentary life, their skeletal muscles atrophy, but their smooth muscles do not. Why?

34. Why are negative feedback loops used to control body homeostasis?

35. Why is a fever a "good thing" during a bacterial infection?

36. How is a condition such as diabetes a good example of the failure of a set point in humans?

37. On a molecular level, how can endotherms produce their own heat by adjusting processes associated with cellular respiration? If needed, review Chapter 7 for details on respiration.