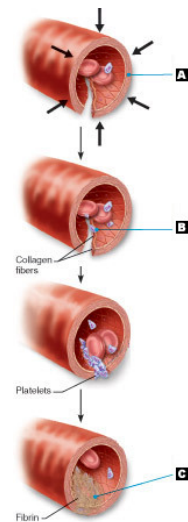
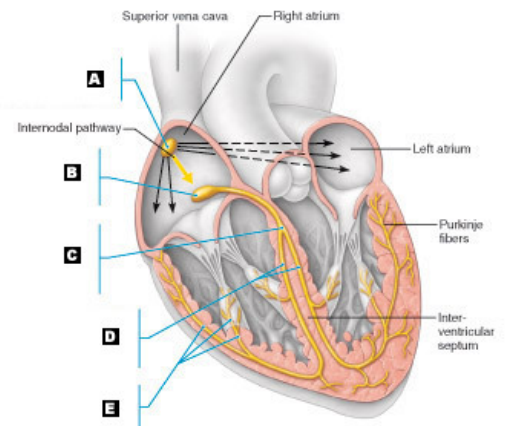
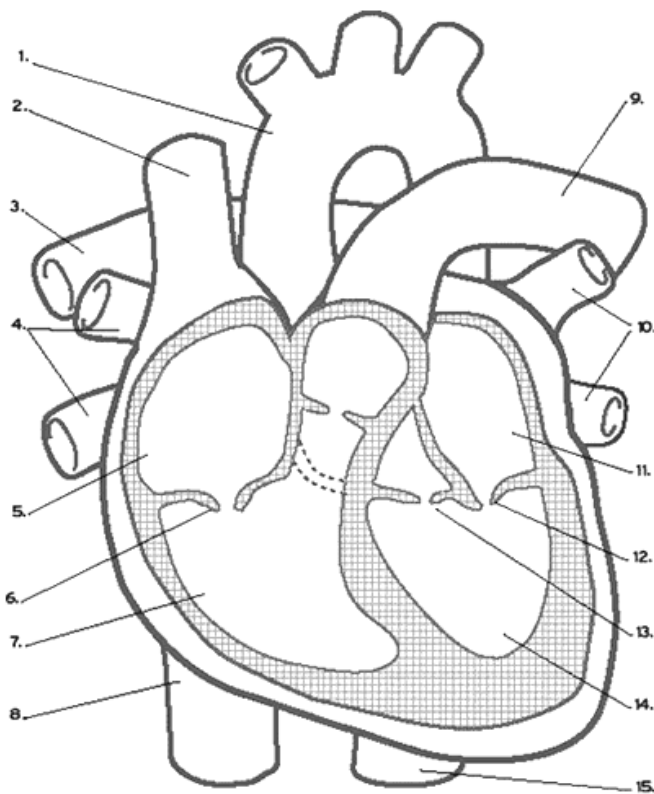


### Cardiovascular

- Name and define the two cardiovascular circuits.
  - Pulmonary-blood to and from the lungs
  - Systemic-blood to and from the body
- What kind of muscle is found in the heart? What makes it different from other muscle?
  - cardiac muscle, intercalated disc (help transmit force of contraction)
- What ion must be present in RBCs to transport oxygen? Iron
- Explain the flow of heart contraction, starting with SA node and ending with Purkinje Fibers. Use the diagram to help you.
  - SA node contracts causing nerve impulse causing atria to contract.
  - Impulse reaches AV node (delayed)
  - Impulses sent to AV bundle
  - AV bundle divides into Purkinje fibers that trigger the ventricles to contract
- Explain the blood flow from the vena cava through the heart and lungs ending with aorta. Include valves and vessels. Label the blood flow in the diagram.
  - vena cava → right atrium → tricuspid valve → right ventricle → semilunar (pulmonary) valve → pulmonary vein → lung → pulmonary artery → left atrium → bicuspid valve → left ventricle → semilunar (aortic) valve → aorta
- Identify and describe the three layers of the heart.
  - Endocardium-deepest layer
  - Myocardium-muscular wall
  - Epicardium-superficial layer
- What are Erythrocytes? Leukocytes? Which leukocyte is most abundant?
  - red blood cells, white blood cells, neutrophils
- What are antigens? What ones are found on the RBCs?
  - antibody generator; A, B, and Rh
- What happens when a blood vessel is damaged?
  - vascular-blood vessel constriction
  - platelet-aggregation
  - coagulation-blood clot
- Name the three types of blood vessels.
  - veins, arteries, capillaries
- What are chordae tendinae? Where are they located?
  - prevent the valve cusps from being pushed back into the atrium, AV valves
- Describe the difference between papillary muscles and pectinate muscles.
  - pectinate - atrium, comb-like ridges of cardiac muscle
  - papillary - ventricles, connected to chordae tendinae
- What vessels carry oxygen to and from the myocardium? Coronary arteries
- Describe the locations of the valves. Both Semilunars, Tricuspid, and Bicuspid.
  - Pulmonary semilunar - right ventricle and pulmonary vein
  - Aortic semilunar - left ventricle and aorta
  - Tricuspid- right atria and ventricle
  - Bicuspid - left atria and ventricle

