

Week 5 Gas Exchange

Learning Goal: Understand how organisms exchange gas with their surroundings and how oxygen and carbon dioxide are transported throughout the human body.

After completing your pre-class assignments you should be able to:

- Explain the relationship between surface area-to-volume ratio and gas exchange efficiency.
- Describe the changes in muscle contraction, volume, and pressure that occur during ventilation.
- Relate partial pressure and Boyle's Law to ventilation and gas exchange.
- Explain how the nervous system regulates breathing and how this relates to homeostasis.
- Describe how hemoglobin binds oxygen and how this relates to gas exchange.

After this class meeting, students will be able to...

- Evaluate oxygen-hemoglobin binding graphs to predict the percent oxygen saturation of different globin proteins under varying conditions of P_{O_2} , pH, etc.
- Predict how changes in elevation or external pressure will affect ventilation and gas exchange.

Week 5 Cardiovascular System

Learning Goal: Understand how the heart pumps blood throughout the body to facilitate the transportation and exchange of gases, small molecules, and other biological materials.

After completing your pre-class assignments you should be able to:

- Describe the properties of blood and blood vessels.
- Discuss the various functions of the cells, proteins, and other components found in human blood.
- Trace the flow of blood through the human circulatory system.

After this class meeting, students will be able to...

- Describe the changes in blood pressure and muscle contraction that occur during the cardiac cycle.
- Relate changes in ion movement to the cardiac action potential.
- Explain heart muscle contraction in response to an action potential.
- Relate the events during the cardiac cycle to those represented on an ECG.