Difference Between Nerves and Blood Vessels

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Key Difference - Nerves vs Blood Vessels

The nervous system and the circulatory system are two vital organ systems in our body. The nervous system is responsible for transmission of electrochemical signals or the nerve impulses while the circulatory system is responsible for the transportation of blood mixed with oxygen, carbon dioxide, nutrients, hormones and wastes throughout the body. Nerves or the neurons are the basic functional units of the nervous system. Nerves are specialized cells which receive, processes and transmit information from the body to brain and back to the body. Blood vessels are one component among the three main components of the circulatory system. Blood vessels deliver blood to and from the heart to and from the rest of the body. Blood vessels make a network of closed tubes to carry blood within the body. There are three main types of blood vessels namely, arteries, capillaries, and veins. The **key difference** between nerves and blood vessels is that, **nerves transmit electrochemical signals whereas blood vessels transport blood throughout the body.**

What are Nerves?

A neuron is the basic functional unit of our nervous system which carries nerve impulses. Neurons are specialized nerve cells which receive, processes and transmit information from the body to brain and back to the body. There are 10 to 100 billion neurons in our nervous system. Neurons do not regenerate. Approximately 10000 neurons die daily from our body. The nerve is composed of three main components; cell body, dendrites, and axon. Dendrites receive messages from other neurons and pass via cell body to axons. Axons convert an electrical signal into chemical signal and transmit into the next neuron through the synapse using chemical messengers called neurotransmitters. Dendrites of the subsequent neuron convert chemical signal again into an electrical signal and pass along its axon to terminal buttons. Likewise, information are transmitted through neurons throughout the body into target organs, glands, muscles and into other neurons.

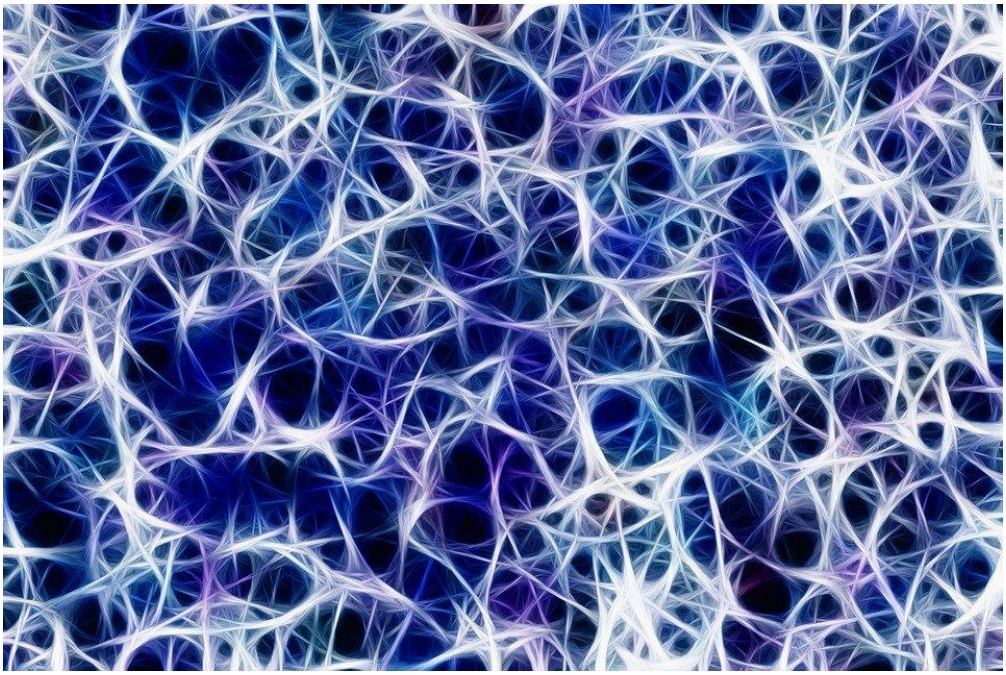

Figure 01: Nerves

There are three types of nerves; sensory nerves, relay nerves and motor nerves. Sensory nerves carry electrochemical signals from sensory organs to the central nervous system. Relay nerves carry signals from one part of the central nervous system to another part of it. Motor nerves carry signals from central nervous system to effector organs. Most of the nerves are supported by Schwann cells. Schwann cells increase the efficiency of the nerve pulse transmission along the nerve cells by producing a fatty substance called myelin and wrapping around the axons.

What are Blood Vessels?

The circulatory system is one of our main organ systems which transport blood, gases, hormones, nutrients throughout the body. Heart, blood, and blood vessels are the main elements of the human cardiovascular system, and it is a closed system in which blood circulates only within the network of tubes which are called blood vessels. Blood vessels carry blood to and from the heart and eventually to all parts of the body. Blood vessels are of three major types; Arteries, Capillaries, and Veins. Arteries carry oxygenated blood from the heart to all the other tissues of the body. Capillaries are the tiny blood vessels which facilitate the exchange of oxygen, nutrients, and wastes between the blood and the tissues. Veins carry oxygen-depleted blood from the body tissues to the heart.

