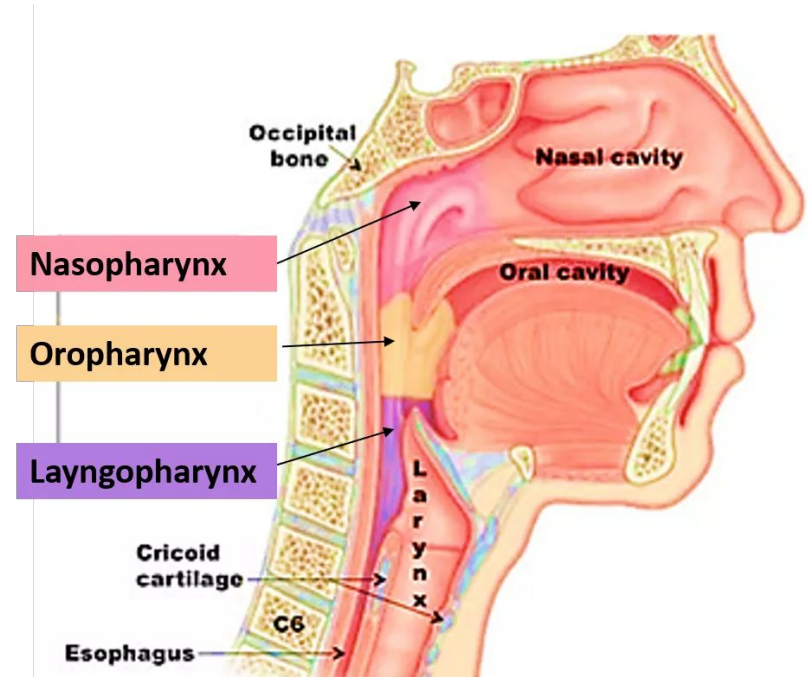


The Pharynx

The pharynx is the body cavity that connects the nasal and oral cavities with the larynx and esophagus. It is commonly referred to as the throat.

The pharynx is part of both the digestive and respiratory systems. As part of the respiratory system, it allows for the movement of air from the nose and mouth to the larynx in the process of breathing.



The Larynx

The voice box, or larynx, is the portion of the respiratory (breathing) tract containing the vocal cords which produce sound. It is located between the pharynx and the trachea.

Air passing through the larynx causes the vocal cords to vibrate, producing sound. With the help of your mouth, teeth, tongue, and lips, that sound becomes your voice.



What happens to your body when you freeze to death?



Review!

- a) What are the responsibilities of the respiratory system?

- b) What happens to your body when you inhale?

- c) What is commonly referred to as the throat?

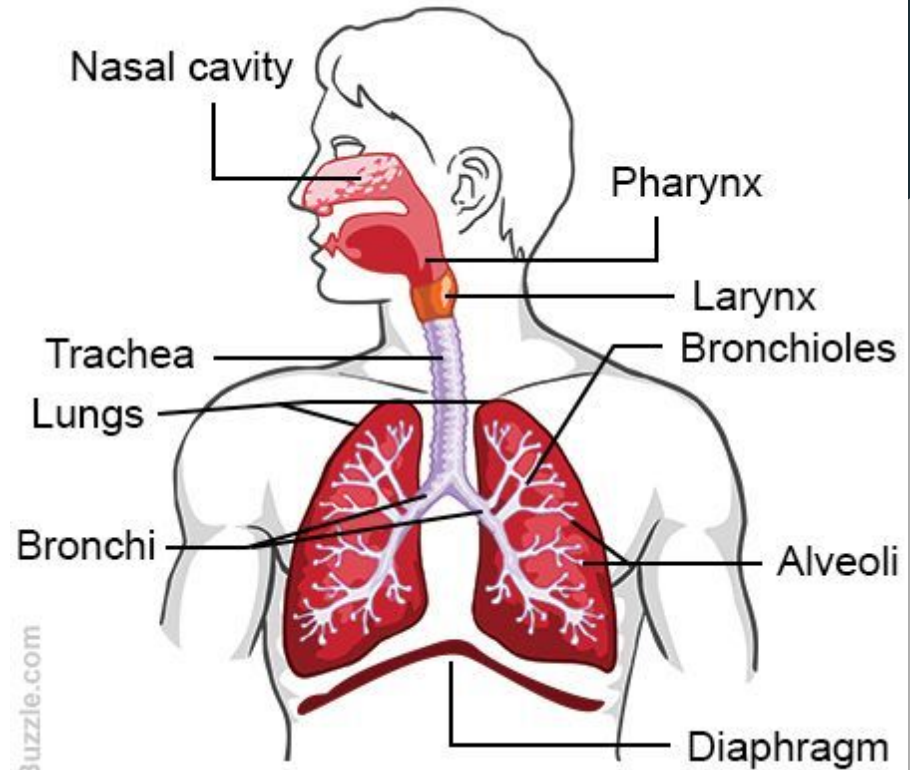


The Trachea

The trachea, commonly known as the windpipe, is a tube about 4 inches long and less than an inch in diameter in most people.

The trachea begins just under the larynx and runs down behind the sternum.

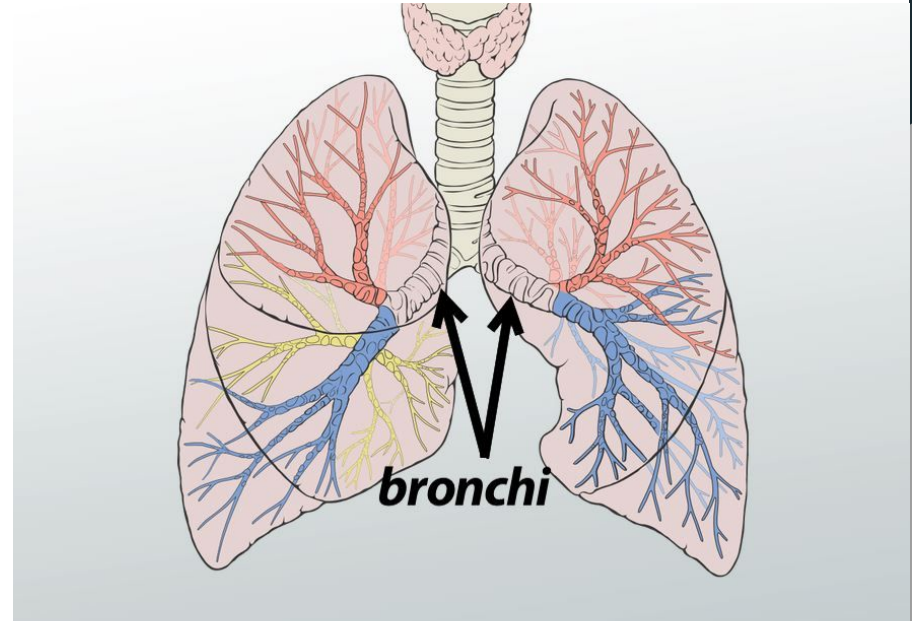
The trachea then divides into two smaller tubes called bronchi; one bronchus for each lung.



Bronchi

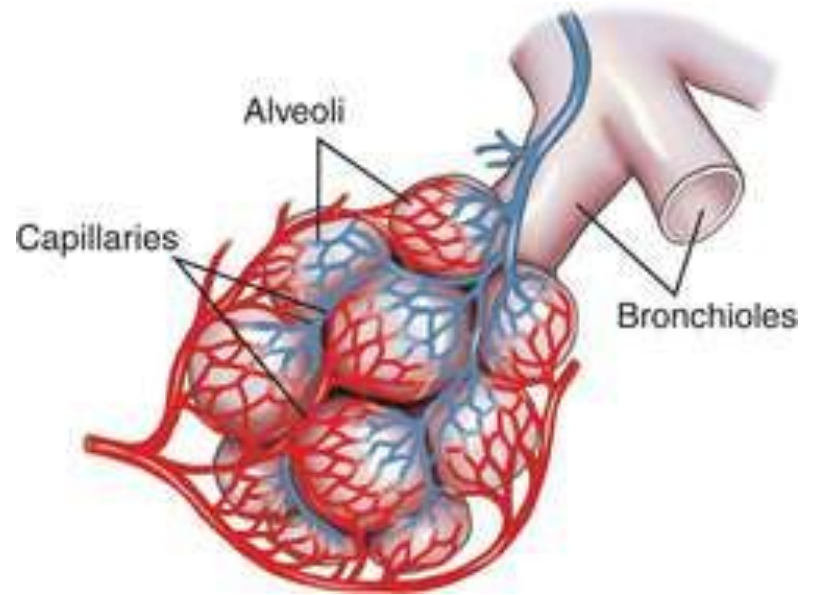
Bronchi are the main passageway into the lungs. Bronchi are tubes lined with tough connective tissue to maintain a rigid shape.

The bronchi become smaller the closer they get to the lung tissue and are then considered bronchioles.



Bronchioles

Bronchioles are tubes that connect the bronchi to the air sacs in the lungs called alveoli.



The Alveoli

Alveoli are an important part of the respiratory system whose function it is to exchange oxygen and carbon dioxide molecules to and from the bloodstream.

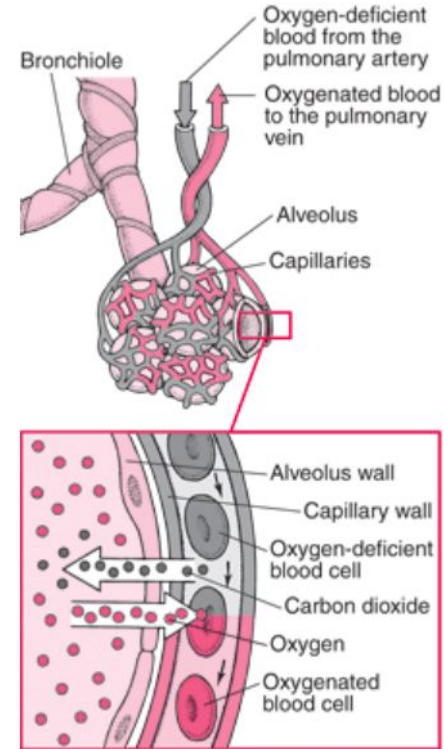
These tiny, balloon-shaped air sacs sit at the very end of the respiratory tree and are arranged in clusters throughout the lungs.



The Gas Exchange Process

The function of the respiratory system is to exchange two gases, oxygen and carbon dioxide.

The exchange takes place in the millions of alveoli in the lungs and the capillaries that envelop them. Through diffusion inhaled oxygen moves from the alveoli to the blood in the capillaries, and carbon dioxide moves from the blood in the capillaries to the air in the alveoli.

