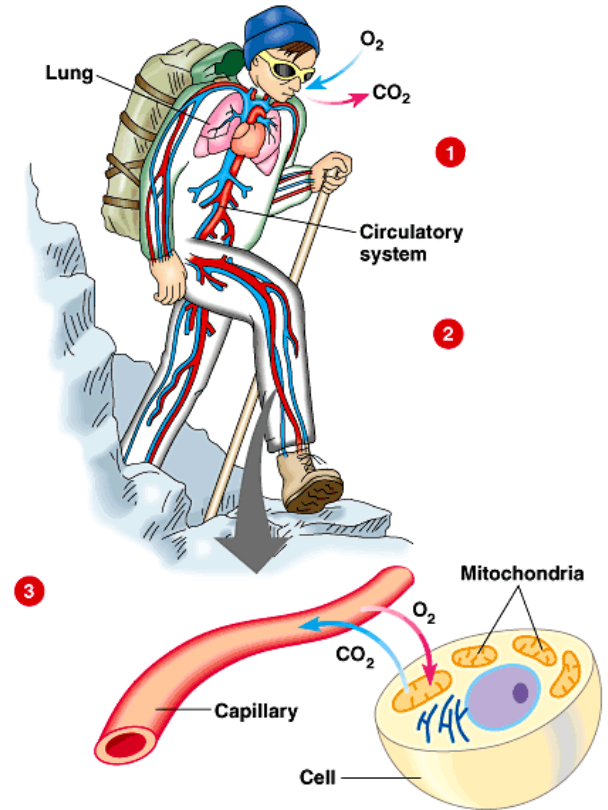


## CHAPTER 22 - Respiration: The Exchange of Gases

### Chapter Reading Guide

#### Mechanisms of Gas Exchange

1. Describe the three main phases of gas exchange.



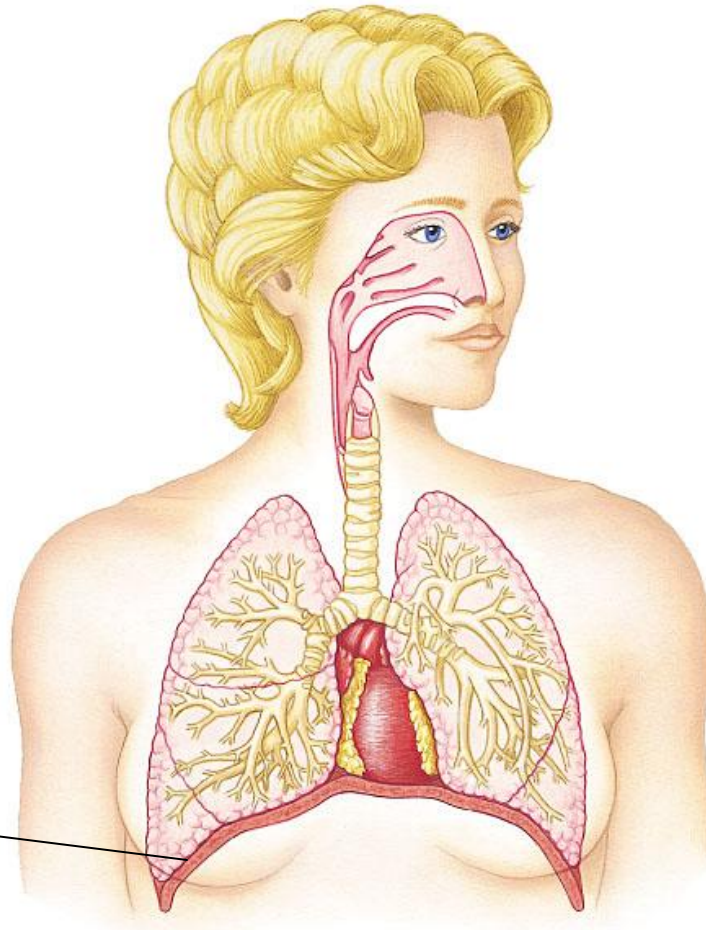
2. Describe the *properties* of respiratory surfaces. Describe four types of respiratory surfaces and the types of animals that use them.

