

# Module 9

## Biological Psychology and Neurotransmission

### Before You Read

#### Module Summary

Module 9 revisits the early Greeks' philosophies as they relate to the mind-body connection and discusses the work of Franz Gall as one of the pioneers of the exploration of the brain and mind. The early contributions of the Greeks are debunked as the science of modern brain studies is introduced. A thorough discussion of neural transmission segues into neuroanatomy and neuronal function and ends with a brief introduction to neurotransmitters, agonists, and antagonists.

Before beginning the module, take a moment to read each of the following terms you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

neuron	refractory period
cell body	all-or-none response
dendrites	synapse
axon	neurotransmitters
myelin sheath	reuptake
glial cells	endorphins
action potential	agonist
threshold	antagonist

### While You Read

**9-1** Answer the following questions.

1. How did Franz Gall contribute to the mind-body question?
2. In what way was Franz Gall incorrect? In what way was he correct?

3. Review Figure 9.1 on page 81 of your text. Do you see any areas where Gall was correct in matching location to function?

**9-2** Answer the following questions, and complete the diagram and chart below.

1. What happy fact allows us to study animal brains to learn about human brains?

2. Fill in the chart below with the functions of these neural structures.

Structure	Function
dendrite	
cell body	
axon	
terminal branches	
myelin sheath	
glial cells	

3. Describe what the action potential is and why it is important to neural communication.

4. Use page 84 and Figure 9.4 to help you complete this paragraph describing the process of the action potential:

The fluid outside the axon membrane is largely made up of \_\_\_\_\_ charged ions but the fluid inside the membrane is primarily made up of \_\_\_\_\_ charged ions. This state is referred to as the \_\_\_\_\_. We refer to the axon's surface as \_\_\_\_\_ permeable since it will only allow particular ions to pass through. When a neuron fires, the axon membrane becomes permeable and \_\_\_\_\_ sodium ions flow into the cell. This \_\_\_\_\_ that part of the axon and then causes the next section of the membrane to become permeable. This occurs over and over down the line of the axon and serves to push the nerve impulse down the neuron. During the \_\_\_\_\_, the \_\_\_\_\_ ions are pumped back out of the cell and the axon returns to the original state of polarity, called the \_\_\_\_\_, prepared to fire again.

5. What is the difference between an excitatory nerve signal and an inhibitory nerve signal?
6. What happens when the level of neural stimulation above the threshold is increased? Why?
7. Sometimes neural transmission is likened to the flushing of a toilet or the firing of a cannon. Explain this analogy, being sure to use the terms action potential, resting potential and threshold.

Neural transmission is like . . .

**9-3** Answer the following questions.

1. What is a synapse?
2. How do neurons communicate with each other?

3. Using Figure 9.6 on page 86 of your text, explain how SSRIs are related to reuptake.

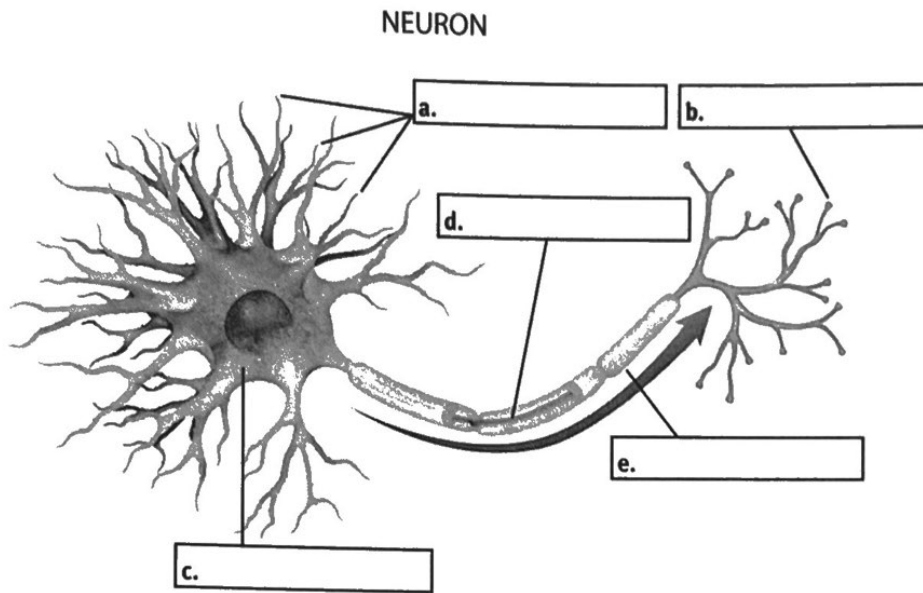
**9-4** Answer the following questions/prompts.

