

SCIENCE EXPERIMENT

HOMESCHOOL LAB SHEET

Name: _____

Date: _____

Grade: _____

Making a Model of the Synaptic Junction Between Neurons

In this activity, you will build a model of a synapse—the junction where one neuron communicates with another. This will help you visualize how signals are sent across the tiny gap between neurons.

QUESTION

How does the structure of a synapse allow signals to pass from one neuron to another?

HYPOTHESIS

Before building your model, write an explanation (or prediction) for how a synapse works.

MATERIALS

- 2 foam halves or foam balls (different sizes)
- Modeling clay or play dough
- Small beads or tiny pom-poms
- Small zip-top bag or plastic wrap
- Toothpicks or small labels (paper flags)
- Markers
- Scissors (if needed)
- Glue (optional)

PROCEDURE

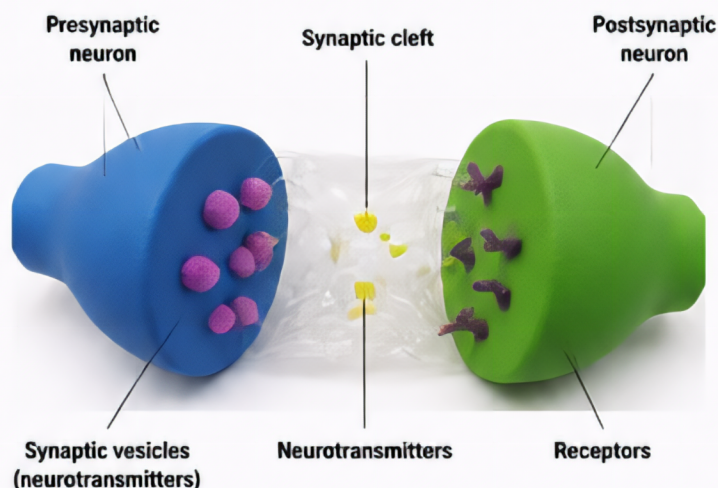
1. **Build the Presynaptic Neuron:** Use one foam half or ball as the presynaptic neuron (the sending neuron). Add small beads or pom-poms inside or on the edge to represent synaptic vesicles containing neurotransmitters.
2. **Create the Synaptic Cleft:** Use a small zip-top bag or plastic wrap to represent the tiny gap between neurons. Place it between the two foam pieces.
3. **Build the Postsynaptic Neuron:** Use the other foam half or ball as the postsynaptic neuron (the receiving neuron). Add small pieces of clay or paper labels on the surface to represent receptors.
4. **Add Neurotransmitters:** Place some beads or pom-poms in the gap (on the plastic) to represent neurotransmitters crossing the synaptic cleft and binding to receptors.
5. **Label Your Model:** Use labels to identify each part of the synapse.
6. **Review Your Model:** Check that your model includes all the parts listed above.

THINK FURTHER!

What might happen if neurotransmitters were not released properly or if receptors were not working? How could that affect the communication between neurons?

YOUR MODEL SHOULD SHOW:

- The presynaptic neuron (sending neuron)
- The synaptic vesicles (with neurotransmitters)
- The synaptic cleft (the gap)
- The postsynaptic neuron (receiving neuron)
- Receptors on the postsynaptic side



OBSERVATIONS

Describe your model. What does each part represent?
How do the parts work together?

CONCLUSION

Explain how your model shows how a synapse works.
What happens when a signal travels from one neuron to another?
