



YALE NATIONAL INITIATIVE

to strengthen teaching in public schools®

Curriculum Units by Fellows of the National Initiative
2009 Volume VI: The Brain in Health and Disease

Neurobiology Using BOTH Sides of the Brain

Guide for Curriculum Unit 09.06.11, published September 2009

by Connie Scercy Wood

This is a unit on neurobiology developed for high school International Baccalaureate or Advanced Placement Biology classes. It is also a unit on the scientific method; using neurobiology to help students gain a better understanding of how science is done. The activities included in this unit include building a model of the brain from MRI images and doing "the wave" to demonstrate how action potentials are propagated. Students will "dissect" a journal article on brain hemisphere specialization in toads for different kinds of behaviors. The "dissection" will allow students to discover how the experiment was designed to control for variables, to test for the hypothesis, and to collect sufficient data. Afterwards, they will replicate the experiment and compare their results to the published data. I encourage you to read the background information, if, like me, you have always had questions about the nervous system, such as: why does acetylcholine stimulate skeletal muscles but inhibits heart muscles? Where and how does an action potential really begin? What exactly happens when neurotransmitters bind to receptors? There is still much to learn about the brain, but it is my hope that one of my students will help discover the answers.

(Developed for IB Biology, grade 12; recommended for IB Biology and AP Biology, grades 11-12)

<https://teachers.yale.edu>

©2023 by the Yale-New Haven Teachers Institute, Yale University, All Rights Reserved. Yale National Initiative®, Yale-New Haven Teachers Institute®, On Common Ground®, and League of Teachers Institutes® are registered trademarks of Yale University.

For terms of use visit https://teachers.yale.edu/terms_of_use