15. Label the diagrams below.

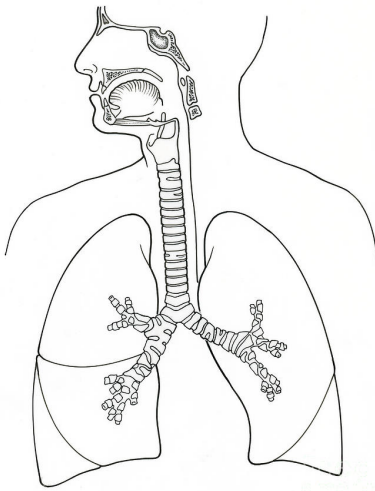


**Respiratory**

1. Describe how Boyle's law plays a role in inspiration and expiration. Think intrapulmonary and atmospheric pressure.
  - a. Volume increases in lungs by action of diaphragm and intercostal muscles, intrapulmonary pressure decreases and is less than the atmospheric pressure, causing air to rush from high pressure to low pressure in the lungs
2. Match the following
 

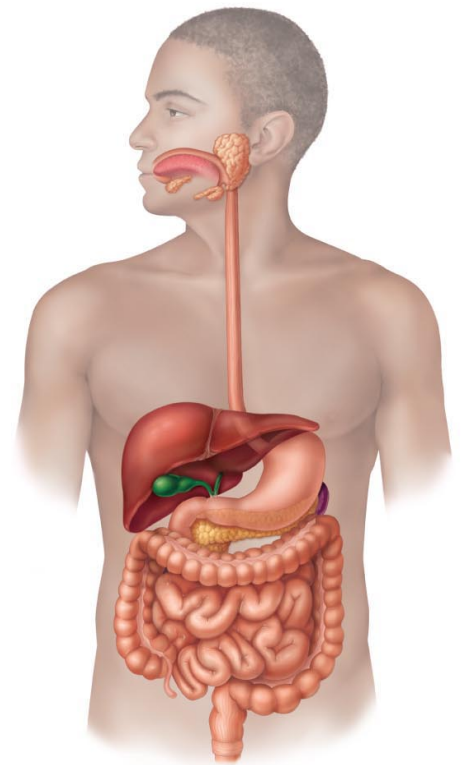
|                     |  |
|---------------------|--|
| <b>nasal cavity</b> | commonly called the throat; air leaves the nose and enters here en route to the lungs            |
| <b>larynx</b>       | descends from the voice box as a single tube reinforced with cartilage rings before it divides   |
| <b>pharynx</b>      | Secretes mucus and antibacterial enzymes; traps dust, bacteria, and warms air during inspiration |
| <b>trachea</b>      | contains vocal cords that produce speech; called the voice box                                   |
3. What is a surfactant? Where is it produced?
  - a. Surfactant is produced by the alveoli to allow the lungs to expand more easily
4. What is the difference between the right and left lobes of the lungs?
  - a. right lungs has 3 lobes, left lung has 2 lobes
5. Describe the two pleuras that line the lungs. both prevent friction while breathing
  - a. parietal - outer layer attached to chest wall
  - b. visceral - lines the lungs

6. Label the diagram. Nasal Cavity, Larynx, Trachea, Pharynx, Alveoli, Left lung, Right lung, Primary Bronchi, Secondary Bronchi, Tertiary Bronchi



### Digestive

1. What is the primary functions of the small intestine?
  - a. major site of nutrient absorption
2. What are the functions of the stomach?
  - a. digests food
  - b. temporary holding area for ingested food
  - c. produces intrinsic factor (aids vitamins to reach your blood)
3. Where is bile stored?
  - a. gallbladder
  - b. produced by liver to break down fats
4. List the characteristics of the large intestine?
  - a. contains a large number of bacteria
  - b. No villi
  - c. absorption function
  - d. shorter than small intestine
5. What is peristalsis?
  - a. major means of propulsion
6. What are some characteristic of the liver?
  - a. detoxify blood
  - b. store glucose
  - c. highly regenerative
  - d. has 4 lobes
7. Describe the purpose of the villi in the small intestine?
  - a. increase surface area for absorption, take it away will cause weight loss
8. Label the digestive organs on the diagram. Mouth, Salivary glands, epiglottis, esophagus, stomach, pancreas, liver, gallbladder, small intestine, large intestine, appendix, colon, anus.



