

# Unit 4: Biological Basis of Behavior

Content Area: **Social Studies**  
Course(s): **Psychology**  
Time Period: **Semester 1 & 2**  
Length: **3 weeks**  
Status: **Published**

## Standards

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SCI.9-12.B.1.2.1	Describe how the endocrine glands are linked to the nervous system
SCI.9-12.B.1.2.2	Describe the effects of hormones on behavior and mental processes
SCI.9-12.B.1.2.3	Describe hormone effects on the immune system
SCI.9-12.B.1.3.1	Describe concepts in genetic transmission
SCI.9-12.B.1.3.2	Describe the interactive effects of heredity and environment
SCI.9-12.B.1.3.3	Explain how evolved tendencies influence behavior
SCI.9-12.B.2.2.2	Describe the visual sensory system
SCI.9-12.B.2.2.3	Describe the auditory sensory system
SCI.9-12.B.2.2.4	Describe other sensory systems, such as olfaction, gustation, and somesthesia (e.g., skin senses, kinesthesia, and vestibular sense)
SCI.9-12.SI.2.1.1	Describe the scientific method and its role in psychology
SCI.9-12.SI.2.1.3	Define systematic procedures used to improve the validity of research findings, such as external validity
SCI.9-12.SI.2.3.3	Define correlation coefficients and explain their appropriate interpretation
SCI.9-12.SI.2.3.4	Interpret graphical representations of data as used in both quantitative and qualitative methods
SCI.9-12.SI.2.3.5	Explain other statistical concepts, such as statistical significance and effect size
SCI.9-12.SI.2.3.6	Explain how validity and reliability of observations and measurements relate to data analysis

## Enduring Understandings

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### **The students will understand that:**

- 1. Behavior consistently found in a species is likely to have a genetic basis that evolved because the behavior has been adaptive.**
- 2. The body's two communication systems, the nervous system and endocrine system, both use chemical messengers to communicate with targets throughout the body.**
- 3. The brain is composed of many specialized and interconnected modules that work together to create mind and behavior.**
- 4. Genetics plays a very critical role in both who and what we are, but not without influences from the environment.**
- 5. Advances have been made in science and technology that allow us to see specific genetic traits along with specific brain function and activity.**

- 6. The basic building blocks and structure and communication systems that allow humans to live and function in society.**
- 7. The impact that a variety of injuries, chemicals, drugs and additional environmental factors have on brain function and development.**
- 8. The nature verses nurture argument remains complex and controversial in regards to neuroscience.**

## **Essential Questions**

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- 1. What behaviors appear to be influenced by nature selection?**
- 2. To what extent is our behavior predetermined by our genetics?**
- 3. To what extent is making designer children ethical?**
- 4. How does cloning impact identity?**
- 5. To what extent can people really recover from a major brain injury?**
- 6. Why do genetic diseases and brain injuries appear to impact people so differently?**
- 7. How can we determine if it a good idea to take substances like psychoactive that influence our neural commination?**
- 8. To what extent do we really need two different communication systems for our body to operate (endocrine and nervous systems)?**
- 9. How are we impacted by the fact that we only use ten percent of our brain?**
- 10. To what extent is it ethical for neuroscientists to read our minds using modern technology?**
- 11. How is it possible that drugs created to help improve specific symptoms affect people so differently with a variety of side effects?**

## **Knowledge and Skills**

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### **Learning Objectives (SWBAT)**

- Explain the process of neural communication.**
- Explain how neurotransmitters work.**
- Delineate the different steps of the neural chain.**
- Analyze the difference between the neural and hormonal systems.**
- Identify the parts of the brain and the functions of each.**
- Describe the different types of brain scans.**

## **Content**

- 1. Physiological Techniques (e.g., imaging, surgical)**
- 2. Neuroanatomy**
- 3. Functional Organization of Nervous System**
- 4. Neural Transmission**
- 5. Endocrine System**
- 6. Genetics**
- 7. Evolutionary Psychology**

## **Transfer Goals**

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**Students will be able to independently apply their knowledge about the human nervous system and brain structure to their understanding of human behavior and disorders.**

**Students will be able to independently distinguish between correlation and causation when interpreting biological research findings, especially in studies linking brain activity to specific behaviors.**

## **Resources**

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**Textbook Reading:** Chapter 3 Biopsychology and the Foundations of Neuroscience (60-107)

**Primary Student Textbook:** Zimbardo, Philip G., Johnson, Robert L., Weber, Ann L., Gruber, Craig W. (2010). Psychology: AP edition with discovering psychology. New York: Allyn & Bacon.

### **Course Resources:**

1. Benjamin, Ludy T. Jr., eds. Favorite Activities for the Teaching of Psychology. Washington, D.C.: American Psychological Association, 2008.
2. Bensley, D. Alan. *Critical Thinking in Psychology: A Unified Skills Approach*. Pacific Grove, Calif.: Brooks/Cole, 1998.
3. Hock, Roger R. Forty Studies that Changed Psychology: Explorations into the History of Psychological Research. 5th ed. Upper Saddle River, N.J.: Pearson/Prentice Hall, 2005.
4. Rolls, Geoff. Classic Case Studies in Psychology. London: Hodder Arnold, 2005.
5. 3D Brain app
6. The Human Brain Book by Rita Carter
7. Brain Games
8. Nova Special: The Brain

Additional Resources from WH databases, and articles connected to the content, including primary readings, historiography, and secondary sources.

### **Links**

- <http://psychcentral.com/>
- <http://www.psychologytoday.com/>
- <http://www.apa.org/>
- <http://www.scientificamerican.com/section/lateststories/>
- <http://www.psychologicalscience.org/>
- <http://www.sciencedaily.com/news>
- <http://www.alleydog.com/>

<http://www.apa.org/research/action/glossary.aspx>

<http://allpsych.com/psychology101/index.html>

<http://www.simplypsychology.org/perspective.html>

## **Assessments**

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<https://docs.google.com/document/d/1mKgdwpriGuRcVHIVCJUdBek7lih12Q0ckKSTC4TMUXs/edit>

## **Modifications**

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<https://docs.google.com/document/d/1ODqaPP69YkcFiyG72fIT8XsUIe3K1VSG7nxuc4CpCec/edit>