

*Solutions Manual for Introduction to
Behavioral Neuroscience 1st Edition by
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ISBN: 9781961584624



Introduction to

Behavioral Neuro- science

Multiple Choice

1.1 Building a Nervous System

1. Which of the following molecules does the work in cells?

- a. DNA
- b. mRNA
- c. Proteins
- d. Golgi

Answer: c

2. Neurons:

- a. come in many shapes and sizes.
- b. all have one axon and many dendrites.
- c. all have one dendrite and many axons.
- d. all have multiple axons and multiple dendrites.

Answer: a

3. The part of the neuron that is specialized for receiving information is:

- a. the axon.
- b. the cell body.
- c. the dendrites.
- d. the axon hillock.

Answer: c

4. Which are the primary myelinating cells of the central nervous system?

- a. Astrocytes
- b. Microglia
- c. Oligodendrocytes
- d. Schwann cells

Answer: c

5. Which cell type is most important for helping to form the blood-brain barrier?

- a. Astrocytes
- b. Microglia
- c. Oligodendrocytes
- d. Schwann cells

Answer: a

6. Which cell type is most important for helping to clear debris from injury in the central nervous system?

- a. Astrocytes
- b. Microglia
- c. Oligodendrocytes
- d. Schwann cells

Answer: b

1.2 Organization of the Nervous System

7. Which feature is consistent across all organisms that have a nervous system?

- a. Ganglia
- b. Neural nets
- c. Bilateral symmetry
- d. None of these

Answer: d

8. The property of a nervous system describing an organization where neurons are consolidated into specific areas of integration rather than just being randomly arranged throughout the body is called what?

- a. Cephalization
- b. Centralization
- c. Symmetry
- d. Concentration

Answer: b

9. Where in the central nervous system would you find cerebral spinal fluid?

- a. In the dura mater
- b. In the subarachnoid space
- c. In the pia mater
- d. In the nerves

Answer: b

10. Cerebral spinal fluid:

- a. sloshes back and forth in the ventricular system.
- b. flows in one direction through the ventricles, into to central canal and subarachnoid space.

- c. flows in one direction from the subarachnoid space into the ventricles and then into central canal.
- d. is still, like a lake or pool.

Answer: b

11. The human connectome:

- a. is well understood.
- b. is relatively simple.
- c. is still being mapped and incredibly complex.
- d. is very similar to that of the roundworm *C. elegans*.

Answer: c

12. The brain requires large amounts of blood to maintain its functions. This blood derives from 2 main arteries. The more ventral artery is called _____ while the more dorsal artery is _____.

- a. carotid artery / vertebral artery
- b. cerebral arteries / vertebral artery
- c. ventral cerebral artery / dorsal cerebral artery
- d. vertebral artery / carotid artery

Answer: a

1.3 The Central Nervous System: CNS

13. My left hand is _____ to my right hand.

- a. medial
- b. lateral
- c. contralateral
- d. ipsilateral

Answer: c

14. Divisions of the central nervous system:

- a. begin early in development.
- b. only emerge in adulthood.
- c. are composed only of brain vs spinal cord.
- d. are defined as neural tube and spinal cord.

Answer: a

15. Which embryonic brain region becomes the cerebral hemispheres?

- a. Telencephalon

- b. Diencephalon
- c. Mesencephalon
- d. Metencephalon

Answer: a

16. Sensory neurons enter the spinal cord from the _____ side.

- a. lateral
- b. medial
- c. ventral
- d. dorsal

Answer: d

17. Which kind of pathways bring information from the periphery to the brain?

- a. Descending
- b. Ascending
- c. Peripheral
- d. Lateral

Answer: b

1.4 The Brain: Structure and Function

18. Which lobe of the cortex is most important for decision making and problem solving?

- a. Frontal
- b. Temporal
- c. Parietal
- d. Occipital

Answer: a

19. Which lobe of the cortex is important for language, memory, and hearing?

- a. Frontal
- b. Temporal
- c. Parietal
- d. Occipital

Answer: b

20. The _____ lobe of the cortex is most important for vision.

- a. frontal
- b. temporal
- c. parietal

- d. occipital

Answer: d

21. Brain regions important for motor control are found:

- a. in the frontal lobe.
- b. in the subcortical nuclei.
- c. in the brainstem.
- d. in all of these.

Answer: d

22. Which brain function shows strong lateralization?

- a. Memory
- b. Sensory integration
- c. Vision
- d. Language

Answer: d

23. Cranial nerves carry what kind of information?

- a. Sensory
- b. Motor
- c. Sensory and motor
- d. Neither sensory or motor

Answer: c

24. The part of the peripheral nervous system that helps the body relax and digest is:

- a. the sympathetic nervous system.
- b. the parasympathetic nervous system.
- c. the hypothalamus.
- d. the somatic nervous system.

Answer: b

Fill in the Blank

1.1 Building a Nervous System

1. The two major cell types of the brain are _____ and _____.

neurons / glia

2. The four major types of glia in the nervous system are _____, _____, _____, and _____.

astrocytes, microglia, oligodendrocytes, Schwann cells

1.2 Organization of the Nervous System

3. Axon bundles in the central nervous system are called _____ and in the peripheral nervous system are called _____.

tracts / nerves

1.3 The Central Nervous System: CNS

4. The three planes for sectioning the brain for anatomical analysis are _____, _____, and _____.

coronal / sagittal / horizontal

1.4 The Brain: Structure and Function

5. The group of specialized brain areas under the cerebral cortex that are part of the telencephalon are called _____.

subcortical nuclei (or subcortical structures)

6. The _____ nerves are a part of the peripheral nervous system and emerge directly from the brain.

cranial

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