

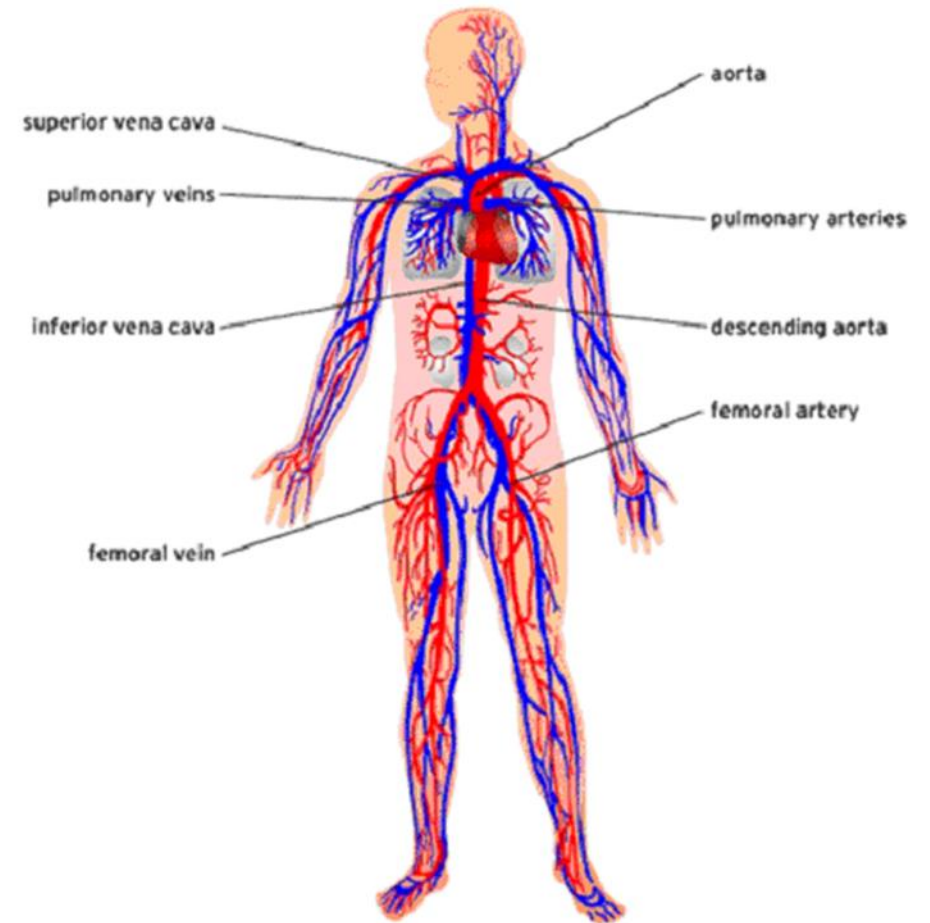
Functions of Our Organ Systems (Part 2)

What are the functions of each individual organ system?

