

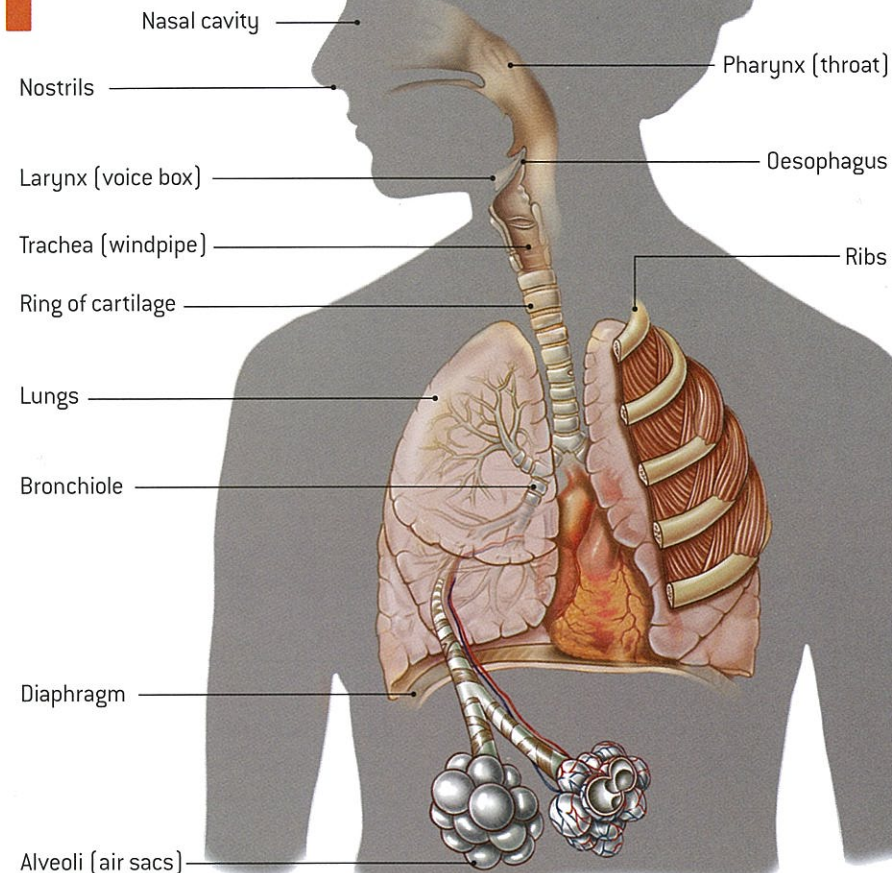
RESPIRATORY SYSTEM

The respiratory system gives the cells in your body the oxygen they need, and removes carbon dioxide. We breathe oxygen into our lungs and transfer it into our blood so it can be transported around the body. Cells need oxygen to create energy from the food we eat.

The lungs

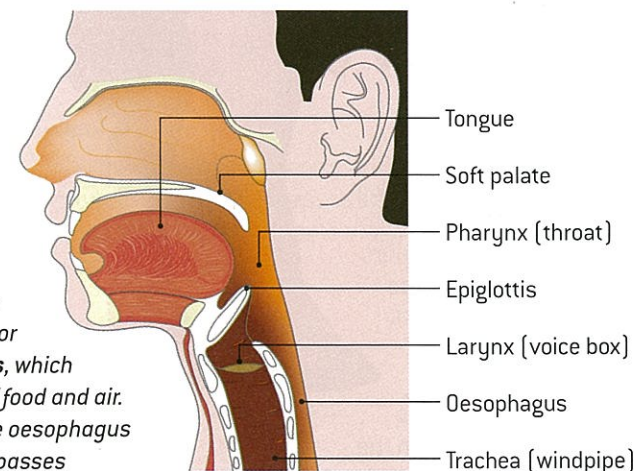
There are two **lungs** in our chest. Every time we take a breath, each lung fills with air and increases in size. The trachea branches into two tubes to carry air into each lung. These branches are called bronchi. The lungs feel spongy because they are home to millions of tiny air sacs called **alveoli**. If these air sacs were untangled and flattened, they would be the size (surface area) of almost half of a tennis court!

