Engage Your Students in Science with a Unit on Circadian Rhythms

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Project NEURON Curriculum Units

- Do you see what I see?
  - Light, sight, and natural selection

- What can I learn from worms?
  - Regeneration, stem cells, and models

- What makes me tick...tock?
  - Circadian rhythms, genetics, and health

- What changes our minds?
  - Toxicants, exposure, and the environment
  - Foods, drugs, and the brain

- Why dread a bump on the head?
  - The neuroscience of traumatic brain injury (TBI)

- Food for thought: What fuels us?
  - Glucose, the endocrine system, and health

- What makes honey bees work together?
  - How genes and environment affect behavior

- How do small things make a big difference?
  - Microbes, ecology, and the tree of life

Available (for free) at: neuron.illinois.edu
### Dimension 1: Scientific & Engineering Practices

1. Asking questions
2. Developing/Using models
3. Planning/Carrying out investigations
4. Analyzing & interpreting data
5. Using math, information and computer technology, and computational thinking
6. Constructing explanations
7. Engaging in argument from evidence
8. Obtaining, evaluating, communicating information

### Dimension 2: Crosscutting Concepts

1. Patterns
2. Cause and Effect
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter
6. Structure and Function
7. Stability and Change

### Dimension 3: Disciplinary Core Ideas

1. Physical Sciences
2. Life Sciences
3. Earth and Space Sciences
4. Engineering, Technology and Applications of Science
Are you an Owl or a Lark?

Image obtained from http://www.novosbed.com/blog/lark-meets-owl-how-to-tell-if-your-sleep-style-is-jeopardizing-your-relationship/
What makes me tick…tock?

*Circadian rhythms, genetics, and health*

- Lesson 1: What is a circadian rhythm?
- Lesson 2: Why do scientists study fruit flies to understand what makes us “tick”?
- Lesson 3: How can genetics change your clock?
- Lesson 4: Tick tock…Broken clock
What makes me tick…tock?

*Circadian rhythms, genetics, and health*

- Lesson 5: How do environment and modern society influence our rhythms?
- Lesson 6: What happens to humans when normal rhythms are disrupted?
- Lesson 7: How can epigenetics change your clock?
- Lesson 8: When should the school day begin?
What makes me tick…tock?

*Circadian rhythms, genetics, and health*

- Lesson 1: What is a circadian rhythm?
- Lesson 2: Why do scientists study fruit flies to understand what makes us “tick”?
- Lesson 3: How can genetics change your clock?
- Lesson 4: Tick tock...Broken clock
Try it!

• Try the student activity (~10 min.)
• Review a copy of the lesson plan (~5 min.)
• Reflect and be ready to discuss:
  – How would you use this learning activity in your class?
  – How does the activity relate to scientific and engineering practices from The Framework?
Free Curriculum Materials

- All curriculum materials featured in our session can be found online for free at:

  http://neuron.illinois.edu/
Project NEURON

Novel Education for Understanding Research on Neuroscience

Project NEURON develops curriculum materials for middle and high school teachers to use in their science classrooms. Each unit addresses various science education standards, including the Next Generation Science Standards, within the context of neuroscience topics and research performed on the University of Illinois campus.

All of our completed materials, which have been classroom-tested and revised, are available on this website to teachers and educators for free. For teachers who wish to engage with our materials hands-on, we also provide professional development opportunities through local workshops and national teaching conferences such as NSTA.

Our materials have been adapted and expanded to be used with younger grades, outreach, and informal education. To learn more about our collaborative projects, please visit the Additional Projects page.

Please note that we are continuously improving this website and the materials hosted here. We work hard to create quality materials, but if you notice any inconsistencies, missing materials, etc., please let us know! We also love to hear suggested improvements or adaptations from teachers who have used our materials!

News and Events

Find us at the Illinois Science Education Conference!

October 14, 2013
Join us at the Illinois Science Education Conference, October 24-26!

New team member provides opportunities for NEURON growth

September 30, 2013
Most of us can remember at least one teacher who could make even the most tedious subjects fun and exciting. For Sahid Rosado Laussell, one of the best teachers she ever had was her high school math teacher. “He was a really cool guy who was in a band, had tattoos, and dyed his hair,” she says.

NEURON gaining recognition in the neuroscience
Acknowledgements

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• University of Illinois

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