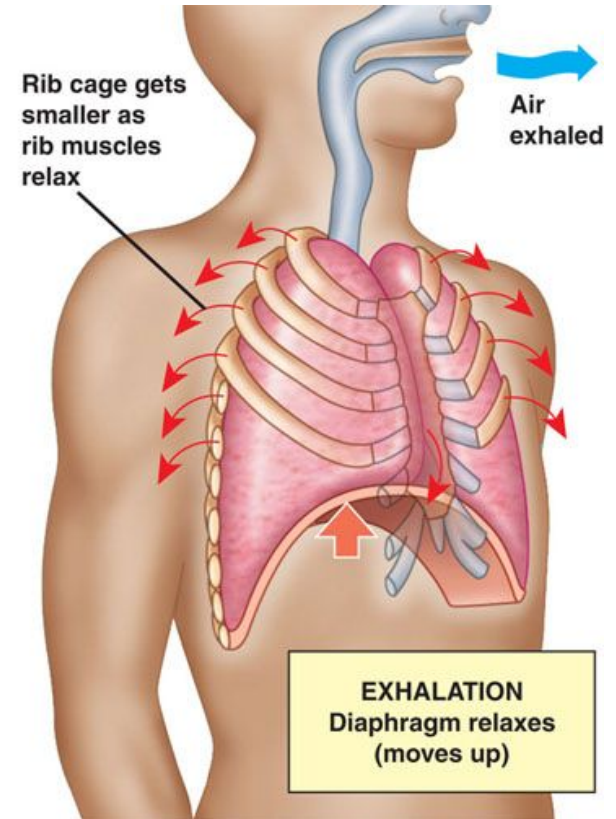


Exhalation

Exhalation is the act of breathing out. During exhalation, rib and diaphragm muscles relax.

The ribs move downwards, and the diaphragm moves upwards.

The chest and lung size is decreased forcing air out of the lungs.



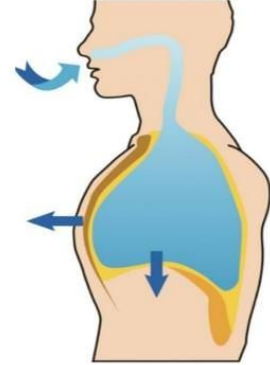
What if you only ate meat?



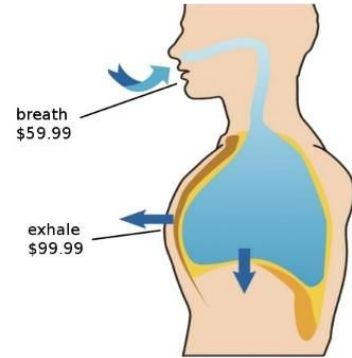
Review!

- What is the pathway of air through the respiratory system?
- What happens to your body during inhalation?
- Through what process do gases exchange in the lungs?

Breathing



BrEAthing

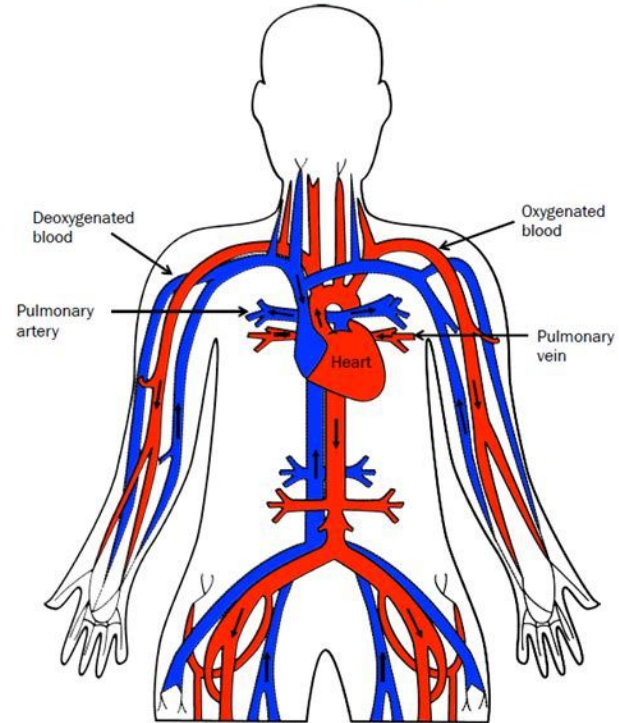


The Circulatory System

Centered with the heart, the circulatory system performs 3 key transportation functions:

- 1) Delivers the nutrients absorbed by your digestive system to each cell in your body.
- 2) Transports oxygen to your cells.
- 3) Removes waste products away from the cells.

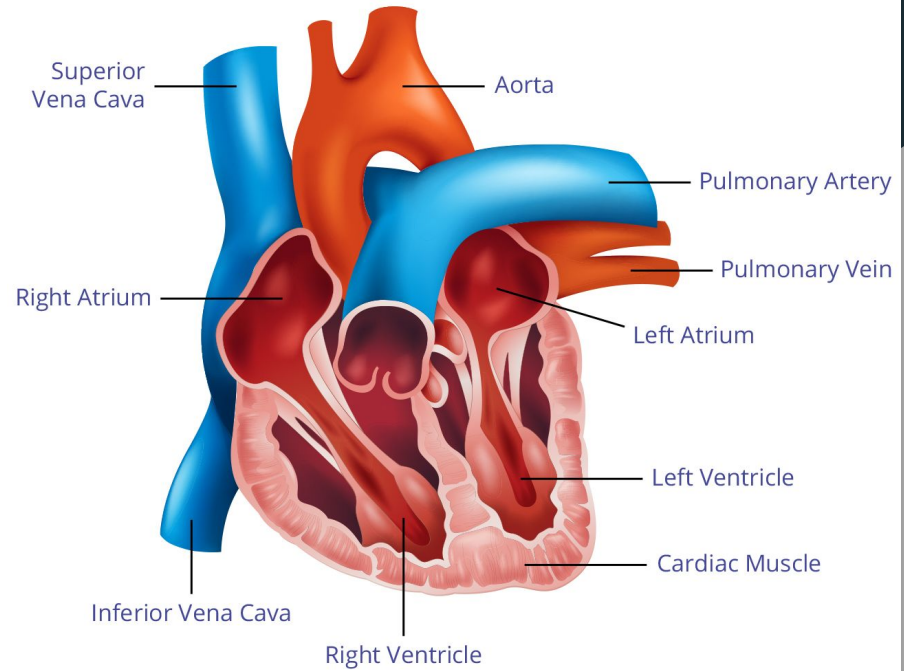
Circulatory System



The Heart

The heart is a double pump, or rather two pumps working together.

The right side of the heart pumps blood to your lungs, while the left side of the heart receives the oxygen rich blood from your lungs and pumps it to your body.

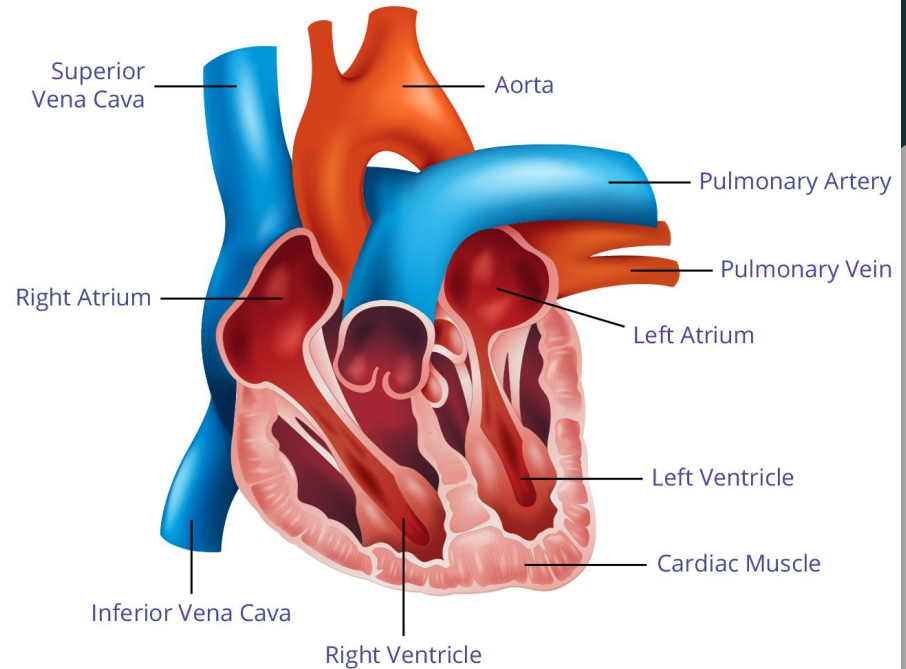


The Heart

Each side of the heart is divided into 2 chambers;

The **atria** are the upper chambers of the heart that receives the blood from the body and lungs.

The **ventricles** are the lower chambers of the heart that pump blood to the body.

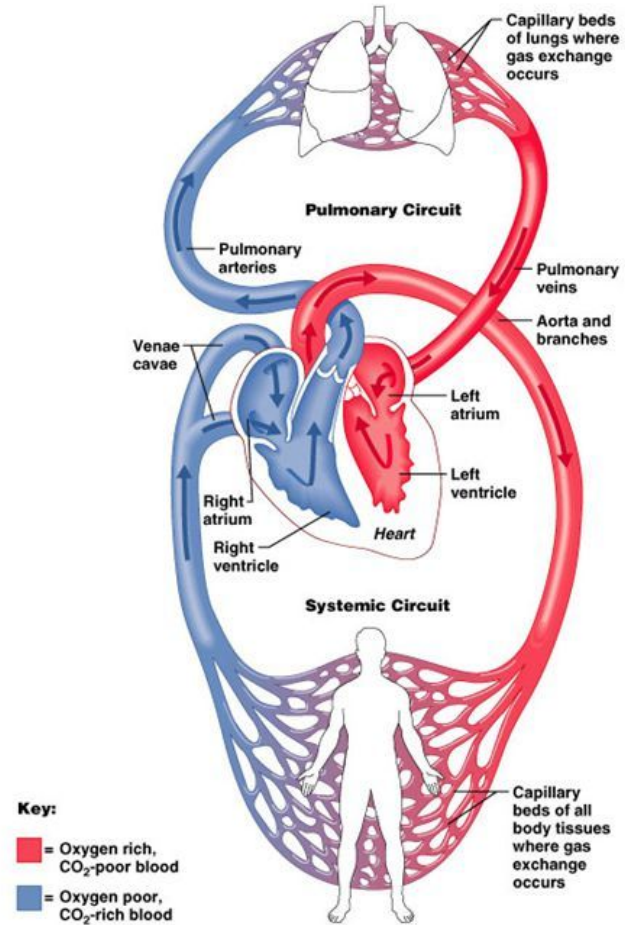


The Heart

The circulatory system works in a very systematic way.

The right side receives oxygen poor blood from the body and tissues and then pumps it to the lungs for reoxygenation.

While the left side receives oxygenated blood and pumps this blood throughout the body.

