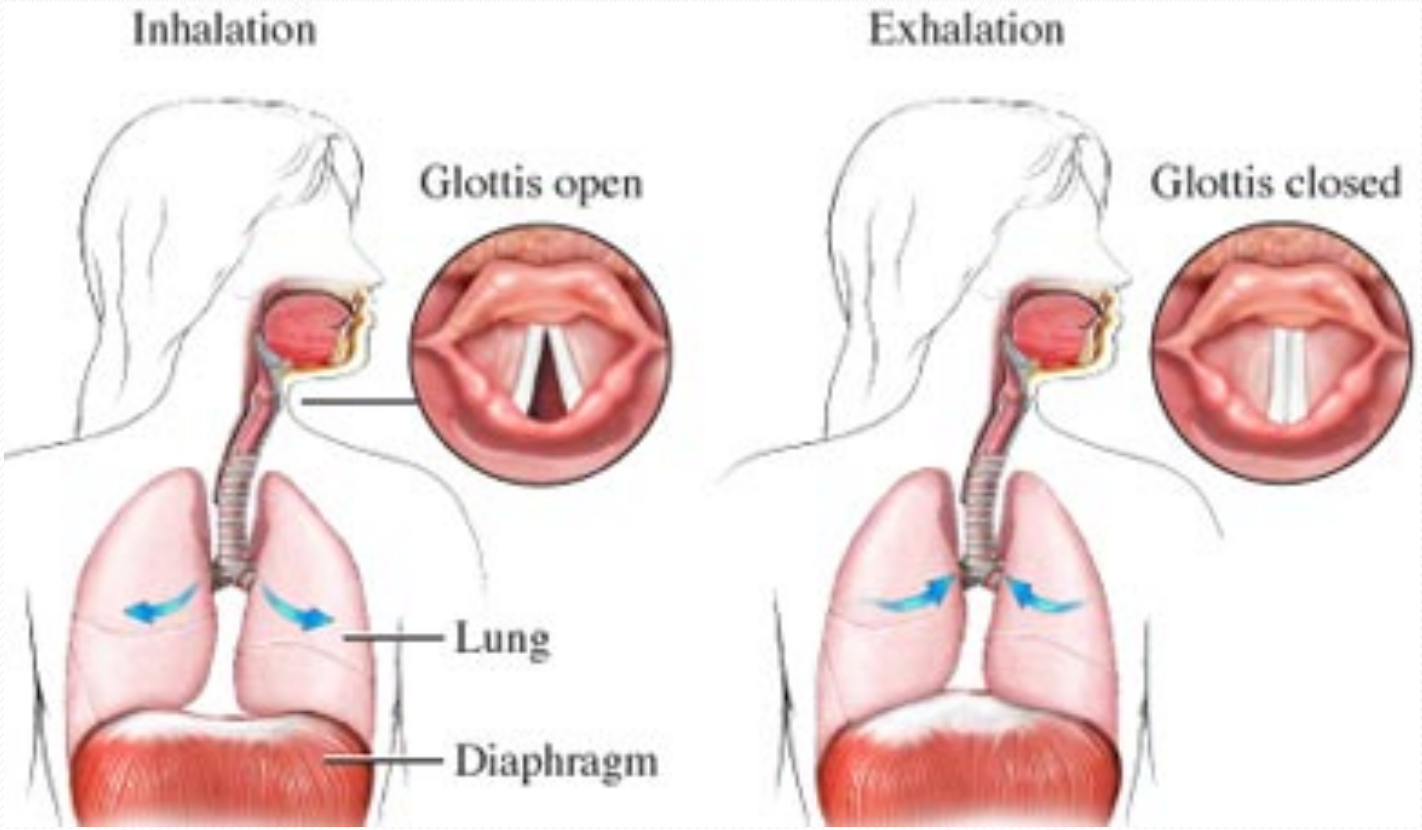
C. Glottis/Larynx

1. **Located just below the epiglottis**
2. **The GLOTTIS is the opening to the larynx**



