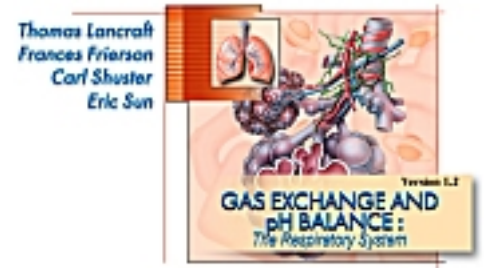


# Gas Transport

## Directions:

- Click the "Contents" button,
- Open the *Respiratory System* File,
- Click *Animations*,
- Click *Gas Transport*



## Introduction

- Summarize blood's role with regard to transporting oxygen and carbon dioxide.

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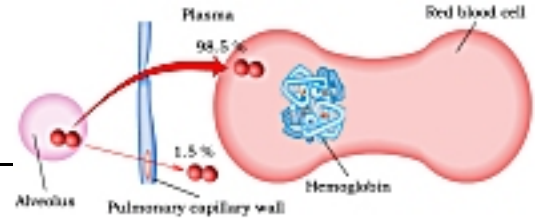
## Oxygen Transport

- Contrast the two ways oxygen is transported in blood.

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- Describe the important role of the *heme groups* within each hemoglobin molecule.

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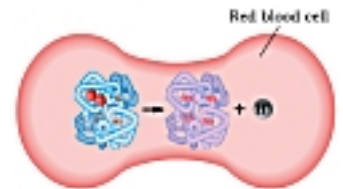
- Define each of the following:

*deoxyhemoglobin* \_\_\_\_\_

*oxyhemoglobin* \_\_\_\_\_

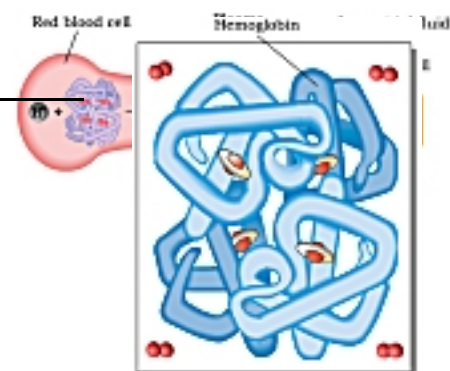
- What is the oxygen association reaction that occurs in the lungs? \_\_\_\_\_

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- What is the oxygen dissociation reaction that occurs at the tissue cells? \_\_\_\_\_

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## Factors That Affect Hemoglobin's Saturation With Oxygen

7. Name the factors that affect hemoglobin's saturation with oxygen (production of *oxyhemoglobin*).

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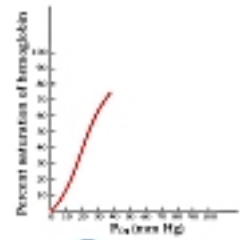
### Oxygen-Hemoglobin Dissociation Curve

8.  $P_{O_2}$  is a primary factor influencing the degree of hemoglobin saturation. Explain how  $P_{O_2}$  in the lungs and tissue cells determines whether oxygen binding or dissociation occurs with hemoglobin.

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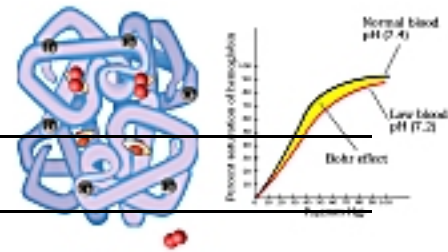
### Hemoglobin's Affinity for Oxygen

9. a. Describe the *Bohr Effect*.

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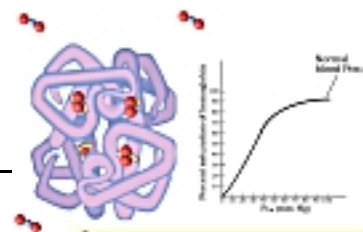
b. In contrast to the Bohr Effect, how does elevated pH affect hemoglobin's oxygen affinity?

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10. a. Actively metabolizing cells aerobically use oxygen and produce carbon dioxide. Describe how increasing levels of blood *carbon dioxide* affect hemoglobin's oxygen affinity? Where (in the body) does this occur?

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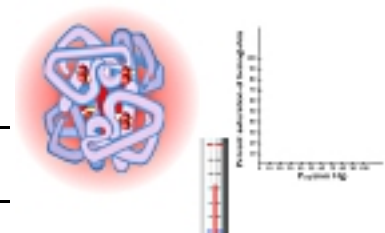
b. Explain  $CO_2$ 's affect on oxygen loading in the alveolar spaces.

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11. Describe how body temperature affects  $O_2$  association with hemoglobin.

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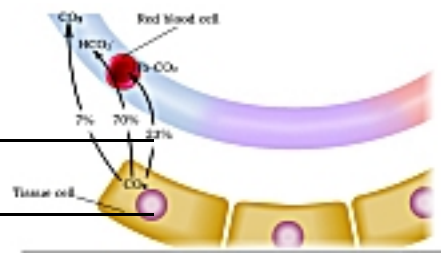


12. Explain the affect of BPG on  $O_2$  association with hemoglobin. \_\_\_\_\_

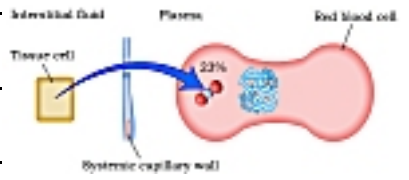


**Carbon Dioxide Transport**

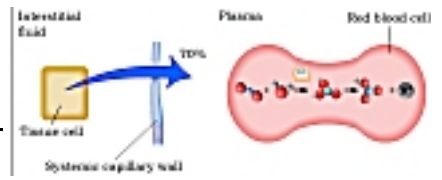
13. Name the three ways  $CO_2$  can be transported by the blood and the percentage for each mechanism. \_\_\_\_\_



14. Explain *carbaminohemoglobin* formation and function. \_\_\_\_\_



15. a. Explain bicarbonate ion formation and how it is used to transport carbon dioxide. \_\_\_\_\_



b. Define the *chloride shift* and explain why it occurs. \_\_\_\_\_

\_\_\_\_\_