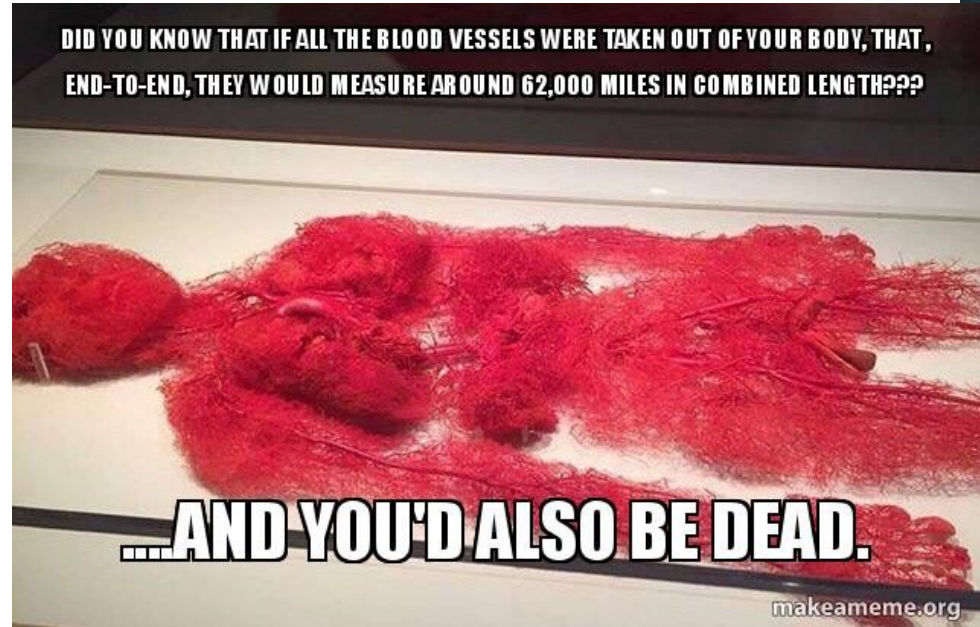


Blood Vessels

The blood vessels are the part of the circulatory system, that transport blood throughout the human body.

The three types of blood vessels are;

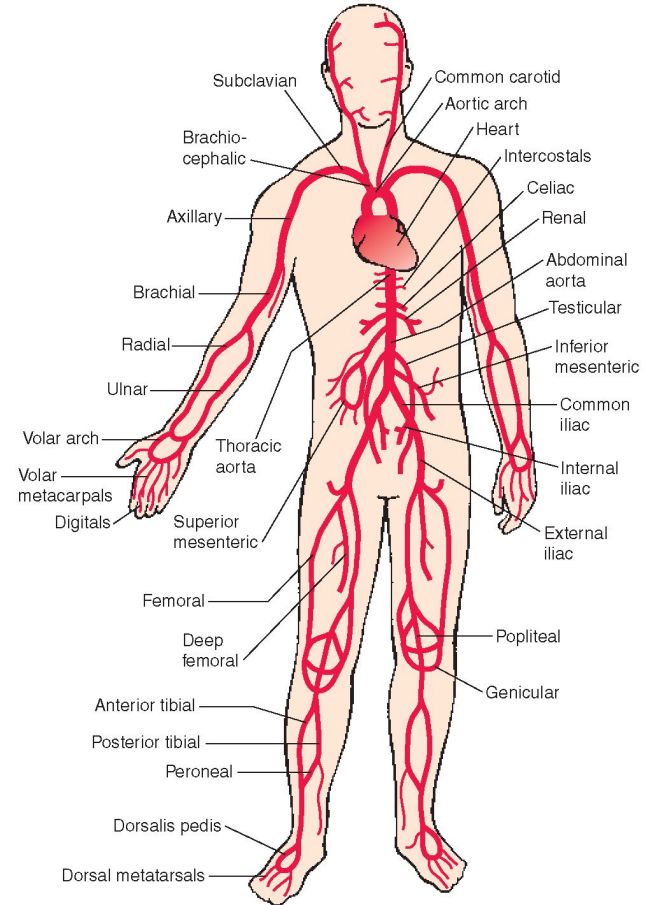
- 1) Arteries
- 2) Capillaries
- 3) Veins



Arteries

The arteries are the blood vessels that deliver oxygen-rich blood from the heart to the tissues of the body. Each artery is a muscular tube lined by smooth tissue and has three layers.

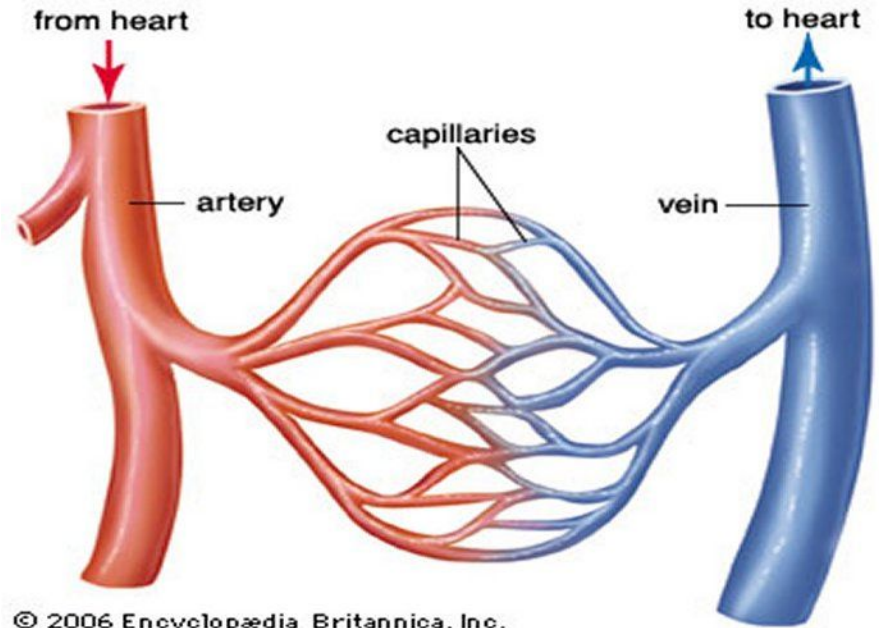
The largest artery is the aorta, the main high-pressure pipeline connected to the heart's left ventricle. The pulmonary arteries carry oxygen-poor blood from the heart to the lungs.



Capillaries

Capillaries are tiny blood vessels that connect arteries to veins; one cell layer thick and extremely narrow.

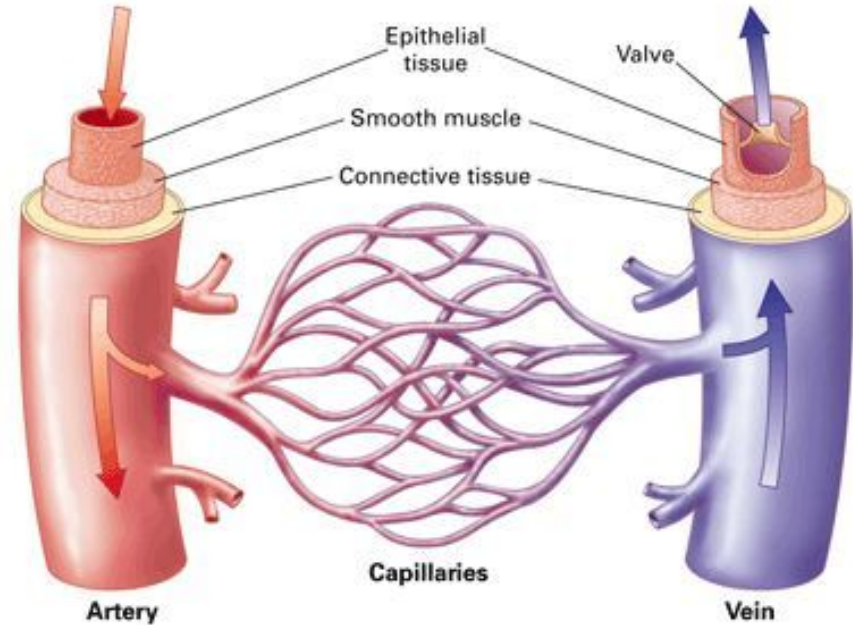
It is in the capillaries that diffusion takes place, ridding the cells of waste materials and supplying them with nutrients and oxygen.



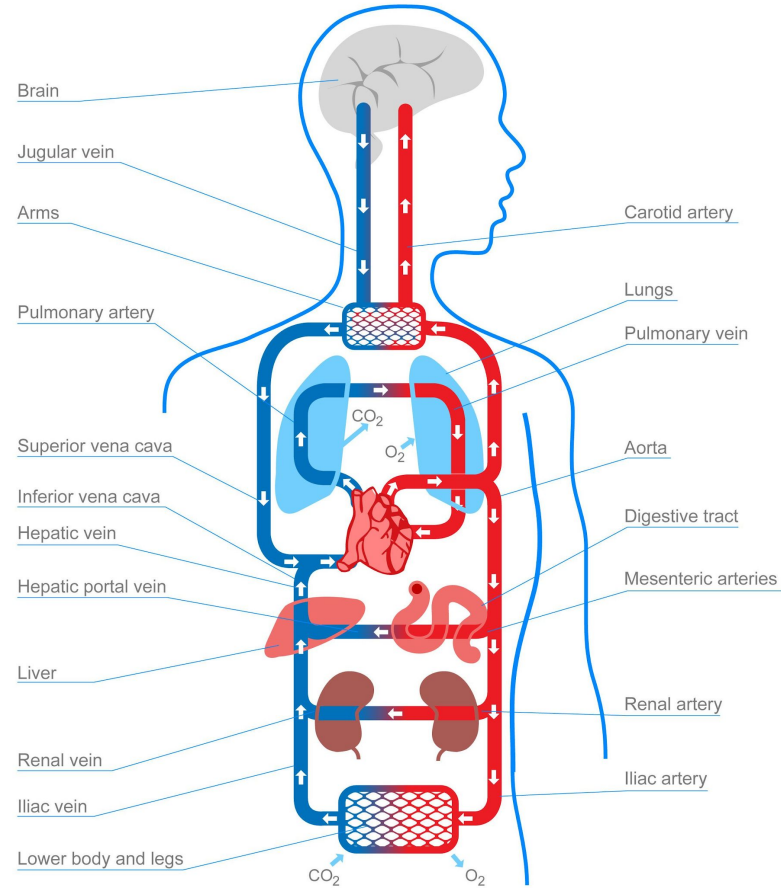
© 2006 Encyclopædia Britannica, Inc.

Veins

Veins are blood vessels that return blood from the body to the heart. Veins are thinner than arteries, and have valves that stop the blood from flowing backward.