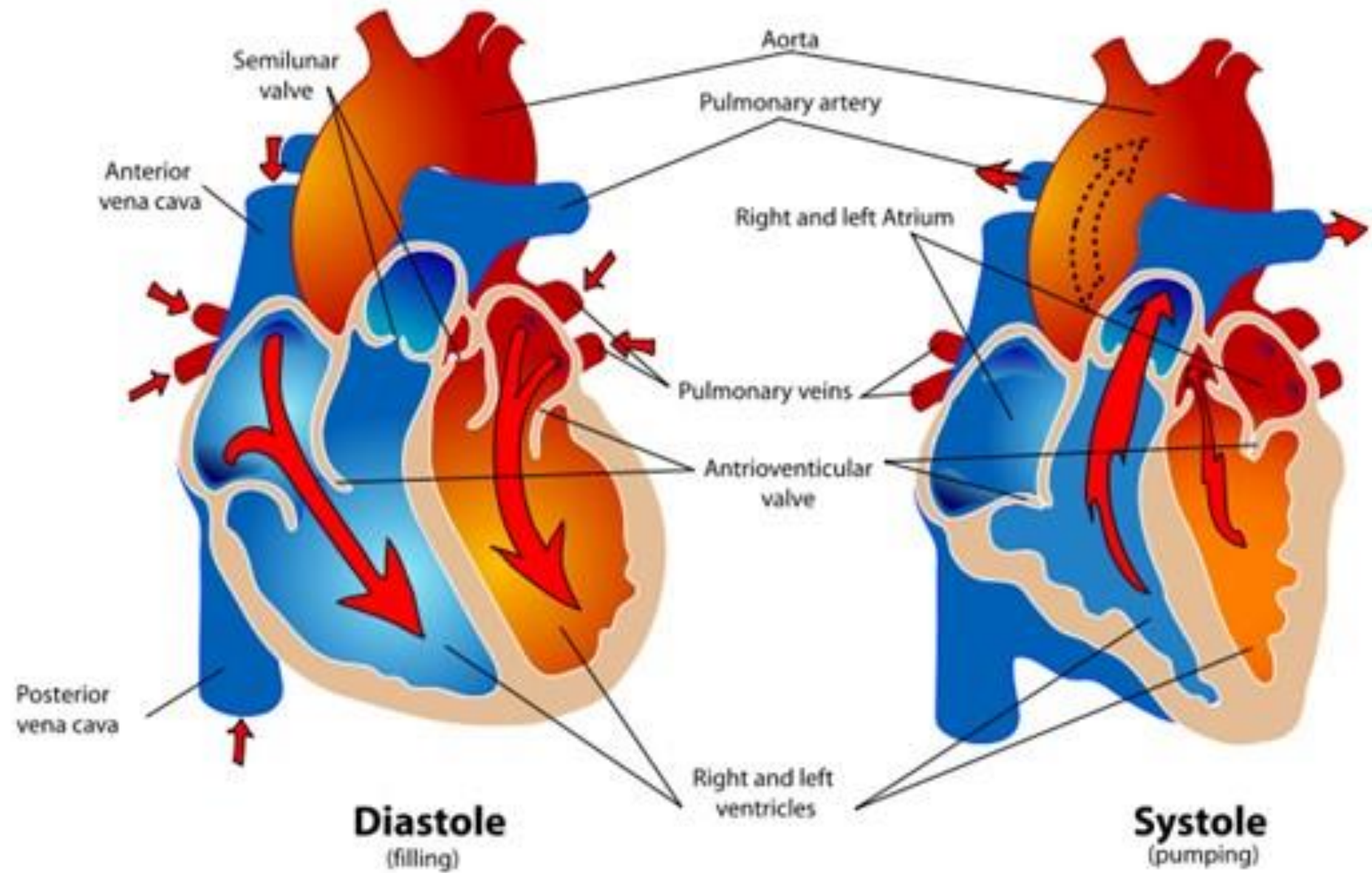
How do the functions of organ systems interact?

Circulatory System

- Includes heart, blood vessels, and blood
 - Blood carries oxygen from your lungs to all body cells. Carbon dioxide diffuses from your body cells into your blood. The carbon dioxide is carried back to the lungs where it is exhaled
 - Blood carries waste products from your cells to your kidneys to be removed
 - Blood transports nutrients and other substances to your body cells
 - Cells and molecules in blood fight infection and help heal wounds.



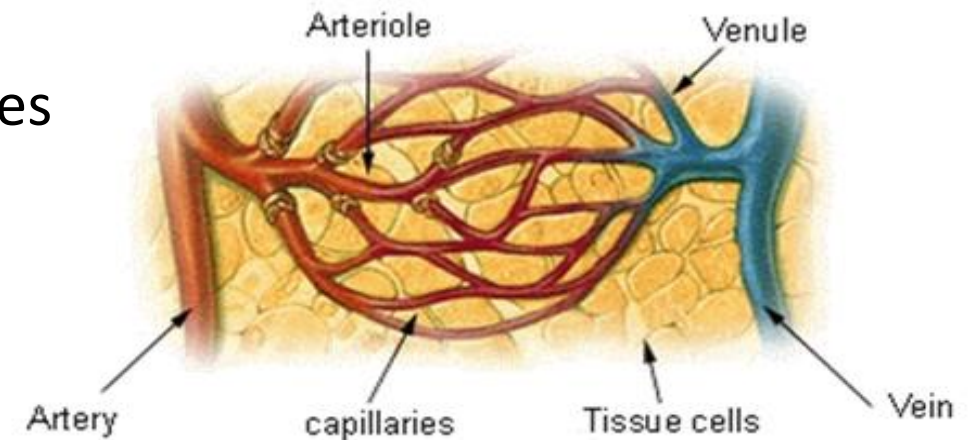
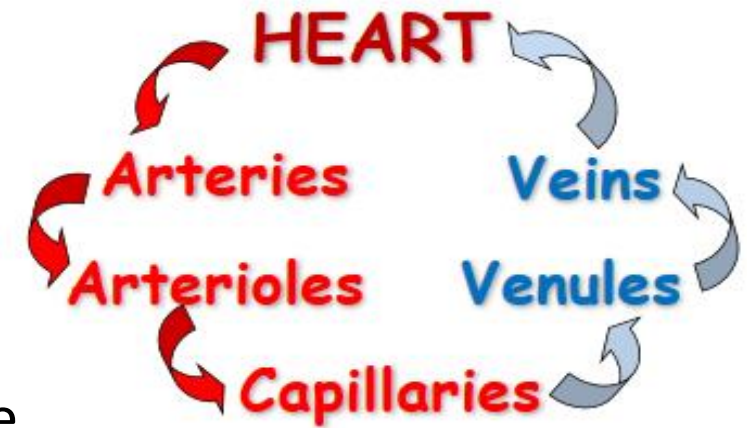
S7L2e Explain the purpose of the major organ system in the human body (i.e digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, and for protection from disease)