1. Give an example of an agonist and describe how it functions in the nervous system.
2. Give an example of an antagonist and describe how it functions in the nervous system.
3. A drug known as L-dopa mimics dopamine and helps to reduce the tremors of patients with Parkinson's Disease. Explain if this makes L-dopa an agonist or an antagonist.
4. What effect does the release of endorphins have on the body?
5. The text presents many neurotransmitters in Figure 9.1. Identify what happens if there is:
  - a. an undersupply of serotonin: \_\_\_\_\_
  - b. an oversupply of dopamine: \_\_\_\_\_
  - c. an oversupply of glutamate: \_\_\_\_\_
  - d. a deterioration in acetylcholine neurons: \_\_\_\_\_

# After You Read

## Module 9 Review

Complete the diagram, then the section of matching questions below to see if you have mastered the basics. Label and describe the function of the five main parts of the neuron.



*Terms*

- \_\_\_\_\_ 1. glial cell
- \_\_\_\_\_ 2. neuron
- \_\_\_\_\_ 3. dendrites
- \_\_\_\_\_ 4. axon
- \_\_\_\_\_ 5. myelin sheath
- \_\_\_\_\_ 6. action potential
- \_\_\_\_\_ 7. refractory period
- \_\_\_\_\_ 8. all-or-none response
- \_\_\_\_\_ 9. threshold
- \_\_\_\_\_ 10. synapse
- \_\_\_\_\_ 11. neurotransmitters
- \_\_\_\_\_ 12. reuptake
- \_\_\_\_\_ 13. endorphins
- \_\_\_\_\_ 14. agonist
- \_\_\_\_\_ 15. antagonist

*Definitions*

- A. Reabsorption of the neurotransmitter by the sending neuron
- B. Chemical messengers that cross the synapse between neurons
- C. Level of physical stimulation required to trigger an impulse
- D. The junction between the axon tip of the sending neuron and the dendrites of the receiving neuron
- E. Cells in the nervous system that support, nourish, and protect neurons
- F. Brief electrical charge that travels down an axon
- G. Opiate-like neurotransmitters linked to pain control
- H. Basic building block of the nervous system
- I. A period of inactivity after a neuron fires
- J. Receives neural messages and sends impulse to cell body
- K. Molecule similar to a neurotransmitter that triggers a response
- L. Extension of neuron that passes messages through its branches to other neurons, muscles or glands
- M. Neural reaction of either firing or not firing
- N. Molecule that binds to a receptor and inhibits a response
- O. Fatty tissue layer encasing the axon

# Module 10

## The Nervous and Endocrine Systems

### Before You Read

#### Module Summary

Module 10 lays out the divisions and subdivisions of the nervous system and describes how each division helps us function. In addition, the nature and function of the endocrine system is discussed.

Before beginning the module, take a moment to read each of the following terms you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