## Nervous

1. What is the difference between white and gray matter?
  - a. gray matter - non-myelinated axons
  - b. white matter- myelinated axons
2. Describe the difference between afferent and efferent.
  - a. afferent- sensory (bring info to the CNS)
  - b. efferent- motor (brings info to effective organ)
3. Which part of the brain controls emotions? Regulates heart and respiratory rate? Responsible for sleep-wake cycle? **hypothalamus, medulla oblongata, pineal gland**
4. What part of the neuron receives the impulse? What part of their neuron delivers the impulse?
  - a. dendrites, axon terminal
5. List and describe the functions of the neuroglial cells?

|                  |   |
|------------------|---|
| Ependymal Cells  | produce cerebrospinal fluid   |
| Astrocytes       | maintain brain-blood barrier, support, repair, & guide neuron development |
| Oligodendrocytes | myelinate CNS axons   |
| Microglia        | migrating macrophage  |
| Schwann Cells    | myelinate PNS axons and repair  |
| Satellite Cells  | homeostasis with the surrounding environment                              |

6. What are the visible bumps on the tongue? List and describe the three types.
  - a. Filiform papillae - front of tongue
  - b. Fungiform papillae - middle tongue
  - c. Circumvallate papillae - back of tongue
7. List and describe the meninges of the central nervous system.
  - a. Dura Mater -outermost, tough, fibrous
  - b. Arachnoid Mater - middle, spiderweb-like
  - c. Pia Mater - innermost layer, lies directly on CNS brain and spinal cord
8. List the five special senses. **gustation, olfaction, equilibrium, vision, hearing**

## Muscular

1. Describe a neuromuscular junction. What is the neurotransmitter released?
  - a. where a neuron stimulates a muscle fiber, acetylcholine
2. Describe the function of tropomyosin and troponin.
  - a. tropomyosin is held in place on the thin filament to block myosin head attachment by troponin, Calcium binds with troponin to cause tropomyosin to shift for cross bridges to form
3. Define Muscle tone.
  - a. sustained partial contraction

4. Fill in the table describing the energy pathways.

| Order in which they occur |                        | Is Oxygen required? | Energy Source         |
|---------------------------|------------------------|---------------------|-----------------------|
| 1                         | direct phosphorylation | no                  | creatine phosphate    |
| 3                         | aerobic respiration    | yes                 | glucose, pyruvic acid |
| 2                         | anaerobic glycolysis   | no                  | glucose               |

5. Place the following in the correct order of muscular contraction.

3 The influx of calcium ions causes **acetylcholine** (ACh) to be released in the **synaptic cleft**

7 Ca<sup>++</sup> bind with **tropoin**, causing the **tropomyosin** to shift, and expose the myosin binding sites on actin

4 ACh binds to the ACh receptors present in the **sarcolemma**, increasing its permeability

5 Na<sup>++</sup> enter the **sarcolemma**, changing its polarity, and creating an action potential

6 Ca<sup>++</sup> are released by the **sarcoplasmic reticulum**, as the action potential travels down the T-tubules in the muscle fiber

9 **Myosin** binds to **actin**

1 A signal is sent from the brain or the spinal cord to the muscle via neurons

8 ATP is hydrolyzed into ADP and phosphorus, releasing energy for myosin power stroke

2 An action potential is generated in the neuron, releasing Ca<sup>++</sup> in the **neuromuscular junction**

10 **Myosin** head bends and **actin** slides over the myosin surface

6. Complete the table.

|                     | Cardiac            | Skeletal                           | Smooth                 |
|---------------------|--------------------|------------------------------------|------------------------|
| Striated?           | yes                | yes                                | no                     |
| Intercalated discs? | yes                | no                                 | no                     |
| Voluntary?          | no                 | yes                                | no                     |
| Nuclei              | uninucleate        | multinucleate                      | central nucleus        |
| Found where?        | walls of the heart | skeletal muscles attached to bones | walls of hollow organs |