Each tiny alveolus (air sac) is covered by a mesh of even smaller blood vessels called **capillaries**. The lungs are organised to have as many air sacs as close to as many blood vessels as possible. For oxygen and carbon dioxide to pass between the air sacs and the blood, the blood vessels need to be able to get really close to the air. Oxygen passes into the blood, whereas carbon dioxide passes out of the blood into the air. We then exhale (breathe out), releasing the carbon dioxide from our bodies as each lung decreases in size.

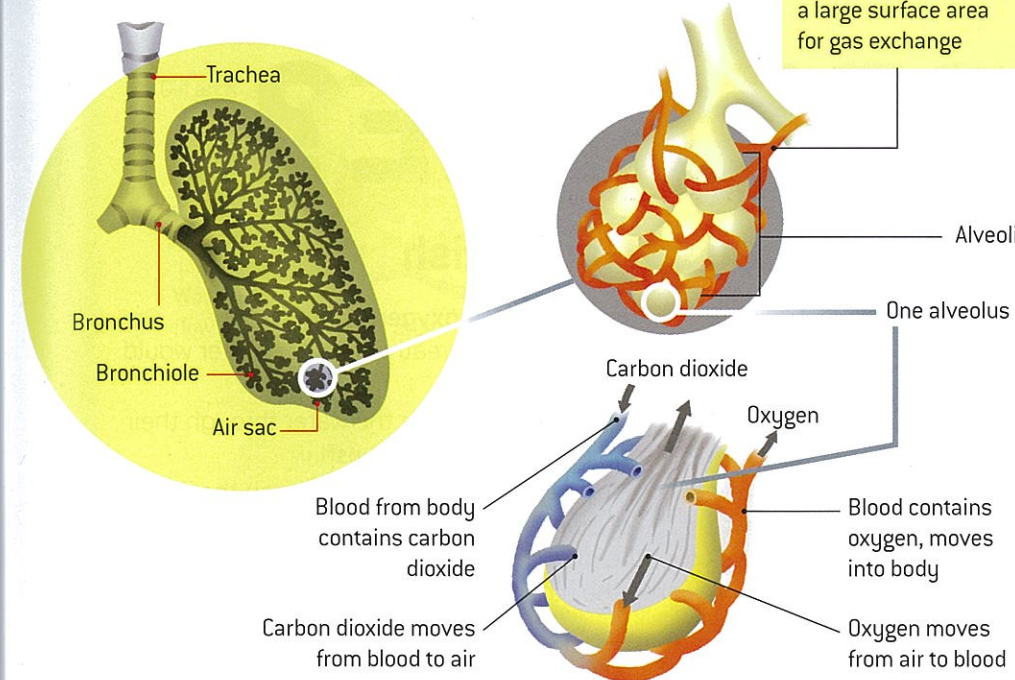


THE RESPIRATORY SYSTEM

We breathe air in through our nose and mouth. As we breathe, the air is cleaned with hairs and wet surfaces as it travels to our **pharynx** (throat). At the bottom of the pharynx is a trapdoor called the **epiglottis**, which controls the path of food and air. Food goes down the oesophagus to the stomach. Air passes through the **trachea** (windpipe) to the lungs.



GAS EXCHANGE IN THE ALVEOLI



The diaphragm

The **diaphragm** is a dome-shaped muscle that is connected to your ribs and moves up and down beneath your lungs. The muscle contracts down and relaxes up. When the muscle doesn't move properly, you feel winded. The dome shape of the diaphragm protects the heart and lungs from the other organs. The lungs have no muscle tissue, so they can't move on their own. Muscles between the ribs lift the rib cage up and out to increase the 'suction' of air into the lungs, pulling the air in and filling them up.

