

Living Systems

INVESTIGATIONS GUIDE



Full Option Science System
Developed at the Lawrence Hall of Science, University of California, Berkeley
Published and Distributed by Delta Education

Investigation 3 – Transport Systems

PART 3: Respiratory Systems

NGSS Standards:

5-PS3.D
5-LS1.C
5-LS2.B

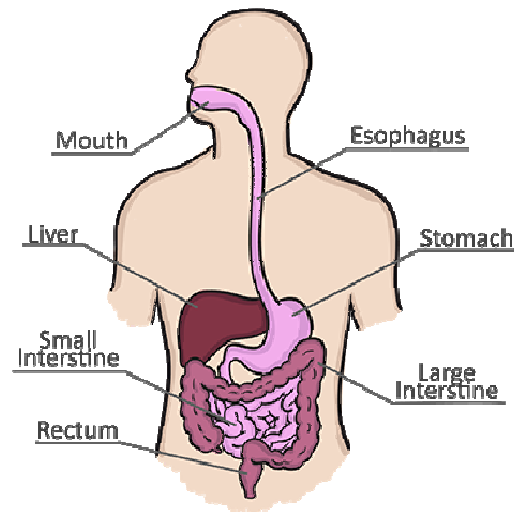


RECALL: How do nutrients for the cells get **into the blood**?

RECALL: How are the simple chemicals **delivered to the cells**?

RECALL: What other resources are needed by cells to stay alive?

Organs of the Digestive System



*Complex foods eaten by humans is processed in the **digestive system** to produce simple chemicals that pass from the digestive system into the bloodstream.*



*The simple chemicals are delivered to the cells by the **circulatory system**.*

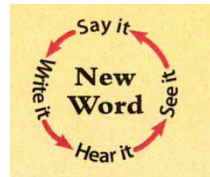


*All living cells need **water and oxygen**. Water enters the bloodstream through the digestive system.*

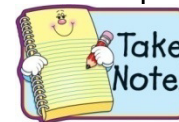
When we investigated the circulatory system, we discovered that the **blood circulates through the lungs** as part of its journey through the body. The lungs come into action when we breathe.



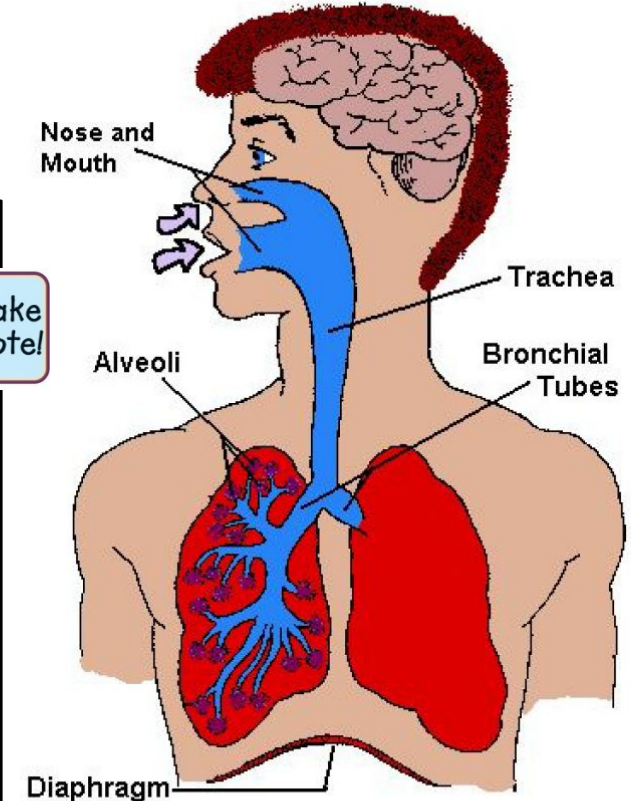
Why do people breathe?



In this investigation we will learn about another complex system – the **respiratory system**.



The **lungs** are the most important part of the respiratory system used for breathing. Your lungs are connected to the environment by a system of tubes and openings. The lungs rest in a chamber inside your chest. The chamber has a large, flat, arched muscle at its bottom edge. The muscle is your **diaphragm**. When the diaphragm muscle contracts, air is pulled into your lungs, and you inhale. When the muscle relaxes, air flows out of your lungs, and you exhale.

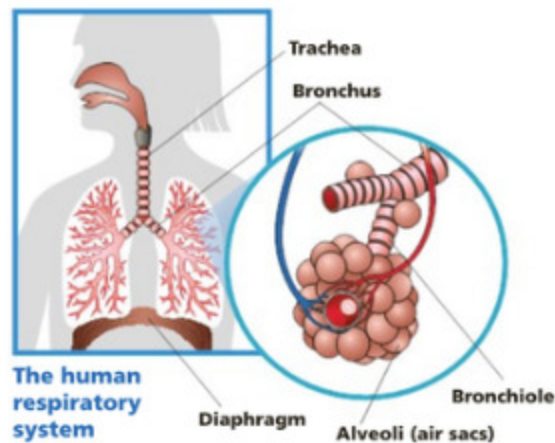


The Human Respiratory System

The **respiratory system** has three main parts. They are the lungs, the system of tubes that connect the lungs with the outside air, and the diaphragm (an arched muscle). The respiratory system brings oxygen to the red blood cells and gets rid of waste carbon dioxide.

When your arched diaphragm muscle contracts, you breathe in. When you inhale (breathe in), oxygen from the air enters your lungs. The air ends up in the 300,000,000 alveoli (air sacs) at the ends of the tiny tubes (bronchioles) in your lungs. The alveoli are surrounded by capillaries. The oxygen passes through the walls of the air sacs into the capillaries. Red blood cells pick up the oxygen. At the same time, the red blood cells release waste carbon dioxide from the body cells into the alveoli. This waste gas goes into the air when you exhale.

Blood flows to the body tissues through arteries. The blood flows through smaller and smaller arteries, ending in networks of capillaries. Capillaries are only 1/100 of a millimeter in diameter. That's just a little bit larger than a red blood cell. Capillaries are so small that red blood cells often travel single file to get through.



TIME TO READ

Homework Grade:

Read “**The Human Respiratory System**” on pages 54 - 55

Answer the “*Thinking about..*” questions in your science notebook.

Be sure to write all **bold vocabulary words** in your notebook.