



## Chapter 2 Exercises

### Review Questions

1. A(n) \_\_\_\_\_ is a sudden, permanent change in a sequence of DNA.
  - a. allele
  - b. chromosome
  - c. epigenetic
  - d. mutation
2. \_\_\_\_\_ refers to a person's genetic makeup, while \_\_\_\_\_ refers to a person's physical characteristics.
  - a. Phenotype; genotype
  - b. Genotype; phenotype
  - c. DNA; gene
  - d. Gene; DNA
3. \_\_\_\_\_ is the field of study that focuses on genes and their expression.
  - a. Social psychology
  - b. Evolutionary psychology
  - c. Epigenetics
  - d. Behavioral neuroscience
4. Humans have \_\_\_\_\_ pairs of chromosomes.
  - a. 15
  - b. 23
  - c. 46
  - d. 78
5. The \_\_\_\_\_ receive(s) incoming signals from other neurons.
  - a. soma
  - b. terminal buttons
  - c. myelin sheath
  - d. dendrites
6. A(n) \_\_\_\_\_ facilitates or mimics the activity of a given neurotransmitter system.
  - a. axon
  - b. SSRI
  - c. agonist
  - d. antagonist
7. Multiple sclerosis involves a breakdown of the \_\_\_\_\_.
  - a. soma
  - b. myelin sheath
  - c. synaptic vesicles
  - d. dendrites
8. An action potential involves  $\text{Na}^+$  moving \_\_\_\_\_ the cell and  $\text{K}^+$  moving \_\_\_\_\_ the cell.
  - a. inside; outside
  - b. outside; inside
  - c. inside; inside
  - d. outside; outside
9. Our ability to make our legs move as we walk across the room is controlled by the \_\_\_\_\_ nervous system.
  - a. autonomic
  - b. somatic
  - c. sympathetic
  - d. parasympathetic
10. If your \_\_\_\_\_ is activated, you will feel relatively at ease.
  - a. somatic nervous system
  - b. sympathetic nervous system
  - c. parasympathetic nervous system
  - d. spinal cord
11. The central nervous system is comprised of \_\_\_\_\_.
  - a. sympathetic and parasympathetic nervous systems
  - b. organs and glands
  - c. somatic and autonomic nervous systems
  - d. the brain and spinal cord

12. Sympathetic activation is associated with \_\_\_\_\_.
- pupil dilation
  - storage of glucose in the liver
  - increased heart rate
  - both a. and c. (pupil dilation and increased heart rate)
13. The \_\_\_\_\_ is a sensory relay station where all sensory information, except for smell, goes before being sent to other areas of the brain for further processing.
- amygdala
  - hippocampus
  - hypothalamus
  - thalamus
14. Damage to the \_\_\_\_\_ disrupts one's ability to comprehend language, but it leaves one's ability to produce words intact.
- amygdala
  - Broca's area
  - Wernicke's area
  - occipital lobe
15. A(n) \_\_\_\_\_ uses magnetic fields to create pictures of a given tissue.
- EEG
  - MRI
  - PET scan
  - CT scan
16. Which of the following is *not* a structure of the forebrain?
- thalamus
  - hippocampus
  - amygdala
  - substantia nigra
17. The two major hormones secreted from the pancreas are:
- estrogen and progesterone
  - norepinephrine and epinephrine
  - thyroxine and oxytocin
  - glucagon and insulin
18. The \_\_\_\_\_ secretes messenger hormones that direct the function of the rest of the endocrine glands.
- ovary
  - thyroid
  - pituitary
  - pancreas
19. The \_\_\_\_\_ gland secretes epinephrine.
- adrenal
  - thyroid
  - pituitary
  - master
20. The \_\_\_\_\_ secretes hormones that regulate the body's fluid levels.
- adrenal
  - pituitary
  - testes
  - thyroid

## Critical Thinking Questions

21. The theory of evolution by natural selection requires variability of a given trait. Why is variability necessary, and where does it come from?
22. Cocaine has two effects on synaptic transmission: It impairs reuptake of dopamine, and it causes more dopamine to be released into the synapse. Would cocaine be classified as an agonist or antagonist? Why?
23. Drugs such as lidocaine and novocaine act as Na<sup>+</sup> channel blockers. In other words, they prevent sodium from moving across the neuronal membrane. Why would this particular effect make these drugs such effective local anesthetics?
24. What are the implications of compromised immune function as a result of exposure to chronic stress?
25. Examine Figure 2 in Lesson 2.3, illustrating the effects of sympathetic nervous system activation. How would all of these things play into the fight-or-flight response?
26. Before the advent of modern imaging techniques, scientists and clinicians relied on autopsies of people who suffered brain injury with resultant change in behavior to determine how different areas of the brain were affected. What are some of the limitations associated with this kind of approach?
27. Which of the techniques discussed would be viable options for you to determine how activity in the reticular formation is related to sleep and wakefulness? Why?
28. Hormone secretion is often regulated through a negative feedback mechanism, which means that once a hormone is secreted, it will cause the hypothalamus and pituitary to shut down the production of signals necessary to secrete the hormone in the first place. Most oral contraceptives are made of small doses of estrogen and/or progesterone. Why would this be an effective means of contraception?
29. Chemical messengers are used in both the nervous system and the endocrine system. What properties do these two systems share? What properties are different? Which one would be faster? Which one would result in long-lasting changes?