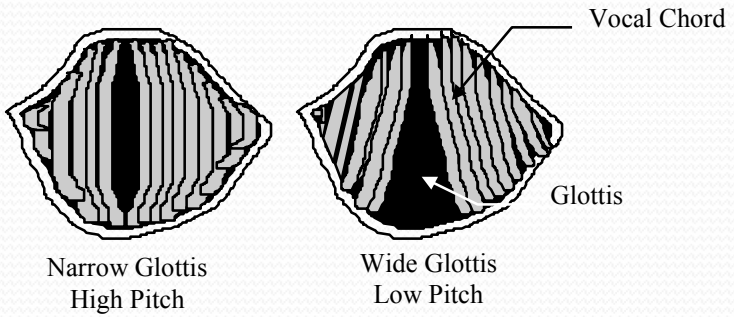
3. The LARYNX is the structure that contains the vocal cords and voice box

a. The air enters the larynx

b. It is like a triangular box with the ADAM'S APPLE at the front corner

c. Elastic ligaments called VOCAL CORDS stretch from the back to the front of the larynx just at the sides of the glottis

d. These cords vibrate when air is expelled past them through the glotti



e. This vibrations produce sound

f. The pitch of the voice depends on the length, thickness, and degree of elasticity of the vocal cords and the tension at which they are held

g. Muscles adjust the tension of the chords to produce different sounds

D. Trachea

1. The "windpipe"
2. Cartilaginous ridges stiffen to prevent collapse with inhalation
3. Lined with ciliated mucous membranes.
   a. Cilia beat upward to move up mucus and any dust or particles that were inhaled or accidentally swallowed
   b. Smoking can destroy cilia

E. Bronchi

1. **The trachea divides into two BRONCHI, which branch into many smaller passages called BRONCHIOLES that extend into the lungs.**

F. Bronchioles

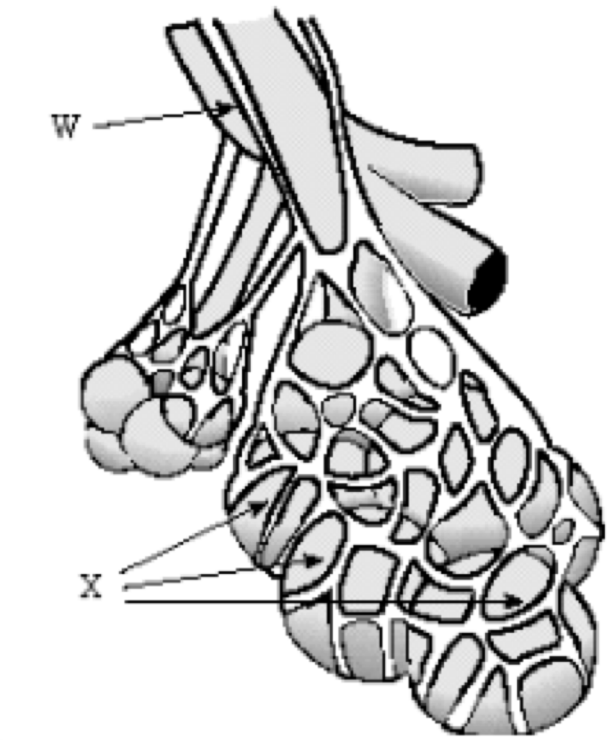
1. The bronchioles continue to branch out, and as they do, their walls get thinner and diameter smaller

2. Each bronchiole ends in sacs called ALVEOLI, which fill up much of the lungs

G. Alveoli

1. **Approximately 300 million alveoli per lung, for a total of 150 m^2 of alveolar area (at least 40 times the area of the skin)**

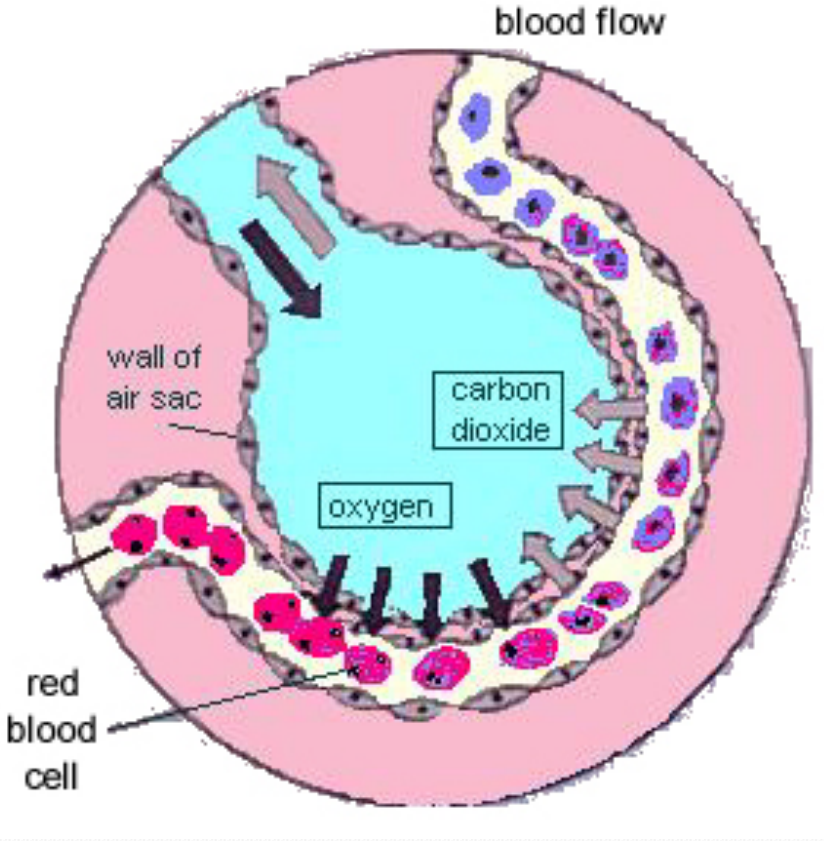
2. **Each alveolar sac is enclosed by a single layer of simple squamous epithelial tissue, which is surrounded by CAPILLARIES carrying deoxygenated blood**



