Erica Dale, Ph.D. Teacher Resource Page

Anatomy Arcade
Online games and puzzles designed to assist the teaching of basic human anatomy.

Caffeine Appears To Be Beneficial In Males–But Not Females–With Lou Gehrig’s Disease
This is an APS press release on a study, entitled ‘Caffeine Reduces Motor Performance and Antioxidant Enzyme Capacity in the Brain of Female G93A Mice, An Animal Model of Amyotrophic Lateral Sclerosis (ALS)’, that was conducted by Rajini Seevaratnam1 supervised by Mazen J. Hamadeh1,2 , and co-authored by Sandeep Raha2 and Mark A. Tarnopolsky2 (1School of Kinesiology and Health Science, York University, Toronto, ON, Canada; 2Department of Pediatrics and Medicine, McMaster University Hamilton, ON, Canada). The researchers will present their findings at the 122nd Annual Meeting of the American Physiological Society (APS; www.the-aps.org/press), which is part of the Experimental Biology 2009 scientific conference. The meeting that was held April 18-22, 2009 in New Orleans.

Comparing the Sheep Brain to the Human Brain - A visual guide to use during sheep brain dissection laboratories
Power Point slides that can be used during the sheep brain dissection laboratory to visually compare the sheep brain to the human brain structures with the goal to learn the anatomy of the human brain.

Exploring the nervous system in elementary school: How do we know what we sense?-PhUn Week Poster Session EB 2014
A series of hands-on activities was designed to introduce the nervous system to fifth graders. Each activity was held in individual classrooms and lasted 45 minutes. Classroom visits included an introduction to the nervous system anatomy and physiology, inquiry-based demonstrations and activities, and a take-home word search of vocabulary from the lesson. The introduction covered general principles of the central and peripheral nervous system including the brain, spinal cord, neurons, synapses, and neural circuits. Several pictures of each were displayed using a white board during the discussion. How tactile sensation is transmitted to the brain was demonstrated using volunteers from the class and small balls to represent neurotransmitters. Each student made their own neuron out of a styrofoam ball and different lengths of pipe cleaners to represent the cell body, axon, and dendrites. The students’ neurons were aligned in a circuit and simulations were run to demonstrate how neuronal transmission occurs under normal touch sensation and paralysis.

Virtual Clinical Trials — Trial 1: Spinal Cord Injury
In Trial 1: Spinal Cord Injury, students work with clinical trials experts to set up a Phase 2 clinical trial testing a new therapy for treating spinal cord injury patients. While engaging in the clinical trials process, students learn the underlying neuroscience behind the medical advancement being tested.

Brain Awareness Week
Brain Awareness Week (BAW) is an inspirational global campaign that unites those who share an interest in elevating public awareness about the progress and benefits of brain and nervous system research. BAW focuses international attention on the field of neuroscience and offers opportunities for teachers and students to engage in fun educational activities.

American Physiological Society
www.the-aps.org

APS Career Trading Cards
November 2014
The Brain from Top to Bottom: The Suprachiasmatic Nuclei and the Pineal Gland

In this online article on the brain, visuals explaining the complex visual system and its relationship with sleep are demonstrated for high schoolers and undergraduates. Sleep cycles and the brain regions associated with the behavior can be customized for beginner, intermediate, and advanced student groups.

Brain Power-- Module

A lesson plan the educates middle school students on the brain and short term memory. This lesson includes small group activities, discussion questions, suggested readings, and evaluations.

The Dancing Cockroach Leg: An Introduction to the Electrical Properties of Neurons

This is a video and accompanying lesson plan. In the video, a cockroach leg is being microstimulated through pin electrodes hooked up to the output of an iPod. The cockroach leg will then ‘dance’ at various points of the song.

HHMI Human Cochlear Video

This video provides a talk and video illustration of what happens in the cochlea with different sounds that allows for hearing. This is presented by HHMI's Biointactive Series.

Lifelines Episode 17: Environmental Cardiology

This is a free audio podcast from the American Physiological Society. Discussion questions, related research, and other teaching resources are available by clicking the "collections" tab in the left hand column. Accumulating evidence indicates that an increase in particulate air pollution is associated with an increase in heart attacks and deaths. In this episode, we’ll talk to Aruni Bhatnagar of the University of Louisville and Robert Brook of the University of Michigan about research in the relatively new field of environmental cardiology – a new field which examines the relationship between air pollution and heart disease. (Begins at 2:58) Why was the man known in scientific literature only as “H.M.” so important to neuroscience? David Linden of Johns Hopkins University explains why in the wake of H.M.’s recent death. (Begins at 14:54) The Buzz in Physiology: (Begins at 1:14) A new study with rats could help uncover how we get hooked on sugary food. You can read the full study here. The heart’s beat is not a simple in-and-out movement, but has a bit of a twist to it. Researchers have created images showing the connection between the configuration of the heart’s muscular layer and how the heart contracts. The study is available here. Be sure to click on the supplemental video to see how it works.

Lifelines Episode 17: Environmental Cardiology; Neuroscience Q&A Sheet

This question and answer sheet is designed to be used in conjunction with Lifelines, a free audio podcast from the American Physiological Society. The Lifelines podcast, related research, and other teaching resources are available by clicking on the "collection" tab in the left hand column.

Lifelong Learning: Times Ideas and Resources for Keeping Your Brain Sharp

In the article in the NY Times, various activities, puzzles, and recommendations are made to lengthen the resourcefulness of the brain and to keep it sharp.
Neurobiology Through Disease
The importance of neurobiology and disease is explained in this lesson plan, which includes student activities and presentations. This lesson is located fourth from the top on the webpage. These resources were developed for classroom use by high school biology teachers who participated in MCB-HHMI Outreach's Summer 2005 "Experimental Biology and Multimedia Workshop".

Neuroscience for Kids: An Activity a Day
In this online interactive calendar, the idea of "An Activity a Day" is presented, offering several ideas to raise awareness of the brain for kids.

On ‘Punched Out’: Looking at Brain Trauma and Other Risks of Violent Sports
In the lesson plan in the NY Times, students explore the story of a hockey player who sustained serious brain injuries, leading to his death. They consider the culture of fighting in the National Hockey League, the physical consequences of repeated injuries and the issue of brain injuries in contact sports. Finally, they create presentations to give to school and youth athletics programs about the risks and dangers associated with violent acts.

The Science Behind Drug Abuse: Educators Lesson Plans and Materials
As an educator, you play an important role in educating your students about how drugs affect their body, brain, and behavior. NIDA has a range of age-appropriate curricula and activities designed to help you in this challenging role and support your efforts in the classroom. The lessons and activities promote an understanding of drug abuse and addiction and a curiosity about neuroscience.

Sleep Quality
To improve the quality of astronauts’ sleep, neuroscientist George C. Brainard, PhD, is researching the effects of space flight on circadian rhythms (podcast with lessons and more).

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Ways of Knowing: Apples as Models
Models are used in neuroscience to represent a variety of concepts. In this lesson, students are introduced to models at several levels of abstraction from the real item: an apple.