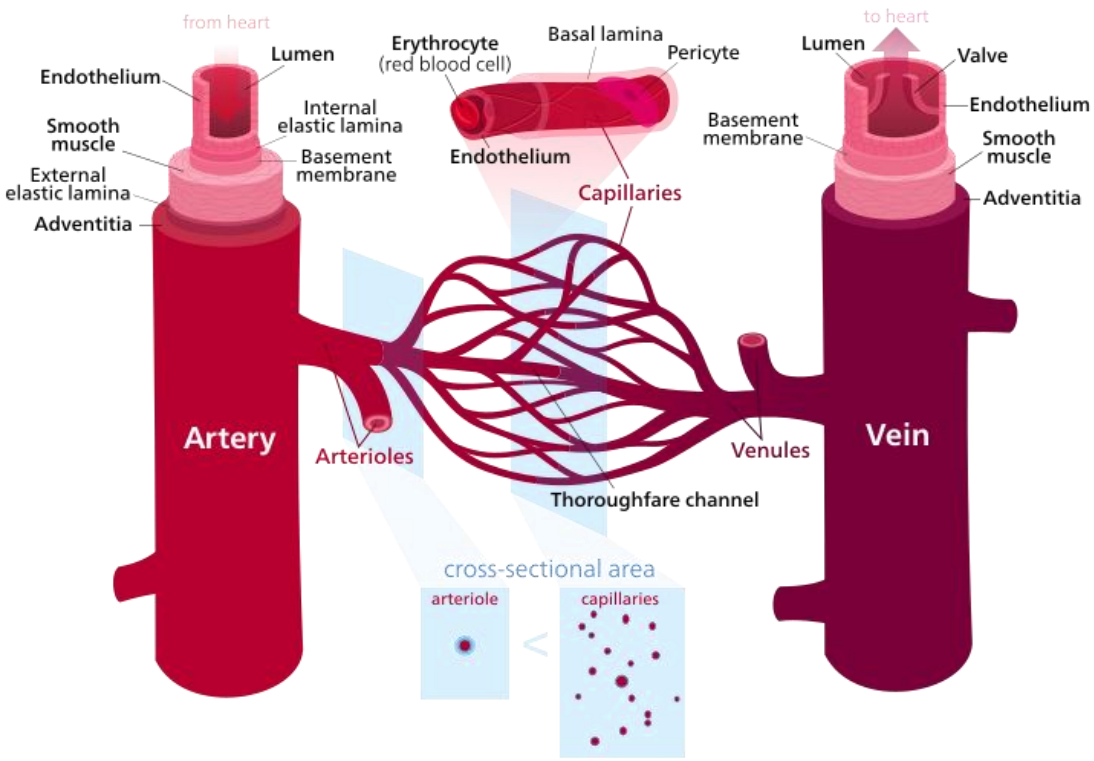

Figure 02: Blood Vessels

Arteries and veins are composed of three cell layers called tunica intima, tunica media and tunica adventitia. Walls of the arteries are thicker than the walls of veins due to the high blood pressure that exists in arteries. Veins have a larger diameter than the arteries.

What are the Similarities Between Nerves and Blood Vessels?

- Both blood vessels and nerves are long and thin.
- Both perform a transport function.
- Both are vital channels in the body.
- Both nerves and blood vessels are located throughout the body.
- Nerves and blood vessels travel together in almost all tissues in the body.
- Both are highly branched structures.

What is the Difference Between Nerves and Blood Vessels?

Nerves vs Blood Vessels	
Nerves are specialized cells that carry information as electrical signals throughout the	Blood vessels are the tube-like structures of the circulatory system which transports

body and are the basic functional units of the nervous system.	oxygenated and deoxygenated blood from and to heart.
Structure	
Nerves are single cells composed of dendrites, cell body, and axons	Blood vessels are tube-like structures composed of many small cell layers.
Types	
Nerves are main three types; sensory nerves, relay nerves, and motor nerves.	Blood vessels are three types; arteries, capillaries or veins
Function	
Nerves move electrochemical signals throughout the body.	Blood vessels move blood throughout the body.
Main Organ System	
Nerves are the basic functional units of the nervous system.	Blood vessels are elements of circulatory or the cardiovascular system.
Connection with Body Organs	
Nerves are connected to the brain and the spinal cord.	Blood vessels are connected with the heart.
Closed or Open	
Nerves are not closed or touch with each other.	Blood vessels make a closed system.

Summary - Nerves vs Blood Vessels

Nerves or neurons are specialized cells which transmit signals throughout the body. They are the basic functional units of the nervous system. Blood vessels are the valves which deliver blood throughout the body. Blood vessels and nerves run together in all the tissues in our body. Nerves deliver electrochemical signals while blood vessels deliver blood mixed with nutrients, hormones, gasses, and wastes. This is the difference between nerves and blood vessels.

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