Capillary network around alveoli

3. Gas exchange (CO_2 and O_2) **diffuse** directly through the **walls** between the **blood** and air in **alveoli**

4. Alveoli surfaces are **moist** and coated with **surfactant** (a **lipoprotein**) to prevent them from **collapsing** when air leaves them to reduce H_2O **surface tension** and prevent sides from **sticking** to each other

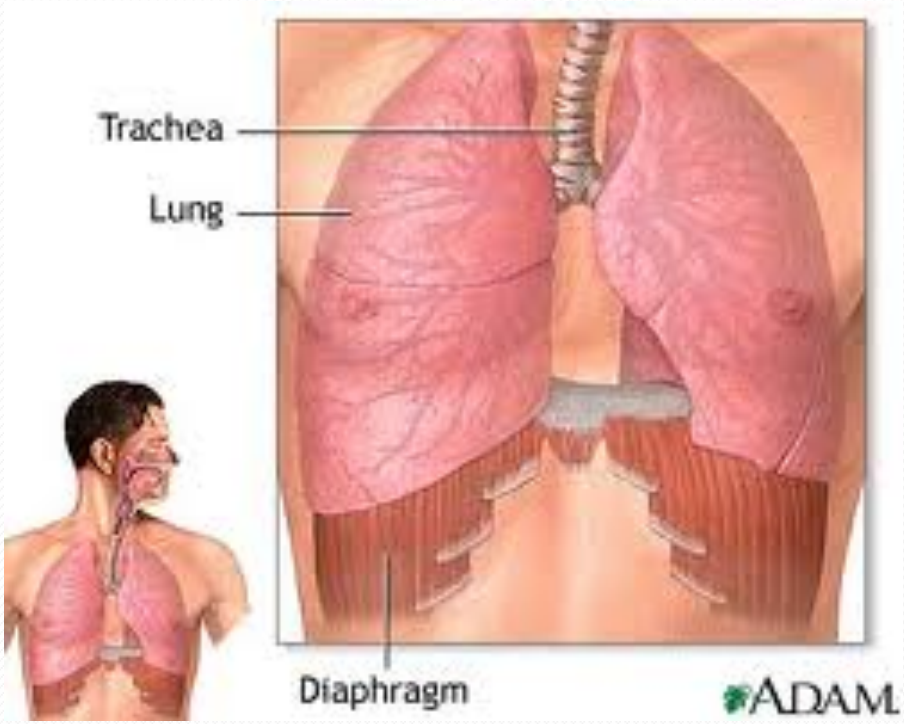


H. Lungs

Cow Lungs

Smoker vs Non-smoker

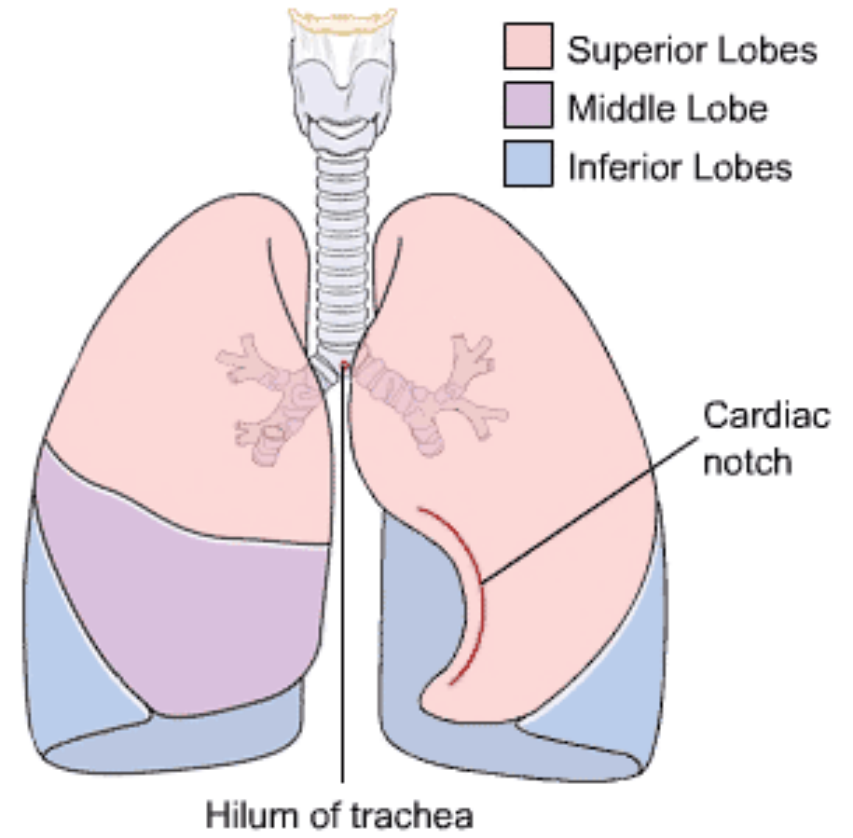
- **1. Lungs are cone-shaped organs that lie on both sides of the heart in the thoracic cavity**