THE CIRCULATORY SYSTEM

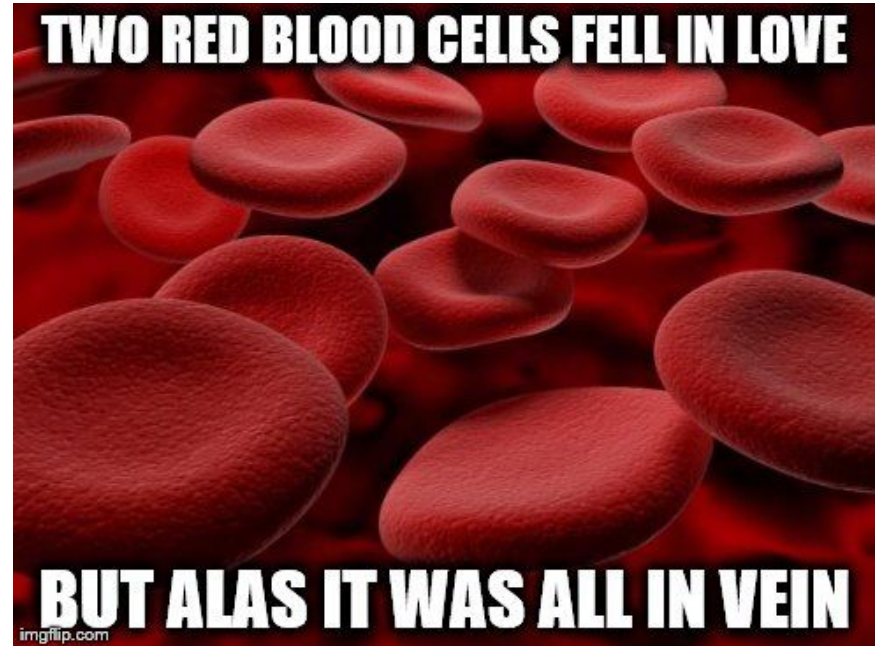


Review

- a) What is the difference between veins and arteries?

- b) What is the center of the circulatory system?

- c) What are the three jobs of the circulatory system?



Blood

Blood is the second largest example of connective tissue in your body.

Blood consists of;

- Red blood cells
- White blood cells
- Platelets
- Liquid Plasma (55% of the volume)



Red Blood Cells

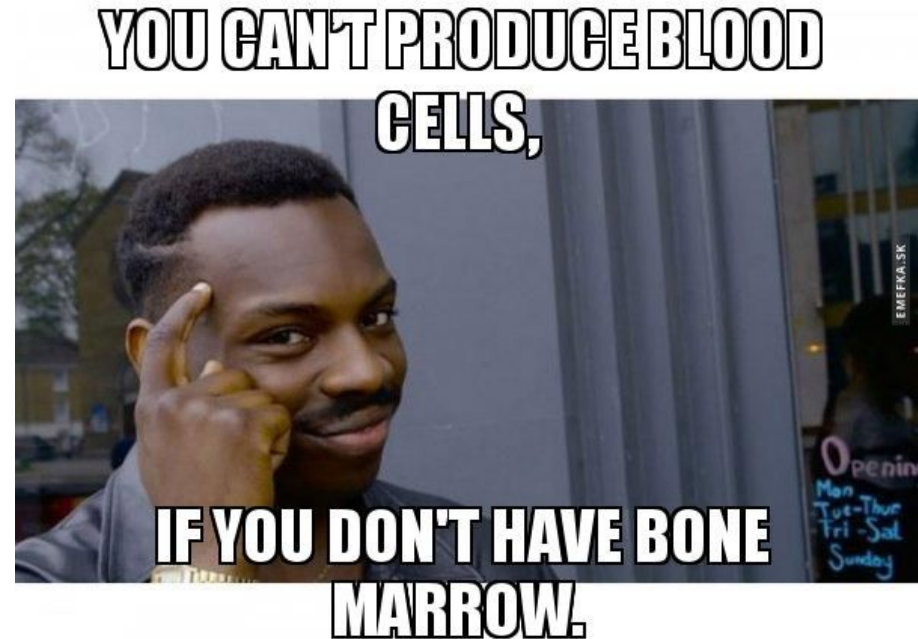
The primary function of red blood cells, is to carry oxygen from the lungs to the body tissues and carbon dioxide away from the tissues and back to the lungs.

Hemoglobin is an important protein in the red blood cells that carries oxygen from the lungs to all parts of our body.



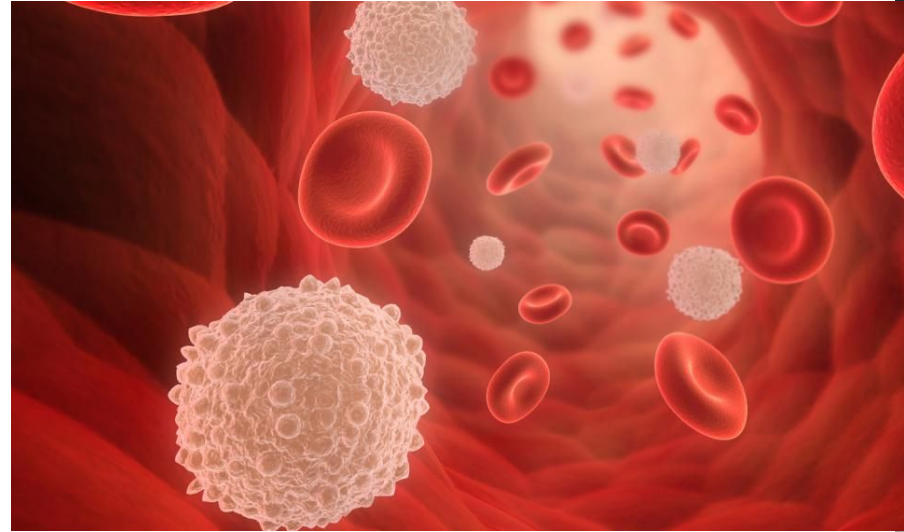
Fun Fact!

Red blood cells are made inside your bones, in the bone marrow. They typically live for about 120 days, and then they die.



White Blood Cells

White blood cells are the cells of the immune system that are involved in protecting the body against both infectious disease and foreign invaders.



Fun fact!

A high white blood cell count isn't a specific disease, but it can indicate another problem, such as infection, stress, inflammation, trauma, allergy, or certain diseases.

A low white blood cell count usually is caused by viral infections that temporarily disrupt the work of bone marrow. Cancer or other diseases that damage bone marrow.

WHITE BLOOD CELL VS. THE COMMON COLD



Platelets

Platelets are tiny blood cells that help your body form clots to stop bleeding. If one of your blood vessels gets damaged, it sends out signals that are picked up by platelets.

The platelets then rush to the site of damage and form a plug, or clot, to repair the damage.

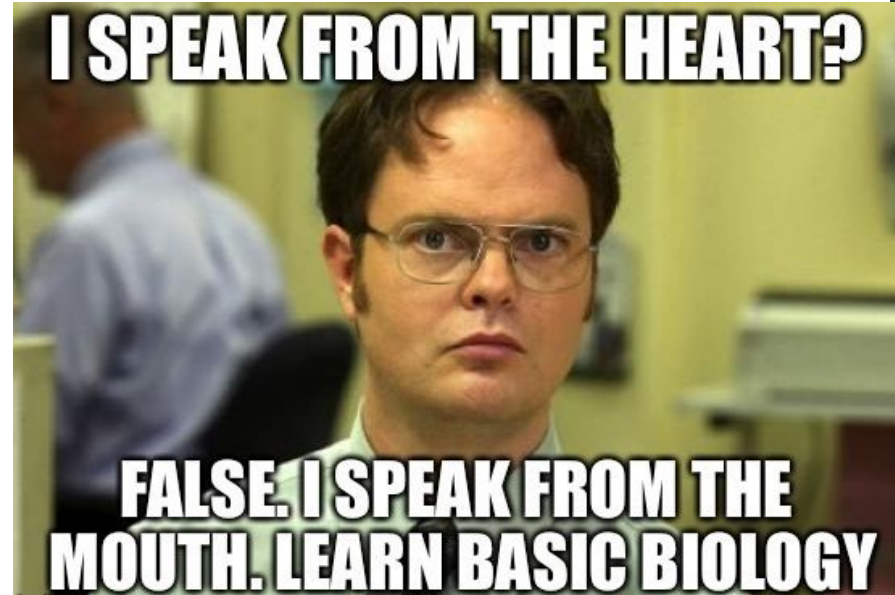


Review!

- a) What is the main role of the circulatory system?

- b) What is the waste product excreted by the respiratory system?

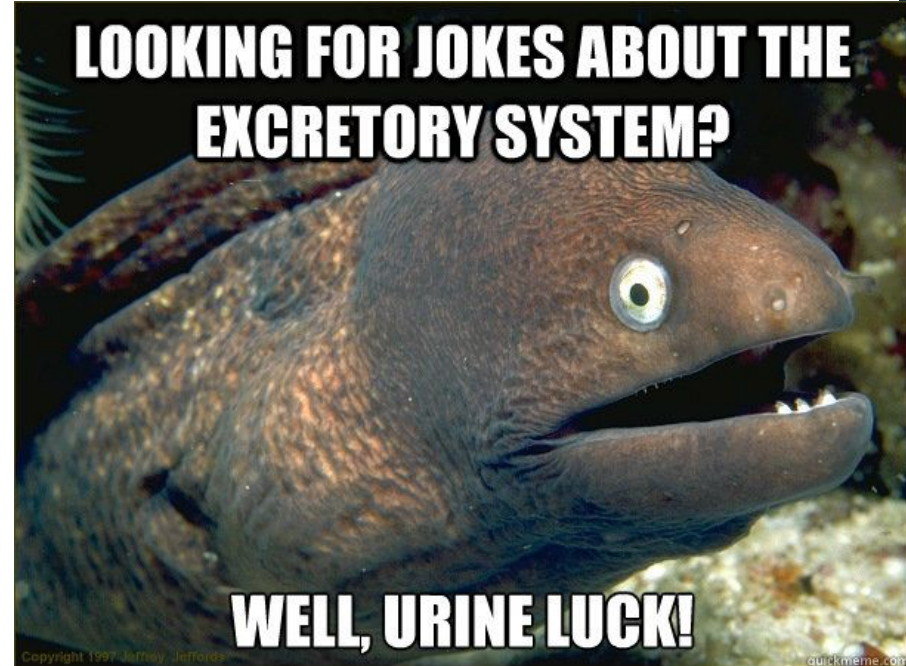
- c) What is homeostasis?



The Excretory System

The excretory system removes excess, unnecessary materials from the body fluids, to help maintain internal homeostasis and prevent damage to the body.

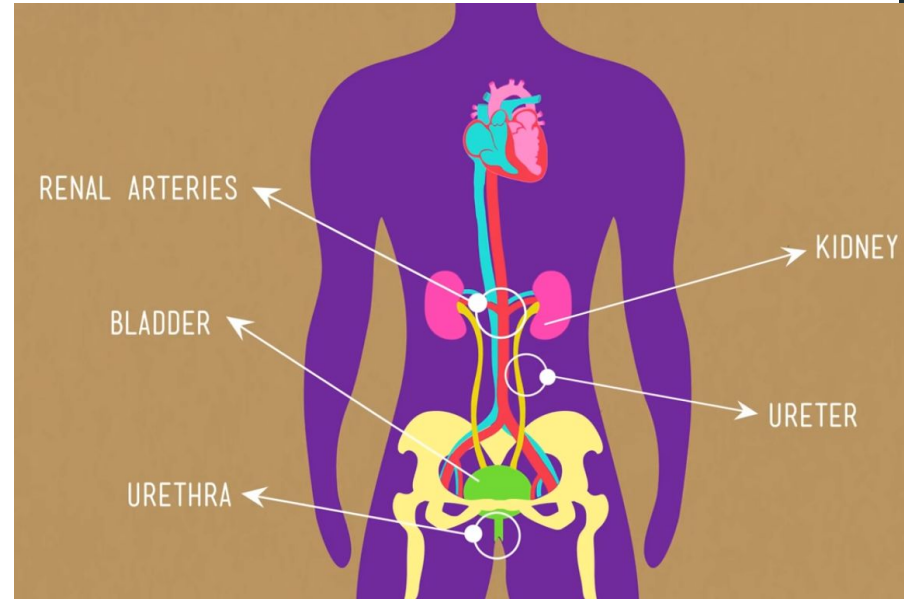
The excretory system includes the lungs, heart, liver, and the process of sweating. But we will largely focus on the urinary system.