nervous system

central nervous system

peripheral nervous system

nerves

sensory (afferent) neurons

motor (efferent) neurons

interneurons

somatic nervous system

autonomic nervous system

sympathetic nervous system

parasympathetic nervous system

reflex

endocrine system

hormones

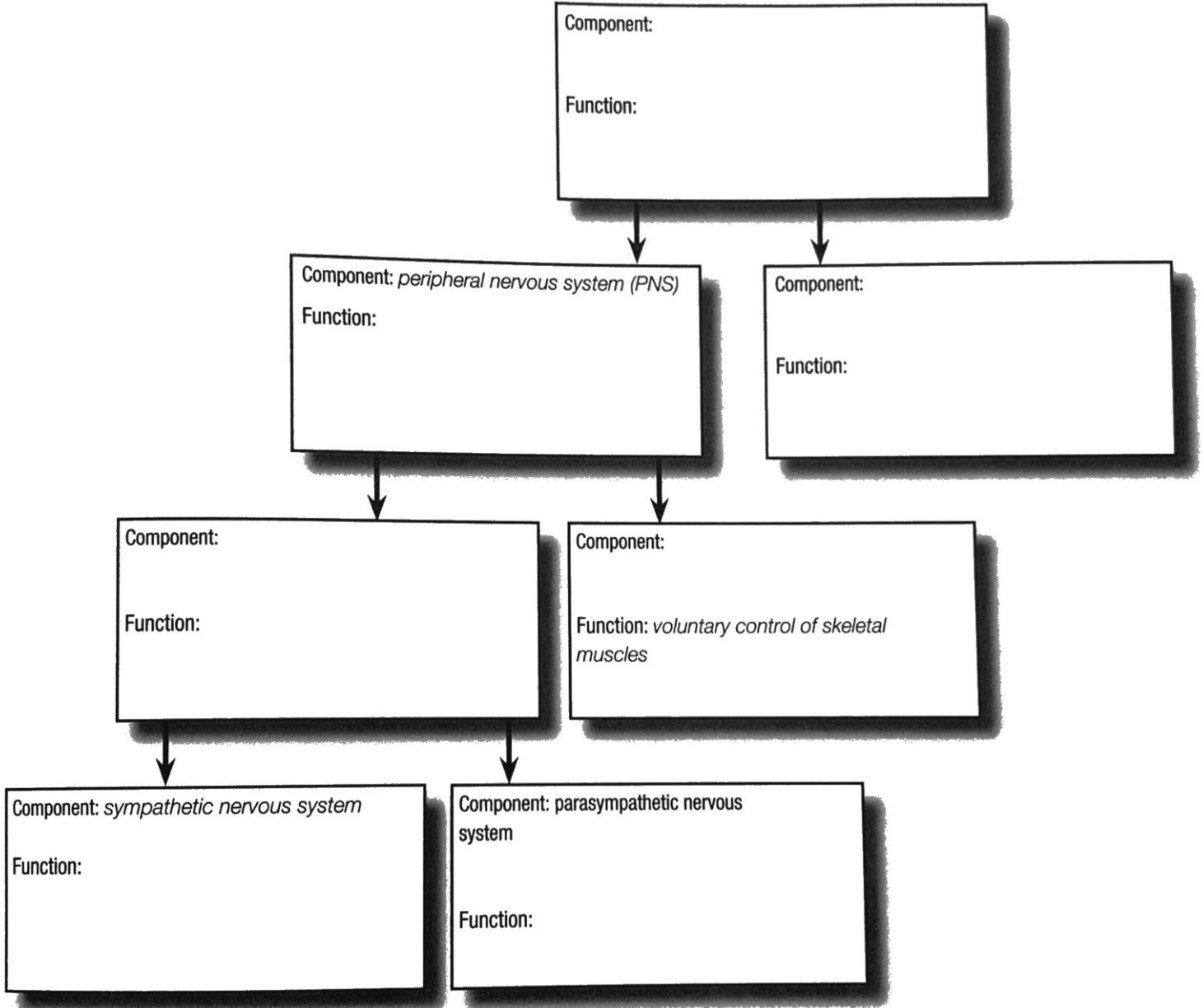
adrenal glands

pituitary gland

# While You Read

**10-1** Complete the diagram and answer the prompts below.

1. Using the information from your text on the functional divisions of the human nervous system and Figure 10.1, fill in the chart below.



2. Which nervous system division is most involved when:

- a. You write with a pencil: \_\_\_\_\_
- b. You are nervous about asking someone to prom: \_\_\_\_\_
- c. You are thinking about the answer to a math equation: \_\_\_\_\_

3. Use Figure 10.2 to complete the chart below describing the physiological changes that occur when the sympathetic and parasympathetic nervous systems are stimulated. A few have been filled in for you. (TIP: The pupil and heart are the two most likely to appear on the AP<sup>®</sup> Exam)

	Effect When Sympathetic Nervous System Is Stimulated	Effect When Parasympathetic Nervous System Is Stimulated
Pupil of the eye		
Heart		
Stomach		
Liver	<i>Glucose is released by the liver</i>	<i>No effect</i>
Gallbladder	<i>No effect</i>	
Adrenal glands		<i>No effect</i>
Bladder		<i>Contracts</i>
Sex organs		

4. Label the diagram below with the three types of neurons used to carry reflex information to and from the spinal cord.



**10-2**

Answer the questions and complete the chart below.

1. In what ways do the endocrine and nervous systems act similarly? In what ways do they act differently?

2. Use the information from your text and Figure 10.5 to complete the chart of endocrine system structures and functions below.

Structure	Function
Hypothalamus	
	secretes female hormones
Adrenal glands	
	releases growth hormone, oxytocin, and other hormones
	affects metabolism
Testis	
	regulates the level of sugar in the blood
Parathyroid	

3. Why is the pituitary gland referred to as the “master gland”?

## After You Read

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### Module 10 Review

Complete the questions below to see if you have mastered the basics.

