Chapter 7
The Respiratory System

7.1 Structures of the Respiratory System
7.2 Breathing and Respiration
7.3 Respiratory Health

Ch. 7 The Respiratory System

• The upper respiratory tract filters, warms, and moistens air, and channels it into the lungs.
• The lower respiratory tract is made up of specialized structures that exchange oxygen for carbon dioxide in the bloodstream.
• Humans ventilate their lungs by breathing, which involves inspiration and expiration.
• The volume of air can fluctuate
• External respiration
• Internal respiration
• Gas exchange occurs through the processes of simple diffusion and facilitated diffusion.
• Disorders and diseases

7.1 Structures of the Respiratory System

In this section, you will:
• Identify the principal structures of the respiratory system
• Identify the principal functions of the respiratory system
• Observe and identify the major respiratory structures
Respiration Requirements

• Large surface area. Why?
• Moist environment. Why?

Breathing

• Inspiration- breathing in, or inhaling
• Expiration- breathing out, or exhaling

Respiration: Stages & Structures

• Breathing involves two basic processes: inspiration (breathing in, or inhaling) and expiration (breathing out, or exhaling). Inspiration moves air from the external environment to the lungs inside the body.Expiration moves air from the lungs back to the external environment.

• External respiration is the exchange of oxygen and carbon dioxide between the air and the blood.
• Internal respiration is the exchange of oxygen and carbon dioxide between the body’s tissue cells and the blood.
• Cellular respiration is the series of energy-releasing chemical reactions that take place inside the cells. Cellular respiration is the final stage in respiration. It is the sole means of providing energy for all cellular activities, and it helps the body maintain homeostasis.

Upper Respiratory Tract

• Air enters mouth/nostrils
• Nasal passages warm, moisturize and clean incoming air
• Mucus secreted- cleans air
• Very thin bones- turbinates bones, increase the surface area of nasal passages and are covered in cilia
**Pharynx = Throat**
- Passageway for air and food/water
- Moves air to the lungs
- Opening to trachea = glottis

**Larynx = Voice Box**
- Made of cartilage
- Pitch is determined by length of the vocal cords
  - Long Cords = Lower Pitch
  - Short Cords = Higher Pitch

**Trachea = Windpipe**
- After passing through the larynx air moves into the trachea (wind pipe)
- Strengthened by semi-circular, cartilaginous arches that prevent collapsing
Think, Pair, Share Review:

1. Name the structures of the upper respiratory tract.
2. What does mucus and cilia do in terms of aiding respiration?
3. How are internal and external respiration different?
Lower Respiratory Tract
- Trachea branches into two bronchi
- Bronchi contain C-shaped cartilaginous rings surrounding its wall
- Bronchi branch into bronchioles
- Both are lined with cilia and mucus

Lungs
- Each lung is divided into distinct lobes
- Right lung has three and left lung has two — why?
- Each lung is surrounded by a pleural membrane, the outer layer of this membrane attaches to the inside of the chest wall
- Membrane attached lungs to chest wall with fluid layer
- Why fluid?

Continued...
- The inner membrane attaches to the lung.
- Fluid fills the space between these two membrane layers — this allows them to respond to the movement of the chest cavity
- Each bronchiole ends with a cluster of tiny sacs (alveoli) that facilitate gas exchange during external respiration
- Capillaries surround the alveoli and connect to arteries and veins
Think, Pair, Share Review:

1. The trachea breaks up into two passageways known as the _________. These structures branches and makes up what?
2. What fluid surrounds the lungs? What is its function?
3. Where does gas exchange occur?

Homework:

• Pg. 248 #1,3,5-7,9,10,12