The Urinary System

The urinary system, consists of the kidneys, ureters, bladder, and the urethra.

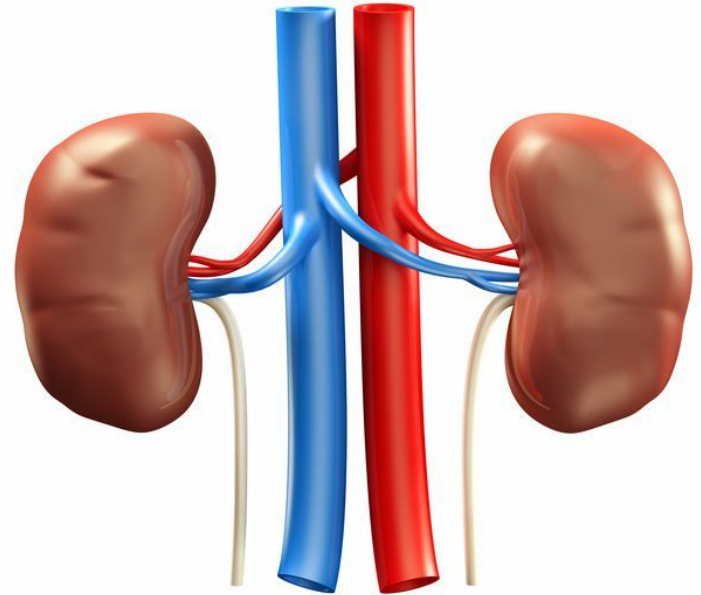
The purpose of the urinary system is to eliminate waste from the body, regulate blood volume and blood pressure, and regulate blood pH.



The Kidneys

The kidneys are bean-shaped organs which are present on each side of the abdominal cavity below the liver.

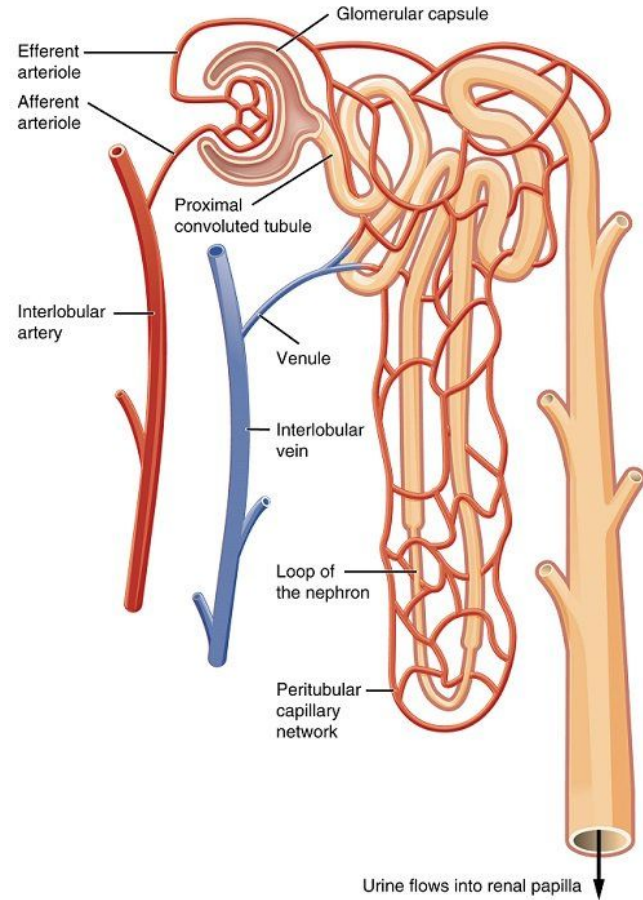
Humans have two kidneys and each kidney is supplied with blood from the renal artery. The kidneys filter blood and regulate water balance in the body.



The Kidneys

The kidneys produce a waste product called urine using special functional units called nephrons. The urine is then excreted from the body. This process takes place in three steps:

- 1) Filtration
- 2) Reabsorption
- 3) Excretion



Filtration, Reabsorption and Excretion. Oh my!

As blood enters the kidney, first blood enters a nephron, which filters out impurities.

The impurities move through tubules, while the rest of the blood is reabsorbed through capillary walls into the blood.

Urine is transported from the kidneys through the ureters and into the urinary bladder. It remains stored in the bladder until it is released through the urethra.

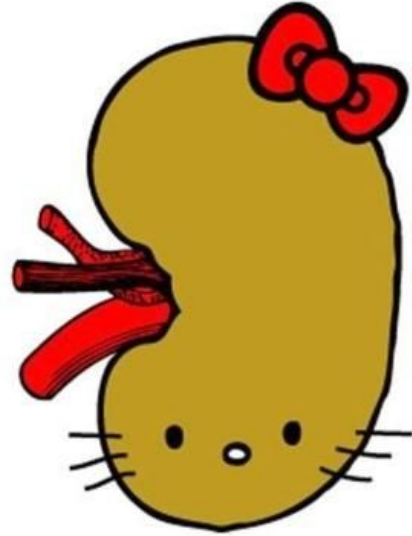


Review

- a) What is the main function of the kidneys?

- b) What is the waste product produced by the kidneys?

- c) What are the four types of tissue?

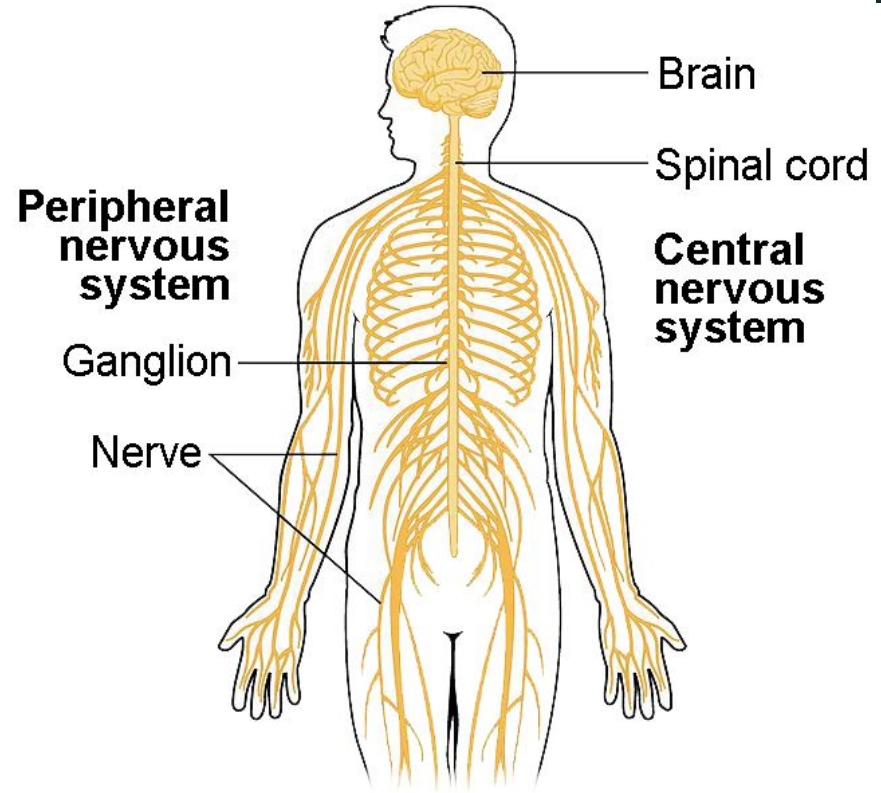


Hello Kidney

The Nervous System

The nervous system is the part of the body that coordinates its' actions by transmitting signals to and from different parts of its body.

The nervous system consists of many divisions, but two of the most important are the Central Nervous System, and the Peripheral Nervous System.

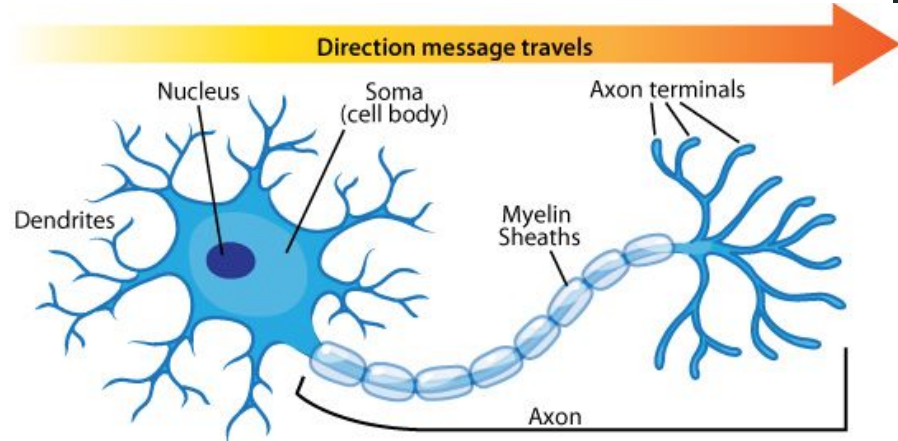


Dendrites

The nervous system is mostly made up of one type of tissue called nervous tissue.

Nervous tissue is made entirely of specialized cells called neurons.

Neurons are specialized cells of the nervous system that receive and transmit information.

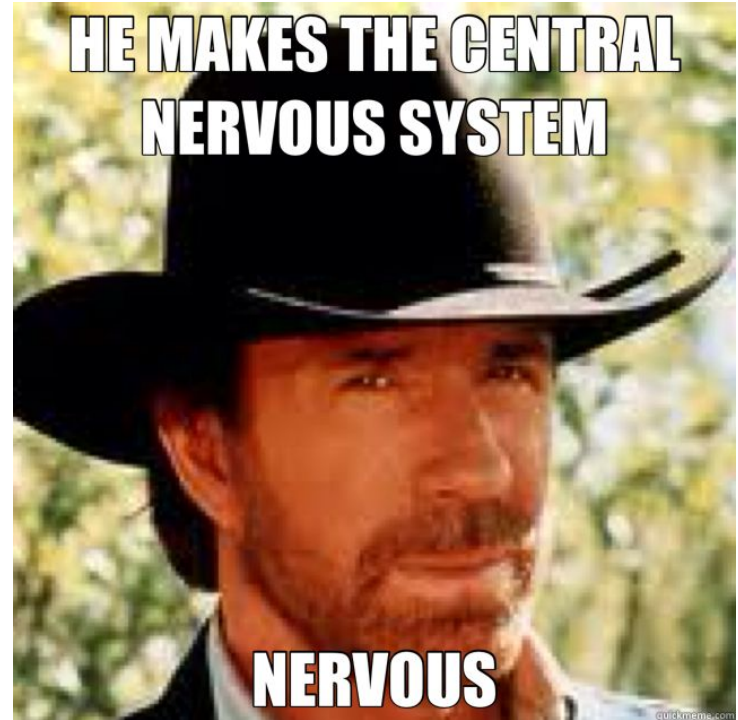


The Central Nervous System

The Central nervous system is composed of the brain and spinal cord.