1. After placing your hand on a hot stove, pain signals are sent from the sense receptors in your skin through \_\_\_\_\_ to the spinal cord where the signal is processed by \_\_\_\_\_ and finally to the muscles in your hand via the \_\_\_\_\_, causing you to remove your hand from the stove. This reflex \_\_\_\_\_ (does/does not) \_\_\_\_\_ involve the brain.
2. When the morning announcements call for you to rise to recite the Pledge of Allegiance, the signal to stand up on your feet is sent by way of which system?
3. The control of your heartbeat is regulated by which system?
4. Provide a scenario where your sympathetic nervous system is likely to be activated and at least one physiological response that will be initiated:
5. Provide a scenario where your parasympathetic nervous system is likely to be activated and at least one physiological response that will be initiated:

# Module 11

## Studying the Brain, Older Brain Structures, and the Limbic System

### Before You Read

#### Module Summary

Module 11 begins the two-module exploration of brain structures by introducing the more primitive structures of the hind- and mid-brain. The functions of the brainstem structures, and the more evolved limbic system structures, are explained through detailed diagrams and examples. It is helpful for you to be able to visualize where in the brain each structure is located, images and picture related questions are fair game on the AP® Exam. In addition, this module contains a thorough review of the scanning technologies that allow us to view inside the brain.

Before beginning the module, take a moment to read each of the following terms you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

lesion	medulla
EEG (electroencephalogram)	thalamus
MEG (magnetoencephalography)	reticular formation
CT (computed tomography) scan	cerebellum
PET (positron emission tomography) scan	limbic system
MRI (magnetic resonance imaging)	amygdala
fMRI (functional MRI)	hypothalamus
brainstem	hippocampus

### While You Read

Complete the charts and answer the questions.

1. What does it mean to lesion the brain? Why is this procedure important in studying the brain?

2. Review Table 11.1 about each of the methods used to scan the brain, complete the chart below.

Full name of brain scan technology	Abbreviation	Method Used to Produce Image
		electrodes placed on the scalp
	CT	
Positron emission tomography		
		magnetic fields and radio waves
	fMRI	
Magnetoencephalography		

3. What do each of the brain scanning methods reveal or show us about brain function?

EEG:

MEG

CT:

PET:

MRI:

fMRI:

## 11-2

1. Why might the structures in the brainstem be referred to as the most primitive?

2. Complete the chart of brainstem structures below:

Structure	Function	How is the structure used when listening to the radio?
Medulla		
Pons		
Thalamus		
Reticular formation		
Cerebellum		

### 11-3

1. In general, what are the functions of the limbic system structures?

2. Complete the chart of limbic system structures below:

Structure	Function	How is the structure used when listening to the radio?
Amygdala		
Hippocampus		
Hypothalamus		

3. What have experiments revealed about a dopamine-related reward pathway in humans??

## After You Read

### Module 11 Review

Complete the questions below to see if you have mastered the basics.

#### *Terms*

- \_\_\_\_\_ 1. EEG
- \_\_\_\_\_ 2. CT scan
- \_\_\_\_\_ 3. PET scan
- \_\_\_\_\_ 4. MRI
- \_\_\_\_\_ 5. fMRI

#### *Definitions*

- A. Shows brain activity by tracking glucose absorption
- B. Reveals brain damage through use of X-rays
- C. Depicts brain structures through the use of magnetic fields and radio waves
- D. Provides an amplified readout of brain waves by using electrodes on the scalp
- E. Reveals brain activity and functioning by tracking increased oxygen-laden blood flow

6. Use your knowledge of the hindbrain and limbic system structures to identify which structure(s) would be involved and what role they would play in the following task/function.
- a. kicking a soccer ball
  
  
  
  
  
  
  
  
  
  
  - b. listening to a conversation in the cafeteria
  
  
  
  
  
  
  
  
  
  
  - c. a mouse encountering a cat
  
  
  
  
  
  
  
  
  
  
  - d. learning many AP® Psychology vocabulary terms
  
  
  
  
  
  
  
  
  
  
  - e. feeling satisfied and contented after eating Thanksgiving dinner

## Multiple Choice

Circle the correct answer.

1. Identify the correct brain structure-function pairing.
  - a. amygdala: thirst, sex and hunger
  - b. cerebellum: conscious memories
  - c. medulla: breathing and heart rate
  - d. pons: aggression and fear
  - e. hypothalamus: breathing and heart rate
  
2. Patrick is able to play the piano flawlessly without even looking at the keyboard. Most likely, the precision and accuracy of this coordination is a result of neural functioning in the
  - a. hippocampus
  - b. hypothalamus
  - c. medulla
  - d. cerebellum
  - e. amygdala
  
3. Which of the following senses does not send neural messages through the thalamus?
  - a. taste
  - b. smell
  - c. touch
  - d. sight
  - e. hearing
  