LOOK IT UP

alveoli tiny airsacs in the lungs where exchange of oxygen and carbon dioxide takes place

capillaries small blood vessels connecting arteries and veins

diaphragm the muscle that lifts the rib cage to increase suction of air into the lungs

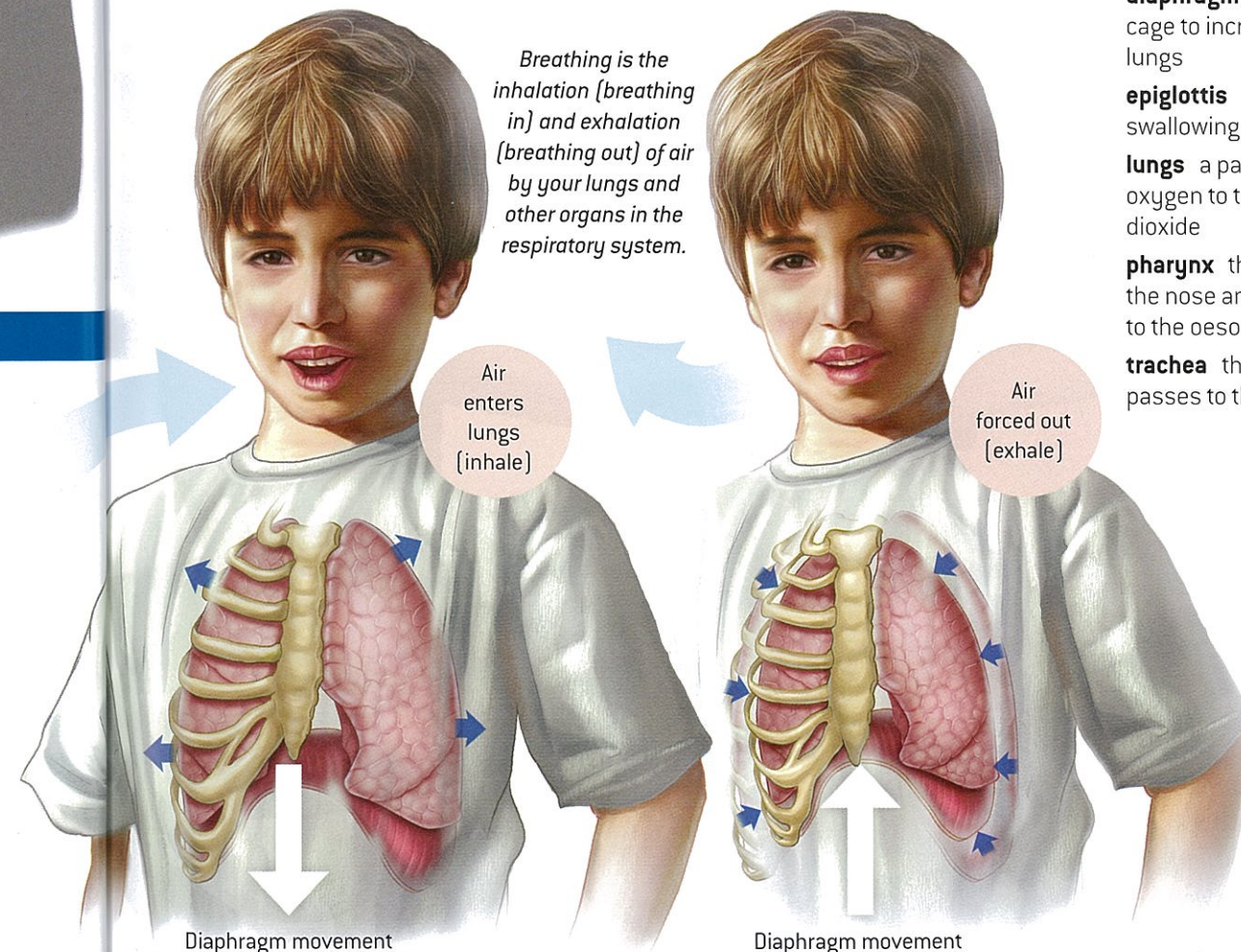
epiglottis a flap that closes during swallowing to cover the windpipe

lungs a pair of breathing organs that bring oxygen to the blood and remove carbon dioxide

pharynx the cavity with muscles behind the nose and mouth, connecting them to the oesophagus

trachea the windpipe through which air passes to the lungs

Breathing is the *inhalation* (breathing in) and *exhalation* (breathing out) of air by your lungs and other organs in the respiratory system.



CHECK IT OUT

- 1 What is the function of the respiratory system?
- 2 What role does the epiglottis play?
- 3 Describe what happens to your diaphragm when you inhale and exhale.
- 4 How do the lungs change in size and why?
- 5 What two key jobs do alveoli perform?