

# Difference Between Ganglion and Synapse

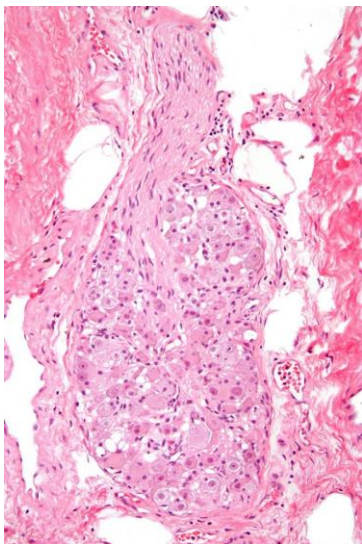
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## Key Difference - Ganglion vs Synapse

[Peripheral nervous system](#) is one component of the nervous system of [vertebrates](#). It consists of nerve cells and [ganglia](#). Peripheral nervous system connects central nervous system ([brain](#) and [spinal cord](#)) to the rest of the body (organs and limbs) for signal transmission and coordination of all body functions. There are two main nerve systems coming under peripheral nervous system. They are [somatic nervous system](#) and [autonomic nervous system](#). Autonomic nervous system is divided into two main systems; [sympathetic nervous system](#) and [parasympathetic nervous system](#). In order to transmit nerve impulses, neurons should work together in the autonomic nervous system. A ganglion is a cluster of neuron cell bodies that house millions of [synapses](#). Synapse is the junction where two neuron cells come closer to propagate nerve impulse. Synapse is located in the ganglion. The **key difference** between ganglion and synapse is **ganglion houses millions of synapses while synapse is a small junction where two neurons come closer during the signal transmission.**

## What is Ganglion?

A ganglion is a collection of cell bodies in the peripheral nervous system. There are millions of synapses located in a ganglion. Ganglia are appeared in the body based on their function and which division of the autonomic system. Ganglia are connected with each other and form a complex of ganglia known as plexus. Ganglia provide relay points and intermediary connections between neurons of the nervous system.

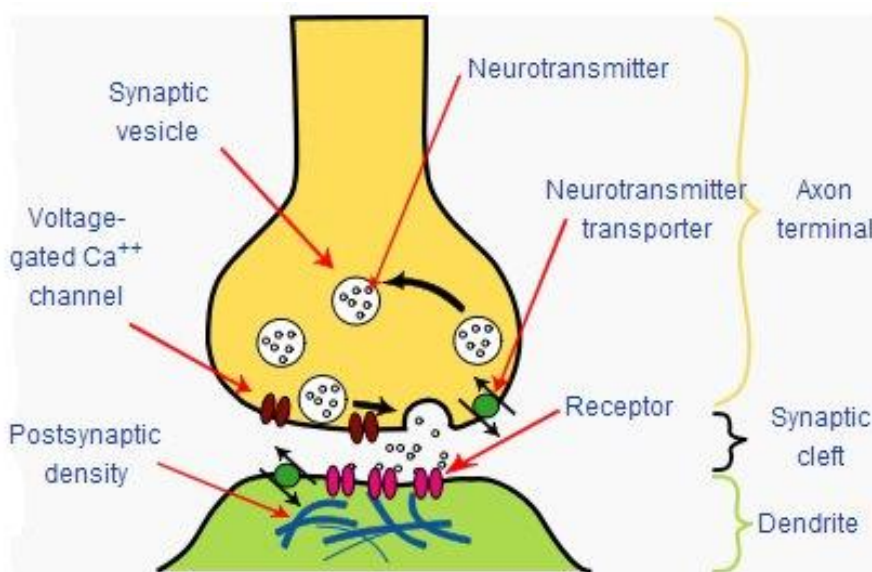


**Figure 01: Ganglion**

There are two types of ganglia; sympathetic ganglia and parasympathetic ganglia. Sympathetic ganglia are found closer to the spinal cord. Parasympathetic ganglia are found near or even inside the effector organs. Ganglia is surrounded by a connective tissue capsule. Ganglia are oval-shaped structures that are composed of cell bodies such as, neuron cells, glial cells and [connective tissue](#). There are three types of vertebrate ganglia. They are Cranial nerve ganglia, Dorsal root ganglia and Autonomic ganglia. There is a ganglion called pseudoganglion. It doesn't contain nerve cells. It has only nerve fibres.

## What is Synapse?

[Neurons](#) or nerve cells are not physically connected. There is a gap between orderly arranged neurons. Synapse is the area where two neurons come closer. When the action potential reaches the end of the first neuron (presynaptic neuron), the synapse facilitates the handover of the action potential to the adjacent neuron that is known as a postsynaptic neuron. Presynaptic membrane becomes positively charged, and it releases [neurotransmitters](#) into the [synaptic cleft](#).



**Figure 02: Synapse**

Neurotransmitters are the chemical messengers of the nervous system. They are stored in the vesicles of the presynaptic. They diffuse through the synaptic cleft and bind with the receptors located on the surface of the postsynaptic membrane. Likewise, the action potential propagates through neurons until it receives by the target organ. The synapse is located in the ganglion.

## What are the Similarities Between Ganglion and Synapse?

- Ganglion and synapse are two structures of the nervous
- Both are involved in nerve impulse transmission.
- Both are connected to neurons.

## What is Difference Between Ganglion and Synapse?

Ganglion vs Synapse	
A ganglion is a cluster of neuron bodies that compose of millions of synapses.	Synapse is the junction of two neurons where they come closer.
Function	
Ganglion houses millions of synapses.	Synapse facilitates the nerve impulse transmission between the gaps of the neurons.
Composed Of,	
Ganglion is composed of cell bodies of nerve cells, connective tissue and glial cells	Synapse is composed of a presynaptic membrane, neurotransmitters, receptors and postsynaptic membrane.
Structure	
Ganglion contains millions of synapses.	Synapse is a junction where two neurons meet.

### Summary - Ganglion vs Synapse

Neurons are the cells of the nervous system. They are not physically connected with each other. Neurons are connected by chemical synapses. Synapse is the connection region between two neurons which propagates the action potential. Synapse facilitates the signal transmission from the axon of a presynaptic neuron to dendrites of the postsynaptic neuron or the target neuron. It occurs via chemical messengers called neurotransmitters. The collection of neuron bodies is known as a ganglion. Ganglion contains millions of synapses. There are two types of ganglia; sympathetic and parasympathetic ganglia. Sympathetic ganglia are located near to spinal cord while parasympathetic ganglia are located closer to effector organs. This is the difference between ganglion and synapse.

#### Reference:

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- 2.“Ganglion.” Wikipedia, Wikimedia Foundation, 24 Jan. 2018. [Available here](#)
- 3.“What are ganglia in the nervous system? | Socratic.” [Available here](#)

### **Image Courtesy:**

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### **How to Cite this Article?**

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