UNIT 3 STUDY GUIDE

Vocab:

- Neuron
- Cell body
- Dendrites
- Axon
- Myelin sheath
- Glial cells
- Action potential
- Threshold
- Refractory period
- All-or-none-response
- Synapse
- Neurotransmitters
- Reuptake
- Endorphins
- Agonist
- Antagonist
- Nervous system
- Central nervous system (CNS)
- Peripheral nervous system (PNS)
- Nerves
- Sensory (afferent) neurons
- Motor (efferent) neurons
- Interneurons
- Somatic nervous system
- Autonomic nervous system (ANS)
- Sympathetic nervous system
- Parasympathetic nervous system
- Reflex
- Endocrine system
- Hormones
- Adrenal glands
- Pituitary gland
- Lesion
- EEG (electroencephalogram)
- MEG (Magnetoencephalography)
- CT (computed tomography)
- PET (positron emission tomography)
- MRI (magnetic resonance imaging)
- fMRI (functional MRI)
- brainstem
- medulla
- thalamus
- reticular formation
- cerebellum
- limbic system
- amygdala
- hypothalamus
- hippocampus
- cerebral cortex
- frontal lobes
- parietal lobes
- occipital lobes
- temporal lobes
- motor cortex
- somatosensory cortex
- association areas
- plasticity
- neurogenesis
- corpus callosum
- split brain
- consciousness
- cognitive neuroscience
- dual processing
- blindsight
- parallel processing
- sequential processing
- behavior genetics
- heredity
- environment
- chromosomes
- DNA (deoxyribonucleic acid)
- Genes
- Genome
- Identical (monozygotic) twins
- Fraternal (dizygotic) twins
- Heritability
- Interaction
- Molecular genetics
- Molecular behavior genetics
- Epigenetics
- Evolutionary psychology
- Natural selection
- Mutation
- Social script

UNIT 3 STUDY GUIDE

Write the answers to the following questions on notebook paper.

Module 9

1. What is *phrenology*? Who invented it and when?
2. What are neurons and what is their primary function?
3. When it comes to neural communication: _____ listen. _____ speak.
4. What disorder occurs when the myelin sheath of neurons deteriorates? What is the physical result of this disorder?
5. What is the purpose and function of glial cells?
6. What causes an action potential to fire?
7. Which part of the axon houses the negatively charged ions and which part houses the positively charged ions?
8. What did British physiologist Sir Charles Sherrington discover that changed what was previously believed about neurons? What did Sherrington call his new discovery?
9. What are neurotransmitters and how are they triggered?
10. What is the difference between agonists and antagonists? How do they differ from the body's self-produced neurotransmitter molecules? **(Also see the very helpful AP Exam Tip on pg. 88)**

Module 10

11. What are the two nervous systems in the human body? What are their primary functions?
12. What is the function of the somatic nervous system? Autonomic nervous system?
13. Explain how the pain reflex works, and why it sometimes seems if physical movements from painful stimuli are involuntary.
14. How is the communication of the endocrine system different from that of the nervous system?
15. How does the feedback system of the hypothalamus and the pituitary gland explain the connection between the nervous system and the endocrine system?

Module 11

16. How did case studies help us to "map" the parts of the brain prior to modern testing technology?
17. What is the neurological purpose for lesions?
18. What does an EEG detect? How does it work?
19. What does a CT scan detect?
20. How does a PET scan detect brain activity (food for thought)?
21. What have MRI's shown in some schizophrenic patients? What does this lead us to hypothesize about schizophrenia?
22. What does the medulla control? What does the *pons* control?
23. Explain the details of the experiment in 1949 that led Giuseppe Moruzzi and Horace Magoun to conclude that the reticular formation is involved in arousal?
24. What does the word *cerebellum* mean? What are some examples of things controlled by the cerebellum?
25. Where is the limbic system located? What is its primary function?
26. How does the hypothalamus coordinate and control many aspects of bodily maintenance? What are some examples of functions controlled by the hypothalamus?

Module 12

27. What is the function of the cerebral cortex? Where is it located?
28. Where is the location of each? What is the function of each?
    - Frontal lobes:
    - Parietal lobes:
    - Occipital lobes:
    - Temporal lobes:
29. How did German physicians Fritsch and Hitzig discover that the (now called) motor cortex controlled bodily movement?
30. What has been discovered about body areas requiring precise control and cortical (having to do with the cortex) space?
31. How can understanding and manipulation of the motor cortex help with the development of new prosthetics?
32. Why are some body parts more sensitive to the perception of touch than others?
33. In what lobes do we receive sensory data brought in as visual information?
34. In what lobes do we receive sensory data brought in as sound information? What happens when these lobes are over-stimulated?
35. What would likely happen if you damaged your frontal lobe?
36. Although electrically probing the association areas of the brain does not produce an observable response, what evidence leads us to the conclusion that the notion that humans only use 10% of their brains is FALSE?
37. Even though Phineas Gage was not killed in his accident (and did not lose any memories or motor functions), what changed when his frontal lobes were damaged?
38. How can plasticity explain why people who have sensory damage, either blindness or deafness, develop enhancements to their other sense(s)?

Module 13

39. What is *lateralization*? How do we know it exists?
40. What is unique about split-brain patients? What does this disposition allow psychologists to study and explain?
41. What happens when split-brain patients' two hemispheric "minds" are at odds with one-another? What do studies on split-brain patients reveal about the hemispheres?
42. What are some examples of functions controlled by the right hemisphere of the brain?
43. What is modern cognitive neuroscience telling us about consciousness of the human mind?
44. How can scientists "read your mind" by looking at cortical activation patterns?
45. What is dual processing and what does this help us to understand about the brain's unconscious (automatic) processing of information?
46. What is blindsight and what is unique about this phenomenon?

Module 14

47. Why is it so difficult to pin-point whether it is nature or nurture to explain whether or not Blue Ivy Carter will become a famous recording artist?
48. How many chromosomes does the normal human possess? How many do we inherit from each parent?

49. What metaphor does Myers give to describe chromosomes, genes and DNA?
50. What is the make-up of the nucleus of a human cell? What is the term for the connected strands of DNA?
51. What two different experiments would behavior geneticists have to set up in order to isolate the effects of environment versus heredity (nature versus nurture)?
52. Even though separating twins at birth would be unethical, how have behavioral geneticists been able to do similar twin studies?
53. How are identical twins different than fraternal twins?
54. In the case of the "Jim Twins" (Jim Lewis and Jim Springer), list one piece of "evidence" that their similarities are the result of *nature*. List evidence for their similarities being the result of *nurture*.
55. Even though Myers draws a link between genetics and personality traits (adopted children acting more like their biological parents), what attributes does he say come from parental influence?
56. How does *heritability* and gene-environment interaction help to explain differences in people when the environmental factors become very similar (think of the metaphor of the "poker game of life").
57. How can molecular genetics help to identify people who are "at risk" for disorders and diseases?
58. What is epigenetics? What can the study of epigenetics help us to understand about our own nature and nurture?

Module 15

59. Briefly explain the process of natural selection of genes.
60. What conclusions can we draw about genetic traits (such as fearfulness) from the selective breeding of foxes by Russian scientist Dmitry Belyaev?
61. How can gene mutations change animalistic behavior or adaptability?
62. What conclusions can be drawn from the survey data gathered globally regarding men and sexuality?
63. What are some examples of gender similarities that transcend sexual orientation?
64. How does Myers explain that natural selection helps to explain how women and men choose sexual partners differently?
65. What are some of the criticisms of evolutionary psychology?