3. Explain how the amount of oxygen available in air compares to that available in cold and warm freshwater and salty water.

4. Explain how the structure of fish gills maximizes oxygen exchange. How is breathing air easier than using water for gas exchange?

5. Describe the tracheal system of insects.

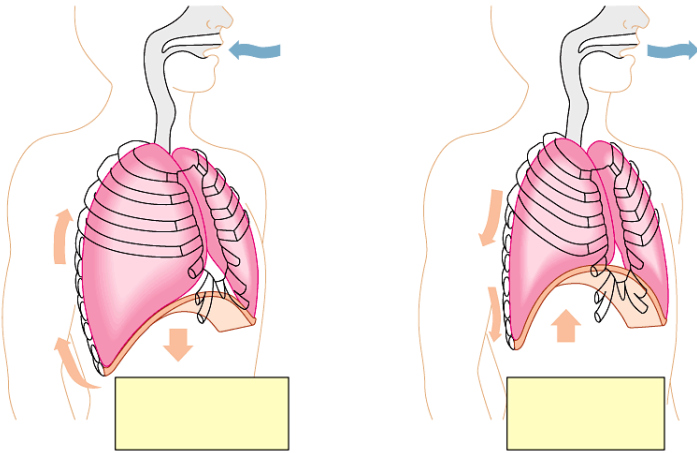
6. Completely label the diagram below of a mammalian respiratory system by identifying and describing each structure and their corresponding functions.



**diaphragm**-a sheet of muscle that separates the chest from the abdominal cavity; its contractions expands the chest cavity and its relaxation reduces it allowing room for the lungs to inflate.

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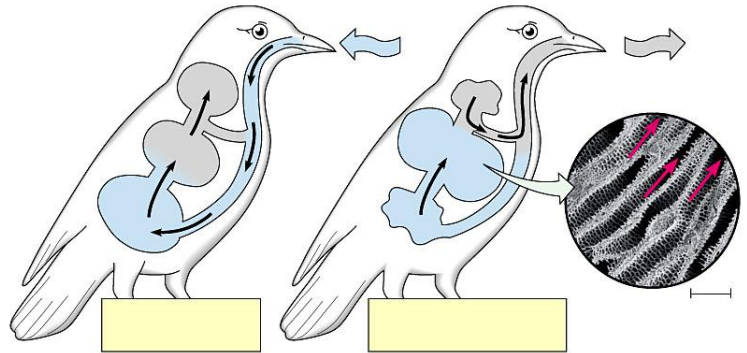
7. Compare how humans and birds ventilate their lungs. Label the diagrams.



**humans**

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**birds**



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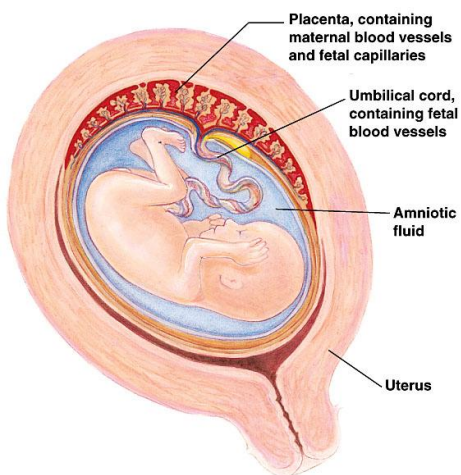
8. Draw a picture that explains how breathing is controlled in humans. Be sure to completely label the drawing.

### Transport of Gases in the Body

9. Explain how blood transports gases between the lungs and tissues of the body.

10. Describe the functions of **hemoglobin**.

**Extension:** Explain how a human fetus obtains oxygen prior to and immediately after birth.



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