Blood Vessels

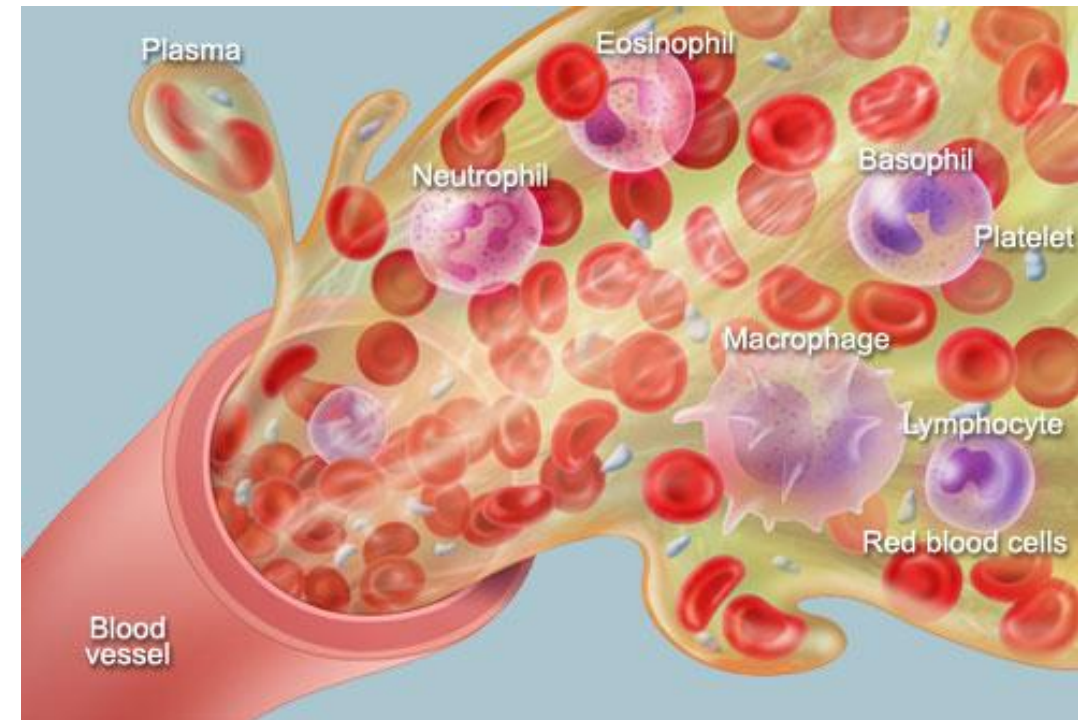
- Arteries
 - Elastic, muscular walls
 - Keep blood under pressure
 - Nerve signals can make arteries constrict or dilate
- Veins
 - Thinner, less elastic, less muscular than arteries
 - Lower pressure than arteries
 - Valves and gravity aid flow back to heart
- Capillaries
 - One cell thick
 - Where transfer of gases and nutrients takes place

