33.3 The Respiratory System

Lesson Objectives

- Identify the structures of the respiratory system and describe their functions.
- Describe gas exchange.
- Describe how breathing is controlled.
- Describe the effects of smoking on the respiratory system.

BUILD vocabulary

A. The chart below shows key terms from the lesson with their definitions. Complete the chart by writing a strategy to help you remember the meaning of each term. One has been done for you.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>How I’m Going to Remember the Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alveolus</td>
<td>One of millions of tiny air sacs in the lungs where oxygen and carbon dioxide are exchanged</td>
<td><em>Alveolus gets oxygen for all of us.</em></td>
</tr>
<tr>
<td>Bronchus</td>
<td>One of two large tubes in the chest cavity that connect the trachea to the lungs</td>
<td></td>
</tr>
<tr>
<td>Diaphragm</td>
<td>A large dome-shaped muscle at the bottom of the chest cavity</td>
<td></td>
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<tr>
<td>Larynx</td>
<td>A structure in the throat containing the vocal cords</td>
<td></td>
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<tr>
<td>Pharynx</td>
<td>A cavity at the back of the mouth that air passes through on its way from the nose</td>
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</tr>
<tr>
<td>Trachea</td>
<td>Windpipe</td>
<td></td>
</tr>
</tbody>
</table>

B. As you work through this lesson, you may find these terms in the activities. When you need to write a key term or a definition, **highlight** the term or the definition.
BUILD Understanding

Flowchart A flowchart is a way to show the steps in a process. As you read the lesson, complete the flowchart. It shows the steps involved in respiratory gas exchange.

Write the letters in the flowchart in the correct order.

A. Air enters alveoli.  
B. Air passes into the bronchi.  
C. Air moves into the lungs.  
D. Carbon dioxide is released from alveoli and exhaled.  
E. Carbon dioxide diffuses into the lungs.  
F. Air enters the body through the nose.  
G. Oxygen dissolves in moisture on the inner surface of alveoli.  
H. Air moves to the pharynx.  
I. Oxygen diffuses into the blood.  
J. Air moves into the trachea, passing the larynx.

Structures of the Respiratory System

Air enters the body through the mouth and nose. It passes through air passages and fills the lungs. In the lungs, oxygen enters the bloodstream while carbon dioxide leaves.

Follow the directions.

1. Label the diagram using the words in the box.

   bronchus  
   pharynx  
   lung  
   nose  
   trachea  
   larynx

Answer the questions. Circle the correct answer.

2. Which structure does air enter right after the nose?
   lung     pharynx     trachea

3. Which structure divides into smaller structures within the lungs?
   bronchus     trachea     pharynx
Gas Exchange and Transport

Look at the diagram below. In the lungs, gas exchange takes place in millions of tiny air sacs called alveoli. Oxygen diffuses from the alveoli through the capillary walls into the blood. Carbon dioxide diffuses in the opposite direction.

Follow the directions.

1. Use blue to color the areas containing oxygen-poor blood.
2. Use red to color the areas containing oxygen-rich blood.
3. Use purple to color the areas in which gas exchange takes place.

Circle the correct answer.

4. What diffuses from the red blood cells into the alveoli?
   carbon dioxide \hspace{1cm} oxygen

5. Air you inhale contains \underline{______________} oxygen than air you exhale.
   more \hspace{1cm} less

Complete the sentence.

6. Air you exhale contains \underline{______________} carbon dioxide than air you inhale.