4. Home alone on a Friday night you hear a car out front of your house and a stranger knocks on your door. If viewed on a PET scan, which area of your brain would be bright white (or highly stimulated) as a result of the fear you would be experiencing?
  - a. thalamus
  - b. amygdala
  - c. hippocampus
  - d. cerebellum
  - e. pons
  
5. At the movie theater, you feel a strong urge to eat popcorn and buy a drink. Most likely, this area of your brain is sending neural impulses influencing your thirst and hunger.
  - a. hippocampus
  - b. nucleus accumbens
  - c. thalamus
  - d. hypothalamus
  - e. amygdala

# Module 12

## The Cerebral Cortex

### Before You Read

#### Module Summary

Module 12 explores the lobes and association areas of the cerebral cortex. Detailed examples and illustrations elaborate on the motor and sensory functions of our brain's complex control center. The module concludes with a discussion of neural plasticity and neurogenesis, which contradicts the long-held common sense about never regenerating brain cells.

Before beginning the module, take a moment to read each of the following terms and names you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

cerebral cortex  
frontal lobes  
parietal lobes  
occipital lobes  
temporal lobes  
motor cortex  
somatosensory cortex  
association areas  
plasticity  
neurogenesis

#### Key Names

Paul Broca  
Carl Wernicke

### While You Read

Answer the following questions.

**12-1**

1. In general, what are the functions of the various cortex regions?







**12-2**

1. How might the functions of the association areas assist in debunking the myth that humans use only a minor percentage of our brains?

**12-3**

1. What is the significance of neural plasticity?

**12-4**

1. How is neurogenesis different from plasticity?

# After You Read

## Module 12 Review

Complete the matching questions below to see if you have mastered the basics.

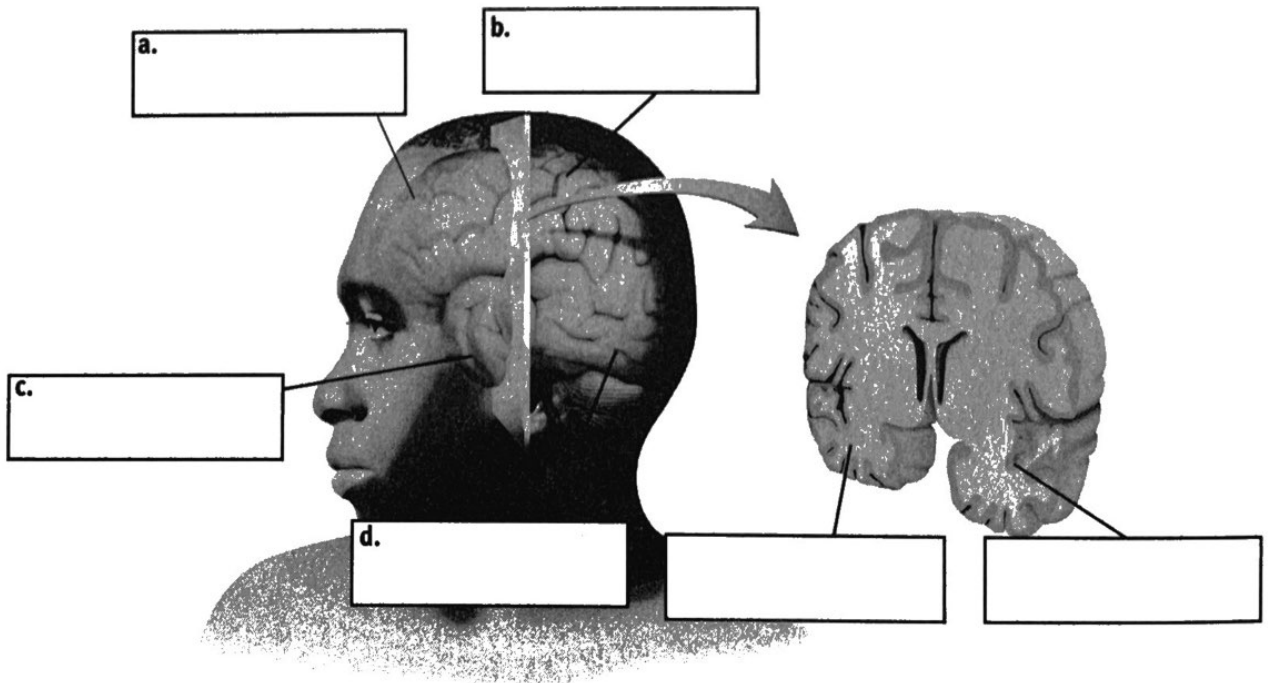
*Terms*

- \_\_\_\_\_ 1. cerebral cortex
- \_\_\_\_\_ 2. Broca's Area
- \_\_\_\_\_ 3. motor cortex
- \_\_\_\_\_ 4. somatosensory cortex
- \_\_\_\_\_ 5. association areas
- \_\_\_\_\_ 6. plasticity
- \_\_\_\_\_ 7. neurogenesis
- \_\_\_\_\_ 8. Wernicke's Area