Blood Vessels



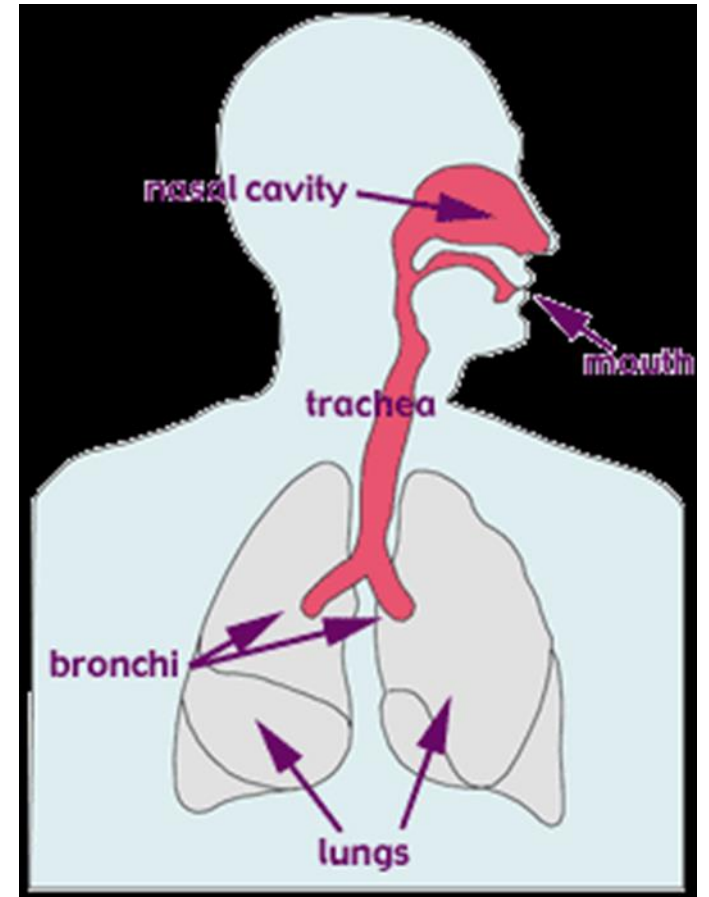
Blood

- Plasma (55% of whole blood)
 - Water with dissolved proteins, sugars, amino acids, salts, and hormones
- Cells (45% of whole blood)
 - Erythrocytes (red blood cells)
 - Hemoglobin carries oxygen
 - Leukocytes (white blood cells)
 - Neutrophil, eosinophil, basophil, macrophage, lymphocyte
 - Fight infection
 - Platelets
 - Responsible for clot formation (coagulation)



