

Neuroscience 430  
Model Outline  
“Sweet Potential”

Purpose: To demonstrate the process of an action potential through ion channels on a cell membrane.

Materials: - clear plastic containers with lids  
candy representing ions (milk duds and tiny tarts)  
two, one liter pop bottles for large display of intra and extra cellular matrices  
Display Board  
Paper  
Scissors  
Glue and tape  
Markers  
Students

Procedure: 1) Construct the cell membrane cups:

- Poke small holes in lid (cell membrane)
- Glue lid to other container (look at drawing for complete explanation)

2) Make Display Board

- a. Title
- b. Explain cell membranes
- c. Explain action potentials
- d. Explain action potentials on cell membranes

3) Demonstration to students:

- a. Explain cell membranes using large two liter bottle display.
  - Explain how action potentials occur
  - Hands-on demonstration

-Students line up in a line each with a cell membrane container. A stimulus (touch a student on the end) initiates the action potential and the student turns over the container (This represents the ion channels depolarizing). Once the candy (Na) passes through the holes (channels) the student can touch the next student and continue the action potentials. A buzzer or bell will be at the end to symbolize the end.

the stimulus= touching the student

flip of container= depolarizing of cells

axon touching another neuron= student touching next student in line

Final reaction to the stimulus=Students will have the opportunity to decide their own reaction to the stimulus. They can be creative: jump, shout...etc.

We are going to time the students and compare their time to the time of an actual action potential. This will help them understand and realize how fast an action potential occurs.

- Hopefully there will be enough candy to let the students eat after the demonstration.

Needs: Nothing will be needed besides a table and students.