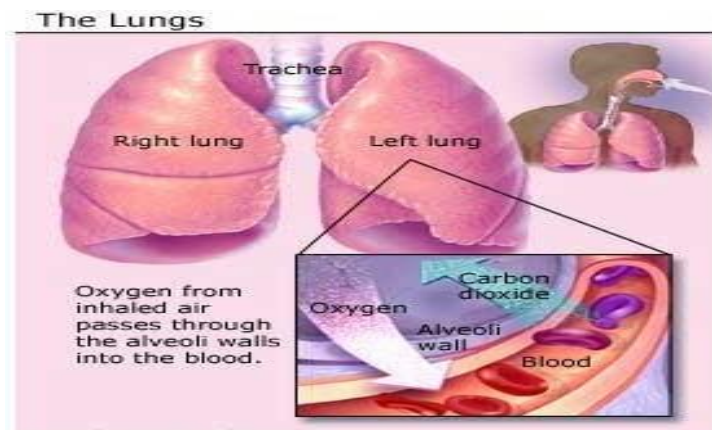


## Respiratory System

The respiratory system is the organs and other parts of your body involved in breathing, when you exchange oxygen and carbon dioxide. The respiratory system works with the circulatory system to provide this oxygen and to remove the waste products of metabolism. It also helps to regulate pH of the blood.

Respiration is the sequence of events that results in the exchange of oxygen and carbon dioxide between the atmosphere and the body cells. Every 3 to 5 seconds, nerve impulses stimulate the breathing process, or ventilation, which moves air through a series of passages into and out of the lungs. After this, there is an exchange of gases between the lungs and the blood. This is called external respiration. The blood transports the gases to and from the tissue cells. The exchange of gases between the blood and tissue cells is internal respiration. Finally, the cells utilize the oxygen for their specific activities: this is called cellular metabolism, or cellular respiration. Together, these activities constitute respiration.



**Parts of the Respiratory System**  
Respiratory system includes:

- Nose and nasal cavity
- Sinuses

- Mouth
- Throat (pharynx)
- Voice box (larynx)
- Windpipe (trachea)

- Diaphragm
- Lungs
- Bronchial tubes/bronchi
- Bronchioles
- Air sacs (alveoli)
- Capillaries

- Breathing starts when you inhale air into your nose or mouth. It travels down the back of your throat and into your windpipe, which is divided into air passages called bronchial tubes.
- For your lungs to perform their best, these airways need to be open. They should be free from inflammation or swelling and extra mucus.
- As the bronchial tubes pass through your lungs, they divide into smaller air passages called bronchioles. The bronchioles end in tiny balloon-like air sacs called alveoli. Your body has about 600 million alveoli.
- The alveoli are surrounded by a mesh of tiny blood vessels called capillaries. Here, oxygen from inhaled air passes into your blood.
- After absorbing oxygen, blood goes to your heart. Your heart then pumps it through your body to the cells of your tissues and organs.
- As the cells use the oxygen, they make carbon dioxide that goes into your blood. Your blood then carries the carbon dioxide back to your lungs, where it's removed from your body when you exhale.

### **Inhalation and Exhalation**

- Inhalation and exhalation are how your body brings in oxygen and gets rid of carbon dioxide. The process gets help from a large dome-shaped muscle under your lungs called the diaphragm.
- When you breathe in, your diaphragm pulls downward, creating a vacuum that causes a rush of air into your lungs.
- The opposite happens with exhalation: Your diaphragm relaxes upward, pushing on your lungs, allowing them to deflate.