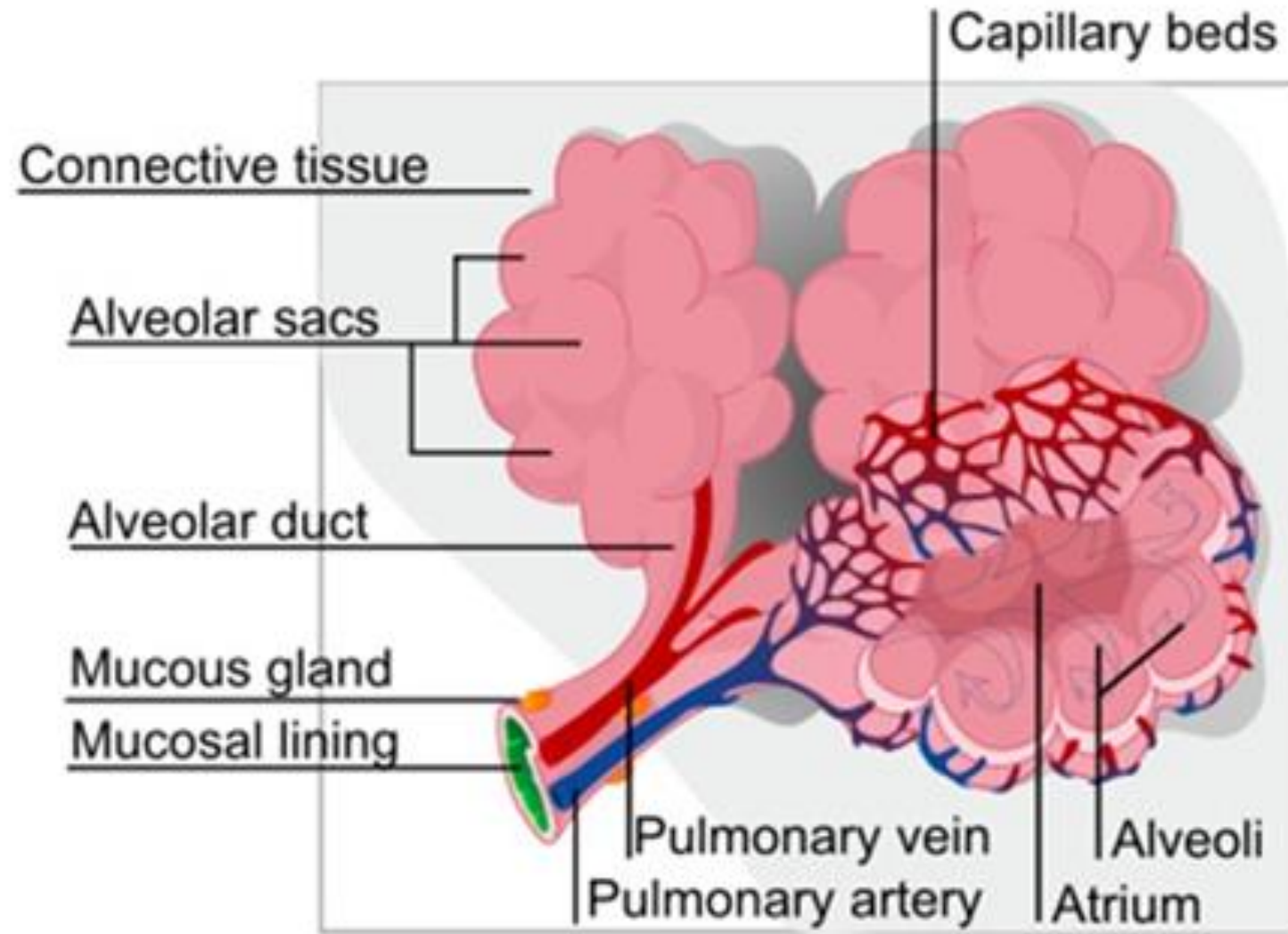
Respiratory System

- Your body's cells depend on your respiratory system to supply oxygen and remove carbon dioxide
- Organs
 - Diaphragm
 - Contraction = inhalation
 - Relaxation = exhalation
 - Pharynx--nasal/oral passageway
 - Larynx—voicebox containing vocal cords
 - Trachea—windpipe to lungs
 - Lungs
 - Bronchi/bronchioles-tubes that enter lungs
 - Alveoli—1 million s of capillary –surrounded sacs where oxygen transfer takes place



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Alveolus



Oxygen Transport

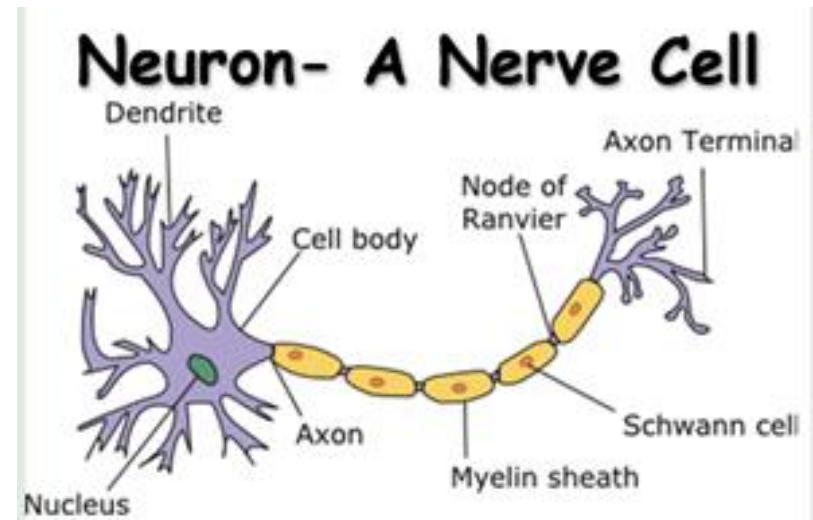
- **Hemoglobin**
 - Protein found in red blood cells
 - Iron in hemoglobin is capable of weakly binding oxygen
- **Oxyhemoglobin**
 - Hemoglobin with oxygen bound to it
 - Oxygen is given up when oxygen concentration around cells gets low

