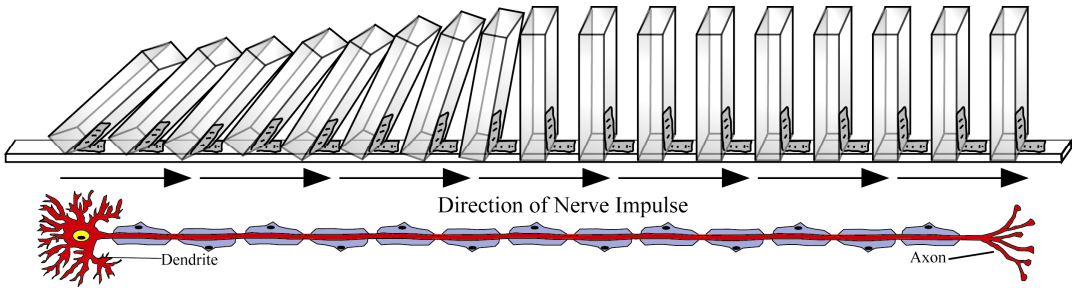
The Domino Effect

Simulate the nervous system with toppling objects



Topics: The Nervous System, Forces and Motion

Materials List

- ✓ Cassette tape cases or video tapes
- ✓ Tape
- ✓ Rulers or meter sticks

This activity can be used to teach:
CO Science Standard 2: Life Science

- The nervous system
- Differentiation of Cells

Grades: 2, 3, 5, 7, HS

raft resource area for teaching
2875 Blake Street • Denver, CO 80205

Use cassette tape cases or videotapes to create a device whose parts can topple like dominos, yet can be easily reset. This device models how nerve cells transmit signals through the body.

Assembly

1. Create a line of cassette tape cases (or similarly shaped objects) along a ruler. Place the cassette cases about half of a cassette length apart.
2. Use hinges made of tape to attach the cases to the ruler (see diagram above).
3. Reinforce the hinges by wrapping pieces of tape at the base of the taped hinge and around the ruler.

To Do and Notice

1. Place the cassette tape/ruler assembly on a table or desk with the cases placed upright.
2. Push the first cassette tape with your hand. What happens?
3. Can you discover an easy way to reset the series of cassette tapes so they can be knocked over again?
4. Remove one or two cassette tapes in the middle of the ruler. Knock over the first domino. What happens?
5. Can the series of cassette tapes be made to fall in the reverse direction?

The Science Behind the Activity

This device models how signals pass from nerve cell to nerve cell in the human nervous system. Once a nerve cell has received a stimulus above a minimal threshold, a signal passes in that cell from dendrite to axon and then triggers the next neuron in a series of neurons. Once a nerve has fired, there is a short refractory or waiting period before that nerve can fire again. During this resting state, nerves consume energy and perform certain staging chemical reactions so that they are able to fire again.

Web Resources (Visit www.raft.net/more for how-to videos and more ideas!)
A more detailed explanation of this activity is online at:
http://www.exploratorium.edu/ti/human_body/dominoeffect.html
Also, check out "Neuroscience for Kids", by the University of Washington, at:
http://faculty.washington.edu/chudler/neurok.html

Written by Coral Clark (RAFT), Illustrated by Jay Gluckman (RAFT)

Adapted with permission from Human Body Explorations (c) Exploratorium www.exploratorium.edu