*Definitions*

- A. Area at the rear of the frontal lobes that controls voluntary movements
- B. The body's ultimate control and processing center that covers the cerebral hemispheres
- C. Area at the front of the parietal lobes that processes body touch and movement sensations
- D. Areas of the cortex involved in higher mental functions such as learning and speaking
- E. Damage to this area will disrupt understanding of speech
- F. The brain's ability to reorganize after damage or build new pathways based on experience
- G. The formation of new neurons
- H. Damage to this area will disrupt speech production

Label the lobes and identify the brain's hemispheres in the cross-section. Then, briefly describe each lobe's function below.



a.

c.

b.

d.

# Module 13

## Brain Hemisphere Organization and the Biology of Consciousness

### Before You Read

#### Module Summary

Module 13 discusses the classic work in split-brain patients that yielded vast information about the lateralization of the brain hemispheres. Detailed graphics and diagrams assist in conveying the key aspects of right- and left-brain functions. The module closes with the biology of consciousness and the explanation of different types of processing that take place in our brain.

Before beginning the module, take a moment to read each of the following terms and names you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

corpus callosum  
split brain  
consciousness  
cognitive neuroscience  
dual processing  
blindsight  
parallel processing  
sequential processing

#### Key Names

Roger Sperry  
Michael Gazzaniga

### While You Read

Answer the questions and complete the charts below.

13-1

1. What is lateralization, and why is it important in the way our brain functions?
2. What is meant by the term *split brain*? Why is this procedure normally conducted?

3. Fill in the chart below with some of the tasks served by each hemisphere of the brain. As you continue to read this module, return to this chart and add new information as you learn it.

Left Hemisphere Functions	Right Hemisphere Functions

4. Why do the tasks listed above lend themselves to the myth that we are “right-brained” or “left-brained”? Using the information regarding the brain structures and association areas you learned in Module 12, address why this myth is erroneous.

5. Using Figures 13.2 and 13.3, and your knowledge of brain structures, explain step-by-step why Gazzaniga’s patients were able to:

a. say the word “ART”

b. point to the word “HE” with their left hand

3. Fill in the chart below with some of the tasks served by each hemisphere of the brain. As you continue to read this module, return to this chart and add new information as you learn it.

Left Hemisphere Functions	Right Hemisphere Functions

4. Why do the tasks listed above lend themselves to the myth that we are “right-brained” or “left-brained”? Using the information regarding the brain structures and association areas you learned in Module 12, address why this myth is erroneous.

5. Using Figures 13.2 and 13.3, and your knowledge of brain structures, explain step-by-step why Gazzaniga’s patients were able to:

a. say the word “ART”

b. point to the word “HE” with their left hand

6. Why is it incorrect to say “left brain” and “right brain”?
7. How does split-brain research help us to understand the functions of our two brain hemispheres?

**13-2**

1. How is cognitive neuroscience changing the way we understand mental processes?
2. What is dual processing? Give an example from your own life of dual processing.
3. Where is visual information typically processed in the brain? How does the concept of blindsight indicate that visual information may be dually processed?



## After You Read

### Module 13 Review

Answer the questions below to see if you have mastered the basics.

1. Jonathon undergoes an MRI and his doctor discovers a tumor in the left hemisphere of his brain. Which of the following functions may be impacted by this tumor?
  - a. Jonathon's perceptual abilities
  - b. the control of the left side of Jonathon's body
  - c. Jonathon's ability to speak
  - d. Jonathon's ability to understand subtleties and inferences in literature or poetry
  - e. Jonathon's understanding or "sense of self"
  
2. Myung Li was involved in a car collision and suffered severe injuries to the right side of her head. Her doctor has been giving her a battery of tests to determine to what extent her various functions are affected. In a remote-associates test in which Myung Li views three words (such as butter, fire and fruit) and is asked to produce a fourth word that would be able to pair with each of the three words to produce a new word, Myung Li is likely to
  - a. modulate her speech when producing the answer.
  - b. be able to quickly draw a picture of the word with her left hand.
  - c. quickly produce the required word.
  - d. be able to rapidly write the answer with her left hand.
  - e. be unable to make the inference necessary to produce the word.
  