Carbon Dioxide Transport

- ❖ **Transport**
 - 10% is dissolved CO_2 in the plasma
 - 90% is carried as bicarbonate ion (HCO_3^-) in the plasma
- ❖ **Elimination**
 - In lungs, bicarbonate is converted back to CO_2
 - CO_2 diffuses into alveoli and is eliminated

Nervous System

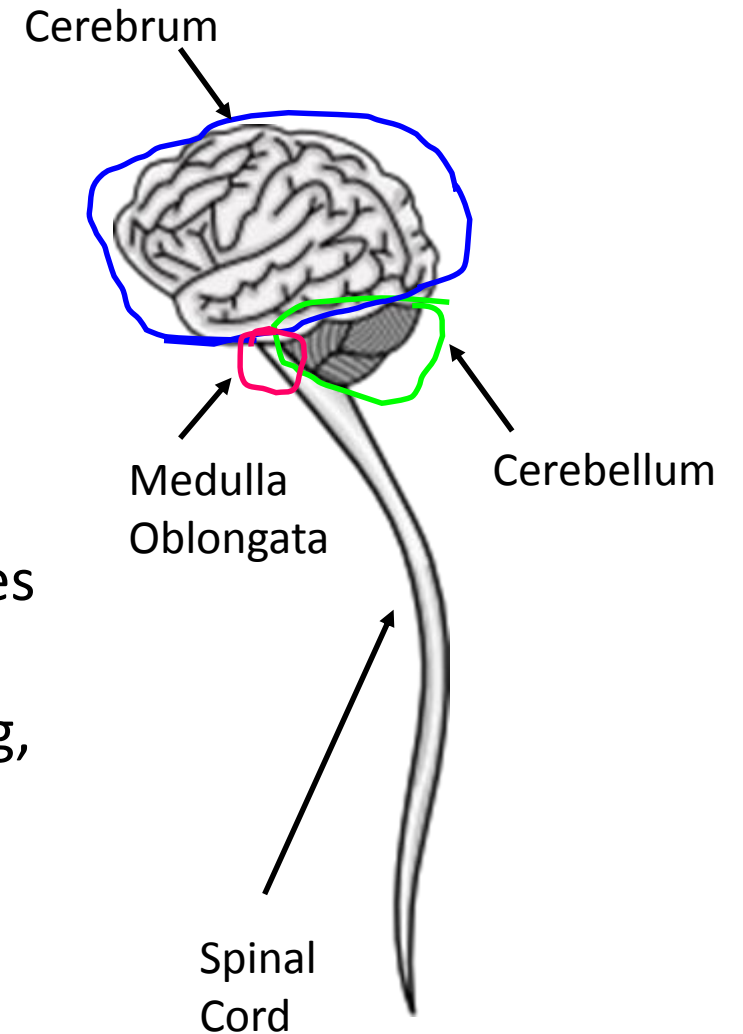
- Provides the body the ability to react to the environment
 - Controls and coordinates all body systems
 - Maintains homeostasis (the regulation of steady, life-maintaining conditions inside an organism despite changes in the environment)
 - Examples breathing, temperature, heartbeat, digestion