The CNS relays messages, processes information and analyzes information.

The CNS requires special protection. It is protected by the skull and vertebrae surrounding the spinal cord.

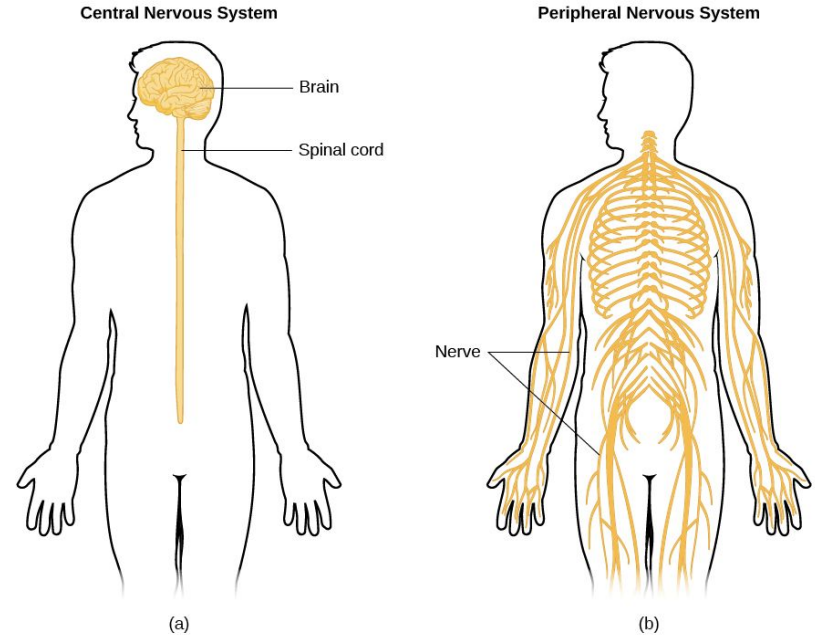


The Peripheral Nervous System

The peripheral nervous system consists of all nerves not included in the CNS.

The PNS receives information from the environment and it relays commands from the CNS to the rest of the body.

The PNS is divided into the sensory division and the motor division.



The Sensory Division

The sensory division transmits signals from the sense organs to the Central nervous system.

The sensory division includes feelings from the "special senses" of touch, smell, taste, hearing, and sight, as well pain, and body position.

WHO WOULD WIN?

The most complex sensory organ in the body



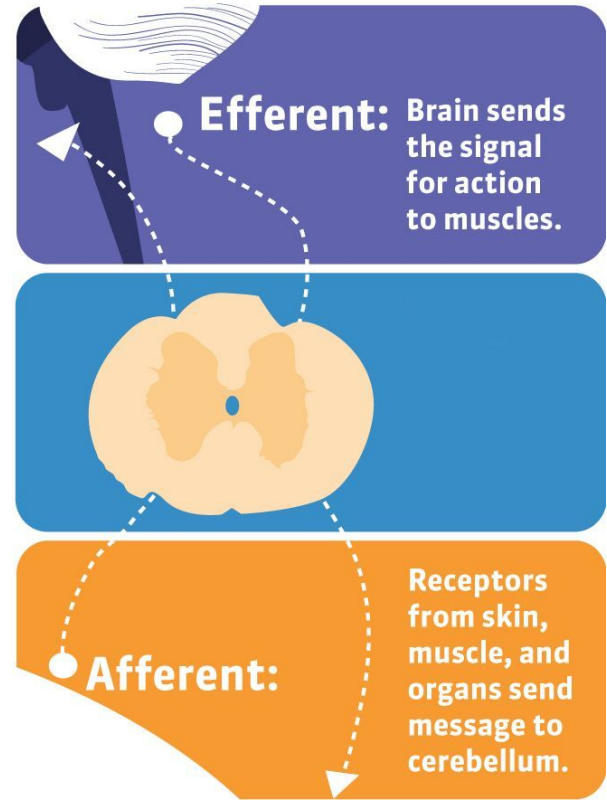
Some chopped veggie bois



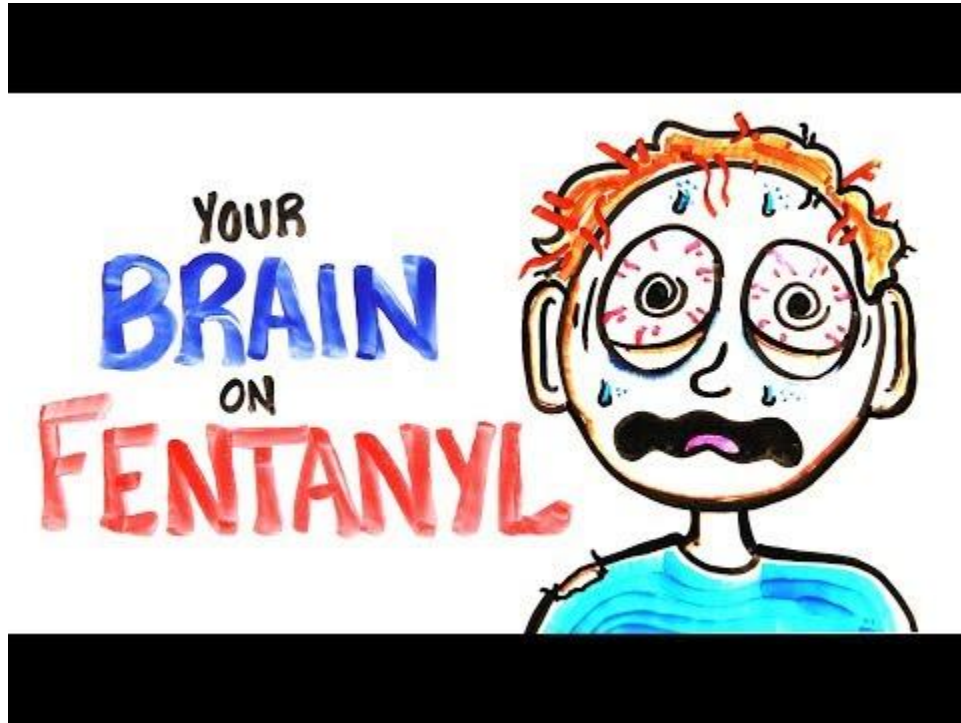
The motor division

The motor division of the PNS transmits signals from the central nervous system to muscles and glands.

The motor division is further divided into two divisions. The autonomic and somatic systems.



What happens to your brain on fentanyl?

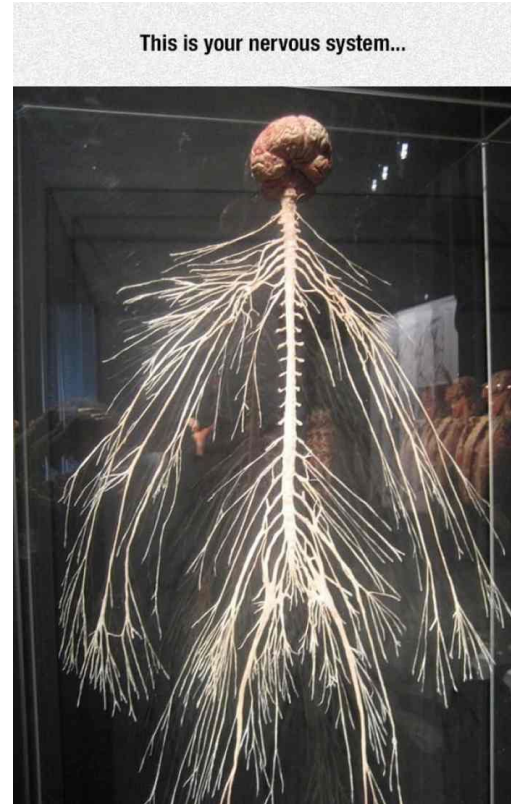


Reveiw!

- a) What is the peripheral nervous system divided into?

- b) What two body parts make up the central nervous system?

- c) What is the motor division separated into?

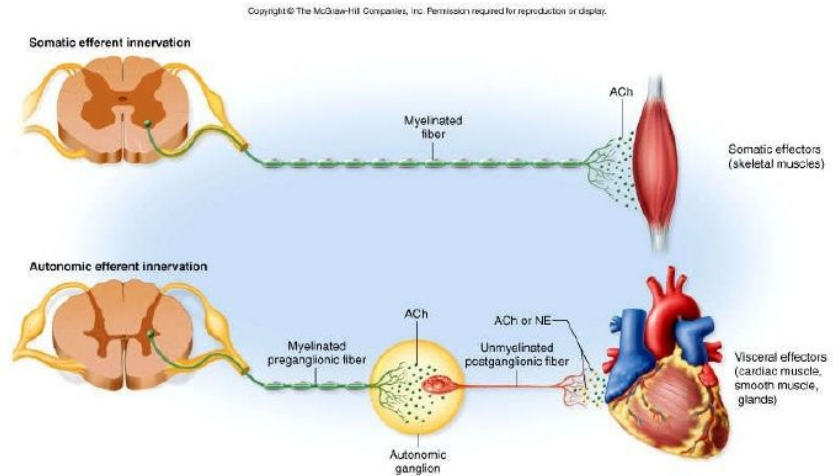


The Somatic Nervous System

The somatic nervous system regulates activities that are under conscious control.

The somatic nervous system controls voluntary movement of skeletal muscles.

Somatic vs. Autonomic

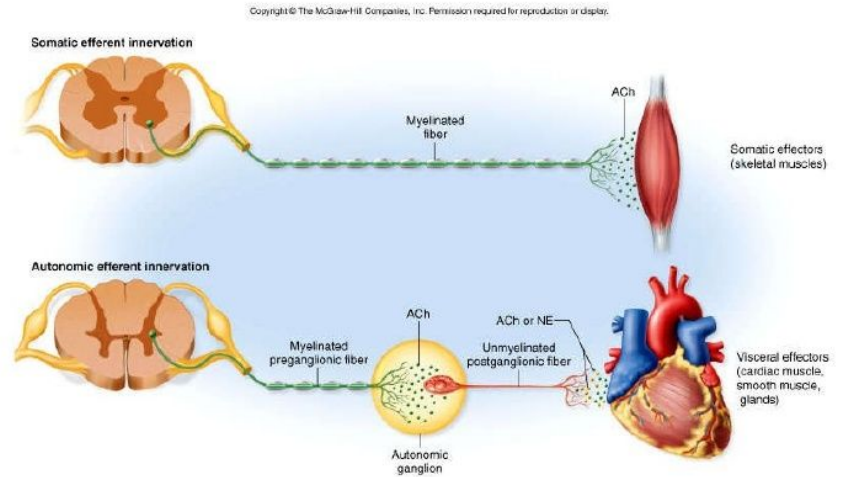


The Autonomic Nervous System

The autonomic nervous system regulates activities that are not under conscious control, or involuntary.

