Chapter 10: The Respiratory System

Path of Air in the Lungs
After air enters the lungs it enters the two primary bronchi. One bronchus enters each lung. From there the bronchi branch. These new branches are called secondary bronchi. There are five secondary bronchi. Each bronchus enters a lobe (part) of the lungs. There are three lobes in the right lung and two lobes in the left lung.

Bronchioles and Alveoli
In each lobe the secondary bronchi branch into tertiary bronchi. These tertiary bronchi branch into bronchioles. The function of bronchioles is to regulate the amount of air which enters the gas exchange area of the lungs, the alveoli. Alveoli are the small bubbles clustered around each bronchiole, just like a cluster of grapes. Each lung contains about 150 million alveoli. The singular form of alveoli is alveolus.

Gas Exchange
Each alveolus is closely surrounded by capillaries. The walls of the capillaries and the alveolus are very thin to allow gas exchange to take place. The process that allows gas exchange is called diffusion. Basically, diffusion is when molecules go from one area which has a large concentration of molecules to another area where there are fewer molecules. In this way when oxygen enters your lungs, and there comes to be a large concentration of oxygen molecules in the alveoli, the oxygen leaves the alveoli and goes to the capillaries where there are fewer oxygen molecules.

Diffusion
In terms of diffusion, it is important to remember that the molecules in one area are moving randomly so when there are a lot of molecules it is more likely that some of them will be pushed to the less-populated area. This movement is known as net movement. It means that many of the molecules are moving toward the emptier space, but not all of them. When both sides are more or less even in their concentration of molecules, movement still occurs, but equally in both directions (no more net movement occurs).

Keeping the Respiratory System Healthy
The respiratory system stays healthy in three basic ways. First hairs in the nose catch particles such as dust, bacteria and viruses. Cilia, small hair-like projections, in the trachea also help to catch particles. Next, these particles can be caught by mucus in the upper respiratory system. Finally, if some of these particles do enter the lungs deeply, there are cells called alveolar macrophages which wander around in the lungs “eating” the particles.