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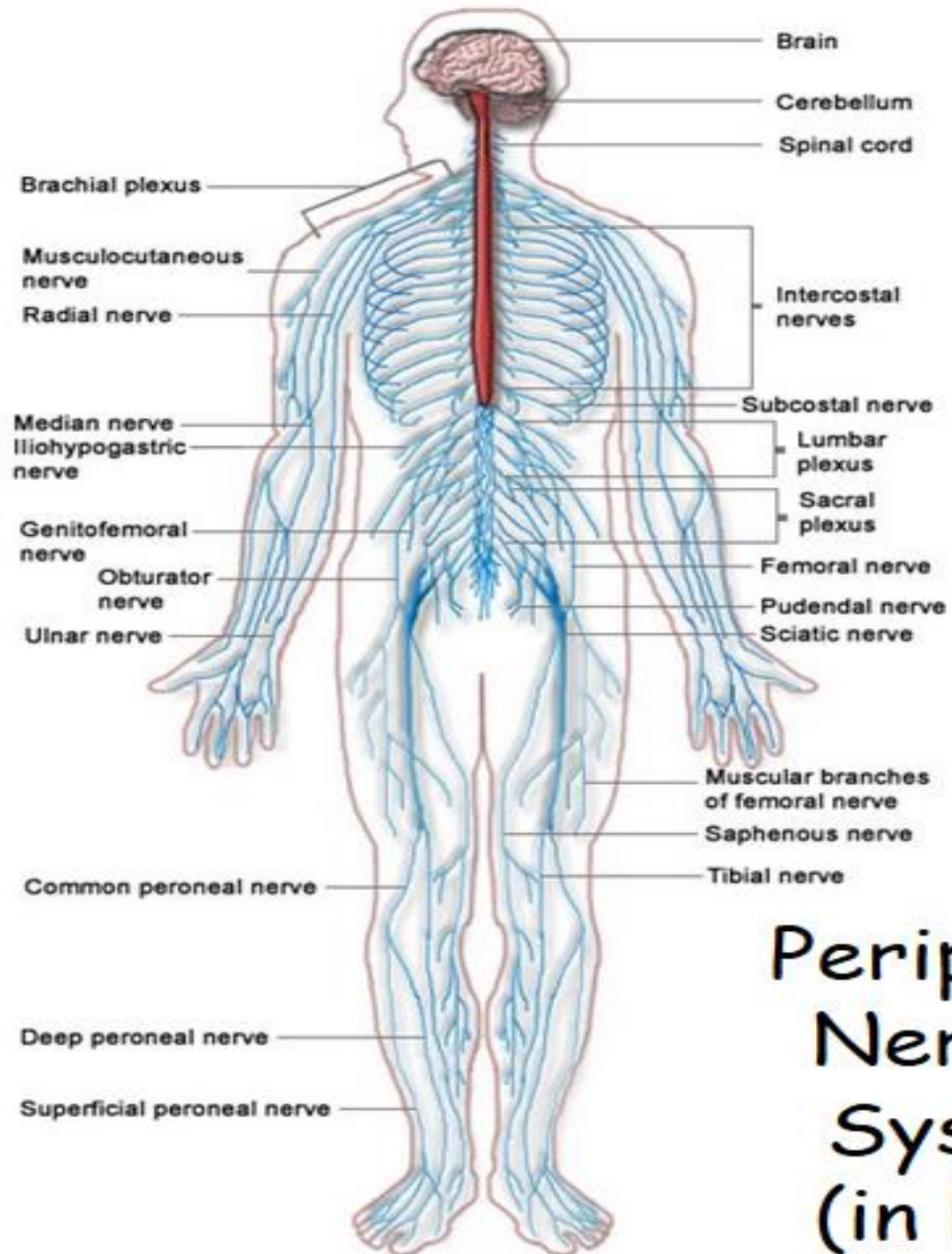
Central Nervous System (CNS)

- Brain
 - Cerebrum-voluntary movement, sensory processing, language and communication
 - Cerebellum-regulates sense of balance and coordinates voluntary muscle movement
 - Medulla Oblongata-involuntary movements (breathing, heart rate, and blood pressure)
- Spinal Cord
- Protected by bone-skull and vertebrae



Peripheral Nervous System (PNS)

- Consist of nerves and neurons
- Found outside the central nervous system to serve the limbs and organs
- Sensory-brings info to CNS
- Motor-carries signals away from CNS
 - Somatic-voluntary control of skeletal muscle action
 - Autonomic-involuntary



Peripheral
Nervous
System
(in blue)

Divisions of the Autonomic Nervous System

- **Sympathetic**

- **Stress** responses (**Fight or Flight**)

- Pupils dilate
 - Mouth dries up (saliva decreases)
 - Heart rate increases
 - Blood flow to skeletal muscle increases

- **Parasympathetic**

- **Relaxation** response

- Heart rate slows
 - Pupils constrict
 - Stimulates salivation
 - Digestive processes stimulated

Reproductive System

- The function of the reproductive system is to continue the survival of the species. It is the means by which the body can transfer genes from one individual to another.
- Only system where the male and female have different parts.



Reproductive System

- Male sex cell called sperm
- Males make about 100 million sperm cells each day
- Male reproductive organs mostly outside the body
- The male cells have 23 chromosomes
- Female cell is call an ovum/egg
- Females make one egg each month
- Female reproductive organs on the inside of the body
- The female cells have 23 chromosomes

When sperm and an egg come together they form a single fertilized cell called a zygote with 46 chromosomes.