The autonomic nervous system is further divided into two subdivisions: the sympathetic and parasympathetic nervous systems.

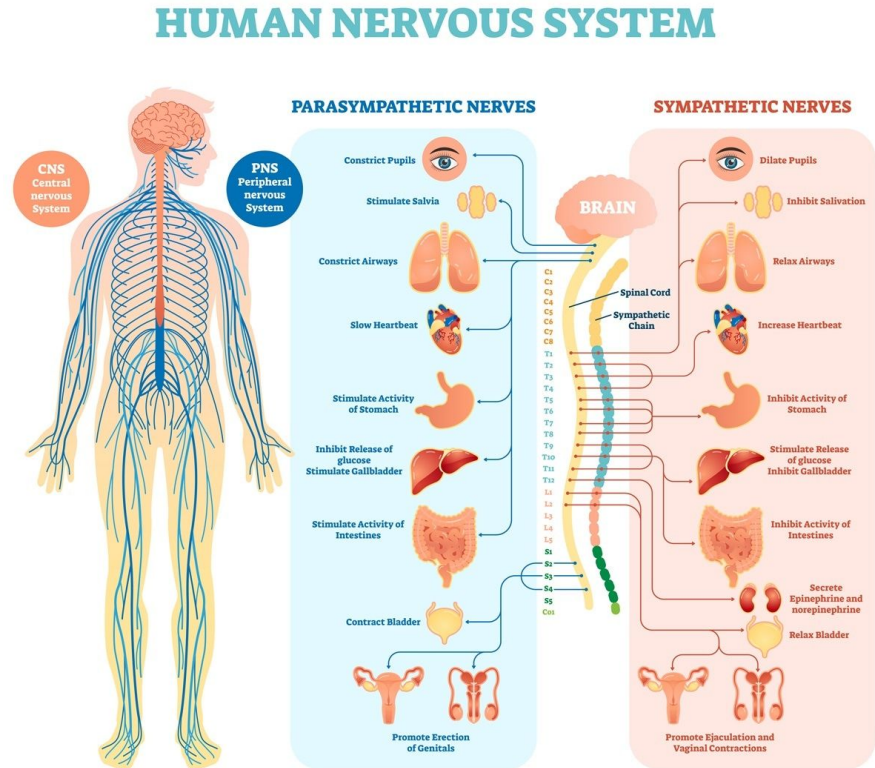
Somatic vs. Autonomic

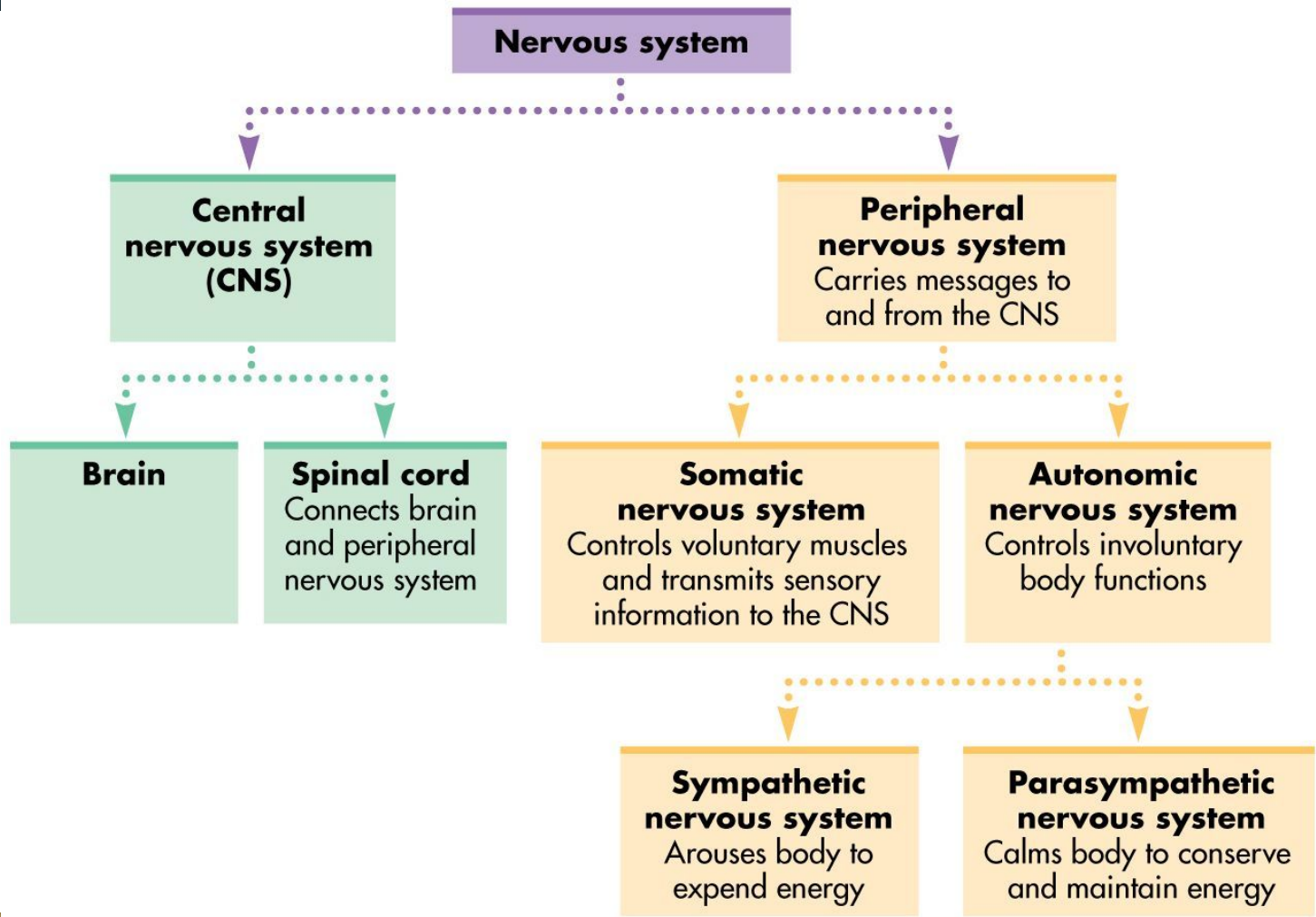


The Sympathetic and Parasympathetic Systems

The sympathetic and parasympathetic nervous systems are responsible for opposite effects on the body.

The sympathetic nervous system will increase the activities of major organs, while the parasympathetic system will slow the activities.





How dangerous is football?



Review!

- a) What are the sympathetic and parasympathetic nervous systems?

- b) What kind of tissue is located in the nervous system?

- c) What two body parts make up the central nervous system?

Controls the whole nervous system

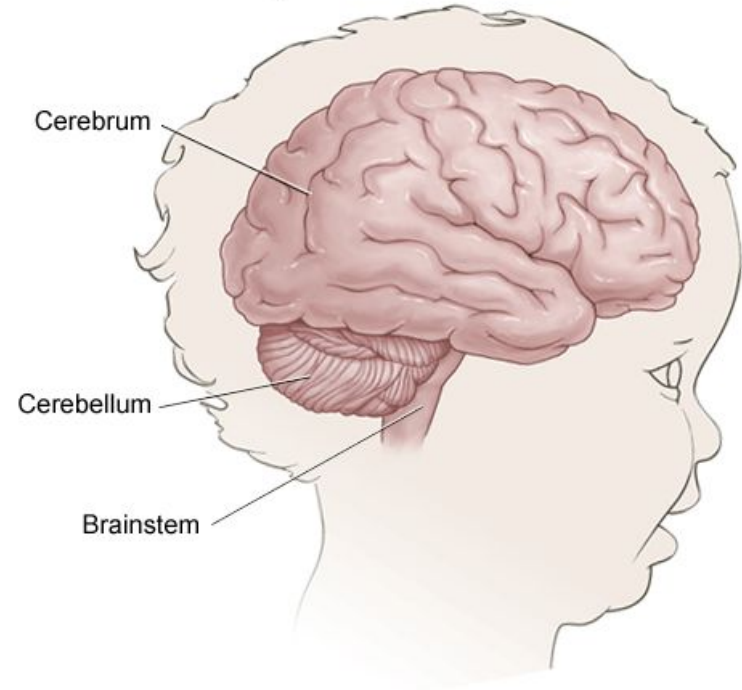
Doesn't have the ability to memorise how it works

The Brain

The brain controls and coordinates all of the body's functions. It consists of over 100 billion neurons and is divided into three major sections:

- 1) The Cerebrum
- 2) The Cerebellum
- 3) The Brain Stem

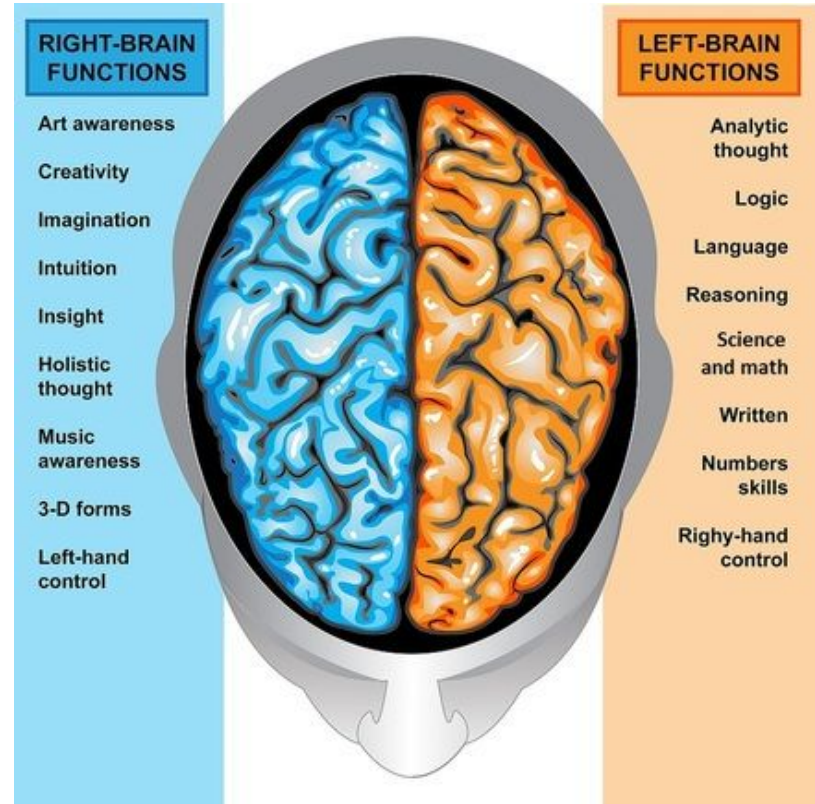
Major Parts of the Brain



The Cerebrum

The cerebrum is the largest region of the brain. The cerebrum is divided into a left and right hemisphere. Each hemisphere is responsible for movement on the opposite side of the body.