3. In Michael Gazzaniga's classic "HEART" experiment with split-brain patients, he found that patients were able to
  - a. use their right hand to point to the word "ART."
  - b. use their right hand to point to the word "HE."
  - c. verbally express the word "HE."
  - d. verbally express the word "HEART."
  - e. use their left hand to point to the word "ART."
  
4. In a controlled replication of Gazzaniga's experiment, when shown an image of a frog in the left visual field and an image of a football in the right visual field, split-brain patients were able to correctly
  - a. use their left hand to point to a picture of a football.
  - b. use their right hand to point to a picture of a frog.
  - c. use their left hand to point to a picture of a frog.
  - d. use either hand to point to both the frog and the football.
  - e. verbally express the word "FROG."
  
5. \_\_\_\_\_ is the faster method of processing that takes care of our routine tasks while the slightly slower \_\_\_\_\_ works best when solving new problems.
  - a. blindsight; consciousness.
  - b. parallel processing; sequential processing.
  - c. consciousness; blindsight.
  - d. sequential processing; parallel processing.
  - e. parallel processing; one-track processing.

# Module 14

## Behavior Genetics: Predicting Individual Differences

### Before You Read

#### Module Summary

Module 14 defines genes, and describes how behavior geneticists explain our individual differences. The potential uses of molecular genetics research are explored and the concept of heritability is explained. The interaction of heredity and environment and the relationship of heritability to individuals and groups are also discussed.

Before beginning the module, take a moment to read each of the following terms you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

behavior genetics

heredity

environment

chromosomes

DNA (deoxyribonucleic acid)

genes

genome

identical twins (monozygotic)

fraternal twins (dizygotic)

heritability

interaction

molecular genetics

molecular behavior genetics

epigenetics

### While You Read

Answer the following questions/prompts.

14-1

- Using key terms from the text, complete the three analogies below:
  - Your book of life: \_\_\_\_\_
  - \_\_\_\_\_ : the chapters in your book
  - words in the chapter: \_\_\_\_\_
- Genes can either be \_\_\_\_\_ or \_\_\_\_\_. What does this mean?
- Why are psychologists interested in variations found at particular gene sites in humans?

## 14-2

1. Identical twins form from a \_\_\_\_\_ fertilized egg cell and are \_\_\_\_\_ identical.  
What are two important qualifications to the statement above?

2. Fraternal twins form from \_\_\_\_\_ fertilized eggs. They share a \_\_\_\_\_  
but are genetically no more similar than \_\_\_\_\_.

3. How are identical twins behaviorally more similar than fraternal twins?

4. Discuss the findings of Bouchard's twin studies.

5. What is a criticism leveled at Bouchard's studies?

6. According to the text, what is the rather counterintuitive finding regarding adoptive families versus biological families?

7. The environment shared by a family's children has virtually \_\_\_\_\_ discernible impact on their personalities.

a. Describe what is meant by this statement, and why people are often surprised by this finding.

b. In what ways does the statement above seem true for your family, extended family, or friends and their siblings?

## 14-3

1. How is heritability defined?
2. As environments become more similar, heredity as a source of difference becomes \_\_\_\_\_.  
Why is this the case?
3. What is molecular genetics? Why is it important to the study of human behavior?
4. What are some ways in which DNA gathering techniques are being used to help humans?

## 14-4

1. "Heredity deals the cards; environment plays the hand." –C. Brewer, 1990 (p. 137)  
How does Charles Brewer's quote above explain the interaction between heredity and environment?
2. How is the example of two babies born with different genetic personalities used to explain how heredity and environment work together?
3. What is epigenetics? How might this cause differences between traits of identical twins?

## After You Read

### Module 14 Review

Complete the questions below by noting whether the answer is *high* or *low* to see if you have mastered the basics of heritability.

1. Conor and Aidan, fraternal twins raised in the same home, have many traits in common. Both boys are outgoing, interested in building puzzles and playing soccer. However, Conor is compliant and easy-going, while Aidan is stubborn and rigid. Psychologists would gauge the heritability of this personality difference as \_\_\_\_\_ .  
*high or low*
2. Imagine 12 genetically identical cloned babies who were given to 12 different families to be raised. After 20 years we find that they have different IQ scores. In this case, the heritability of intelligence would be \_\_\_\_\_ .  
*high or low*
3. Olivia and Dantelle are identical twins that were separated at birth and raised in two different homes. Olivia grew up in Georgia and Dantelle was raised in New York City. They each enjoy unflavored yogurt, pickles and horseradish, and both laugh with a distinctive throaty sound. Yet, Olivia is curious and inquisitive, while Dantelle seems uninterested in learning new things. The heritability of their personality differences would likely be \_\_\_\_\_ .  
*high or low*
4. True or False? As environments become more similar, heritability of differences between groups from those environments increases.
5. True or False? If differences among people are mostly attributable to genes, then the heritability is closer to 0.

