

## Activity 2: How Neurons Communicate

You were introduced in the previous activity to the basic structure of **neurons** and **synapses**. In this activity we will explore how neurons communicate with each other to send messages in the brain.

**Neurons** are a cell type in the brain that are capable of sending messages to each other. They achieve this by communicating across synapses. An electrical signal called an **action potential**, travels along axons to the dendrites, where it is converted to a chemical signal to travel across the synapse, before causing an action potential in the next neuron in the chain.

**Synapses** (Figure 1) are the small gaps between neurons where neurotransmitters travel across. There are trillions of synapses in the human brain!

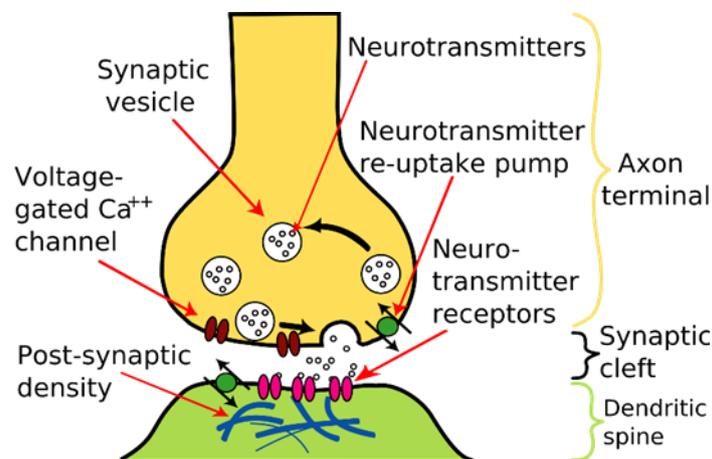


Figure 1: The structure of

a synapse

Communication between neurons is via the following parts of the synapse:

- The presynaptic neuron
- The synaptic cleft
- The postsynaptic neuron

Vesicles containing neurotransmitters arrive at the axon terminal and fuse with the membrane, releasing their load into the synaptic cleft. This travels across to the dendritic spine of the postsynaptic neuron where it acts through receptors to produce an action potential, passing the message on to the next neuron.

**Neurotransmitters** are chemicals that are released from the dendrites into the synapse and act on other neurons across the synapse. There are over a hundred known neurotransmitters in the human brain.

Neurotransmitters are:

- Chemical messengers (amines, amino acids or neuropeptides)
- Excitatory, inhibitory or modulatory

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### Task

1. Watch this brief video: [How Neurons Communicate](#)
2. Read this webpage about synapses: [The Synapse](#)
3. Refer to this web page about neurotransmitters: [What are neurotransmitters?](#)
4. Draw a flow diagram to show how an electrical signal is passed from one neuron to another
5. What do you think the difference is between excitatory and inhibitory neurotransmitters?
6. Choose two neurotransmitters and find out a bit more about how they work. Think about the following when writing your answers:
  - Is it an excitatory or inhibitory neurotransmitter?
  - What bodily functions is it involved with?
  - Are there any disorders associated with this neurotransmitter?

### Explore More...

If you want to expand your knowledge about how neurons communicate using action potentials, take a look at this web page and watch the video at the end: [Action Potentials and Synapses](#)