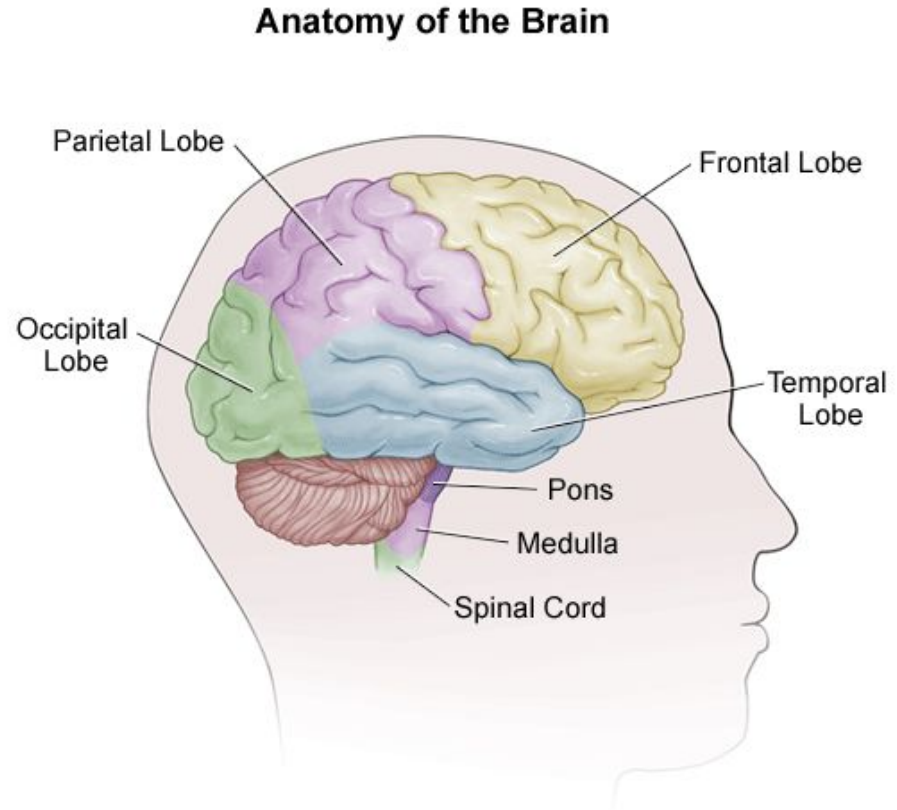
The cerebrum is divided into four different lobes.



The Frontal Lobe

The frontal lobe is located at the front of the cerebrum.

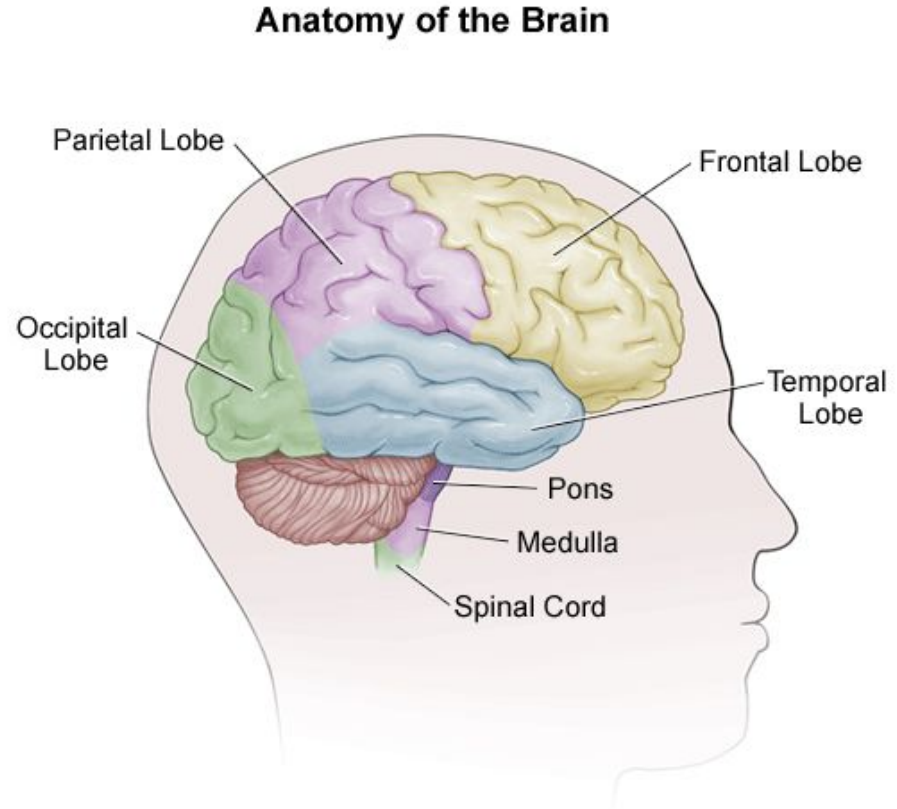
The frontal lobes help control movement, parts of speech, emotions and problem solving.



The Parietal Lobe

The parietal lobe is located directly behind the frontal lobe.

The parietal lobe is associated with sensory information such as pain, movement and orientation.

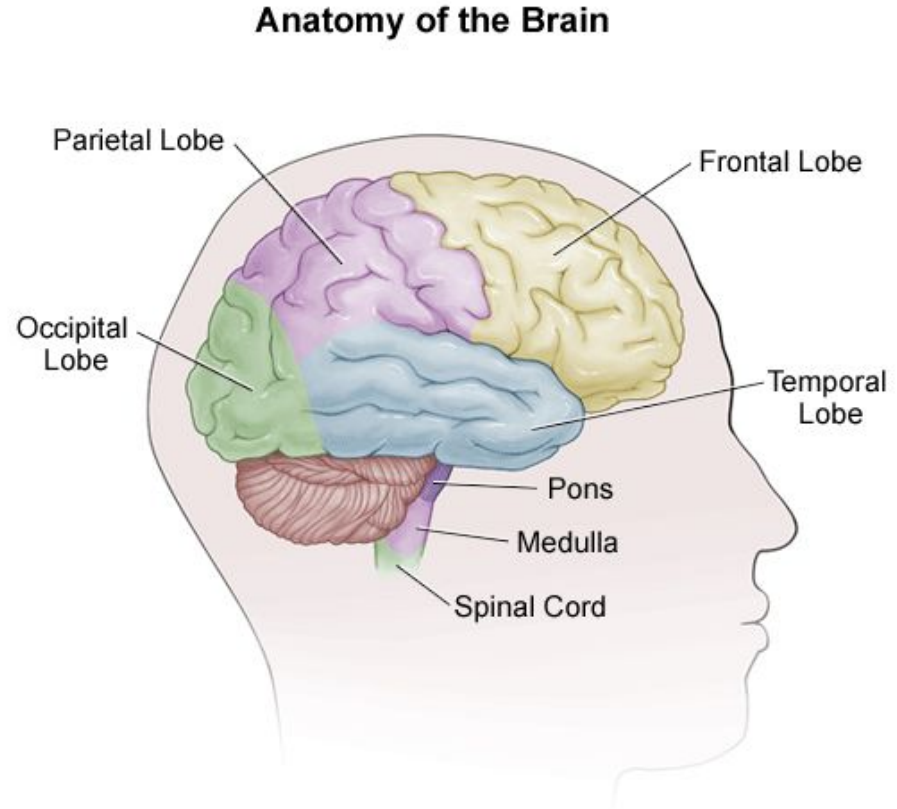


The Temporal Lobe

The temporal lobe is located below the frontal lobe, and on the side of the brain.

The temporal lobe processes language, new memories and emotions.

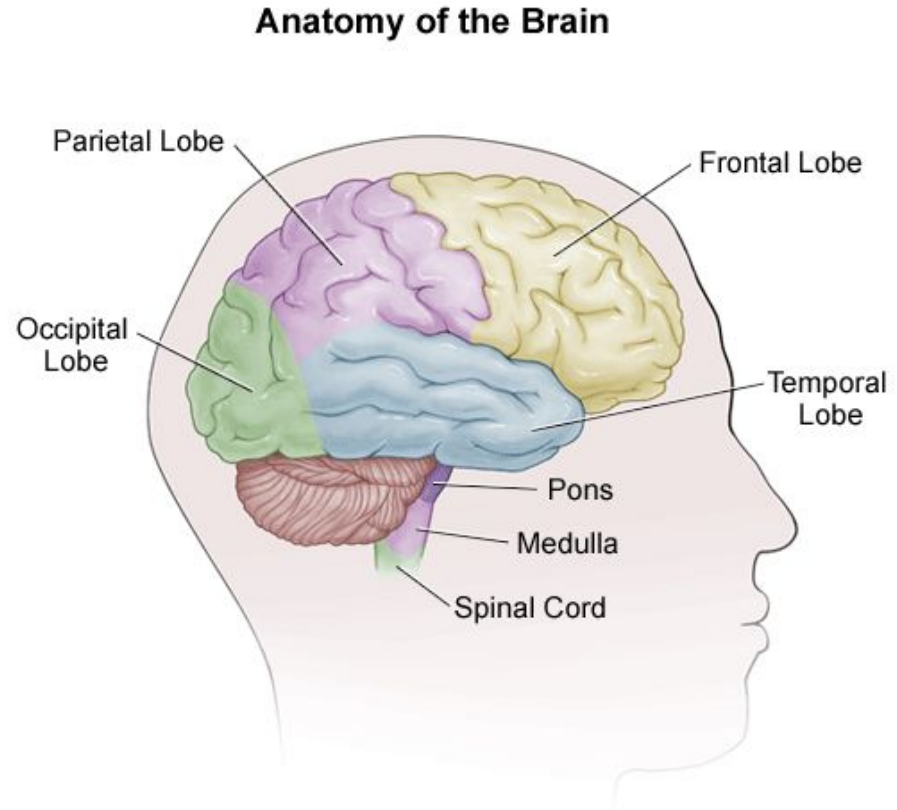
The temporal lobe also helps you to recognize faces.



The Occipital Lobe

The occipital lobe is located at the very back of the cerebrum.

The occipital lobe receives information from the eyes, and is considered to be the visual processing center. .



The Cerebellum

The cerebellum is the second largest part of the brain.

The cerebellum coordinates voluntary movements such as posture, balance, coordination, and speech, resulting in smooth and balanced muscular activity. It is also important for learning motor behaviors.



The Brain Stem

The brain stem controls the flow of messages between the brain and the rest of the body, and it also controls basic body functions such as breathing, swallowing, heart rate, blood pressure, consciousness, and whether one is awake or sleepy.