# Module 15

## Evolutionary Psychology: Understanding Human Nature

### Before You Read

#### Module Summary

Module 15 discusses the concept of natural selection and adaptation in an evolutionary context and explores some of the work evolutionary psychologists do, including some of the more contemporary research in explaining male-female differences in sexuality and mating preferences. The criticisms of evolutionary psychology and the responses from those that work in the field are presented. Lastly, the biopsychosocial approach to explaining behavior and mental processes is presented and explained.

Before beginning the module, take a moment to read each of the following terms and name you will encounter. You may wish to make vocabulary cards for each.

#### Key Terms

evolutionary psychology  
natural selection  
mutation  
social script

#### Key Name

Charles Darwin

### While You Read

Answer the following questions/prompts.

15-1

1. How were researchers Belyaev and Trot able to produce domesticated foxes?

2. No more than 5 percent of the genetic differences among humans arise from population group differences. Some 95 percent of genetic variation exists within populations. (Rosenberg et al, 2002 in Myers, p. 142)

a. How does the text's author explain the statement above using the examples of Icelandic villagers and Kenyans?

b. How might this statement be explained using a different group, for example, males and females?

3. What is the “second Darwinian revolution” and why is it significant?

4. How does evolutionary psychology explain behavior tendencies?

## 15-2

1. What arguments do evolutionary psychologists make that support men’s increased interest in sex?

2. What arguments do evolutionary psychologists make that support women’s increased interest in partnering and pairing?

3. Many women will say that they do not prefer partners who are financially well off, but then rate higher status men as preferable. How might evolutionary psychology explain this?

4. What is significant about these presumed gender differences in mating preferences?

**15-3**

1. List three criticisms of evolutionary psychology.

**15-4**

1. Using Figure 15.1, discuss the three influences on individual development according to the biopsychosocial model.
  - a. biological components:
  - b. social components:
  - c. psychological components:



## After You Read

### Module 15 Review

Complete the matching questions below to see if you have mastered the basics.

#### Terms or Names

- \_\_\_\_\_ 1. evolutionary psychology
- \_\_\_\_\_ 2. natural selection
- \_\_\_\_\_ 3. mutation
- \_\_\_\_\_ 4. biopsychosocial approach
- \_\_\_\_\_ 5. social script

#### Definitions or Descriptions

- A. A culturally modeled guide for how to act in various situations
- B. The study of the gradual change over time of behavior and the mind
- C. A random error in gene application that leads to a change
- D. The principle that inherited traits that contribute to reproduction and survival will most likely be passed on to succeeding generations
- E. The belief that we are products of our genes, our environment, and our psychological decisions

### ✓ Check Yourself

Now that you have mastered the basics, work through the problems below to see if you can *synthesize*, *evaluate*, and *analyze* what you have learned.

Samuel is a cross-country runner for your school and has qualified for the state cross-country meet. He has been training for years and is in top shape for the event. For Samuel to successfully perform at the meet, several key biophysiological functions will occur simultaneously—from the neural impulses his brain sends and the release of key neurotransmitters, to the structures of the central and peripheral nervous systems and endocrine systems.

1. Describe the neural transmission occurring in Samuel's body while he is warming up for the race. Be sure to include how a message moves through each part of a neuron and how messages communicate between neurons.





## Before You Move On

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Use the checklist below to verify your understanding of the unit's main points.

- Do I know the structures and functions of each part of a neuron?
- Do I know how neural transmission works within and between neurons?
- Can I accurately describe the processes involved in the action potential?
  
- Do I understand the influence of drugs on neurotransmitters?
  - Reuptake?
  - Agonists?
  - Antagonists?
  
- Do I know the divisions and subdivisions of the nervous system?
  
- Do I know the structures of the hind-, mid- and fore-brain and their functions?
  
- Can I name and identify the functions of the lobes of the brain and the cortexes included within each?
  
- Do I understand hemisphere lateralization and the information revealed from research on split-brain patients?
  
- Do I know the role of neuroplasticity in brain injury?
  
- Do I understand heritability?
  
- Do I understand how heredity and environment work together to drive behavior?
  
- Do I understand the evolutionary nature of our brain's development?
  
- Can I identify key contributors in the field of biopsychological research?