- **2. Branches of the pulmonary arteries follow the bronchial tubes and form a mass of capillaries around the alveoli**



3. The right lung has 3 lobes and the left lung has 2 lobes

4. A lobe is divided into lobules, each of which has a bronchiole serving many alveoli

5. Lungs are very light and would float in water because they have so much air space



I. Ribs

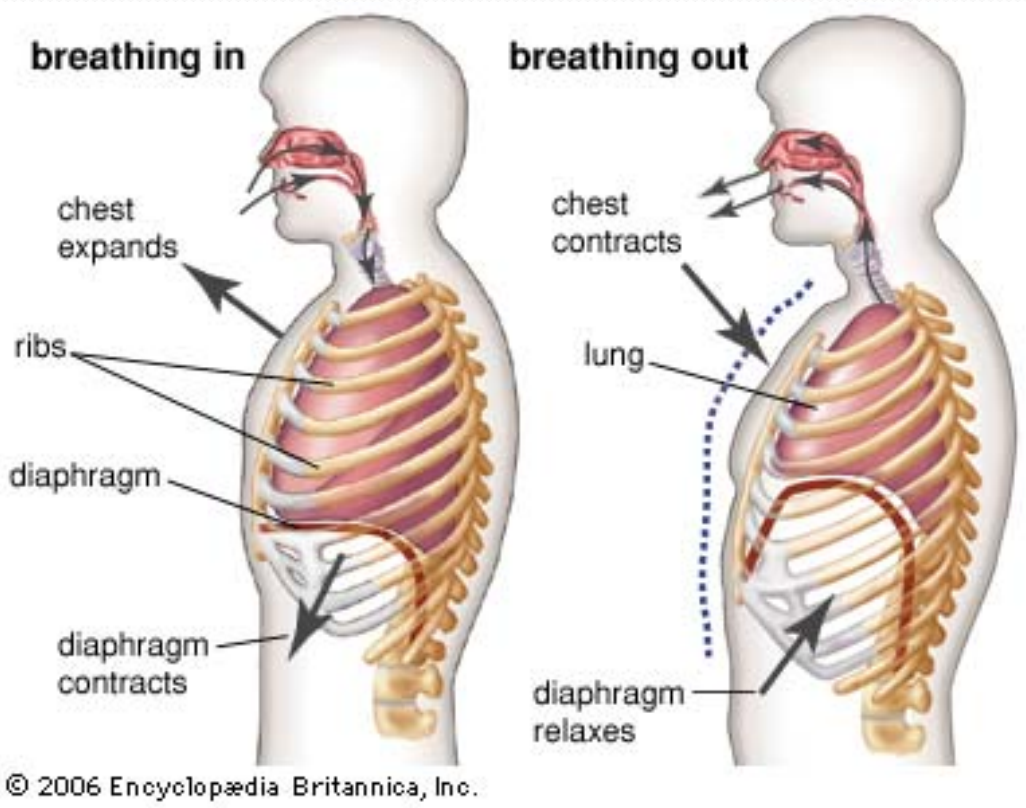
1. **Bones hinged to the vertebral column and sternum**

2. **Along with associated muscle, define the top and sides of the chest cavity**

J. Diaphragm

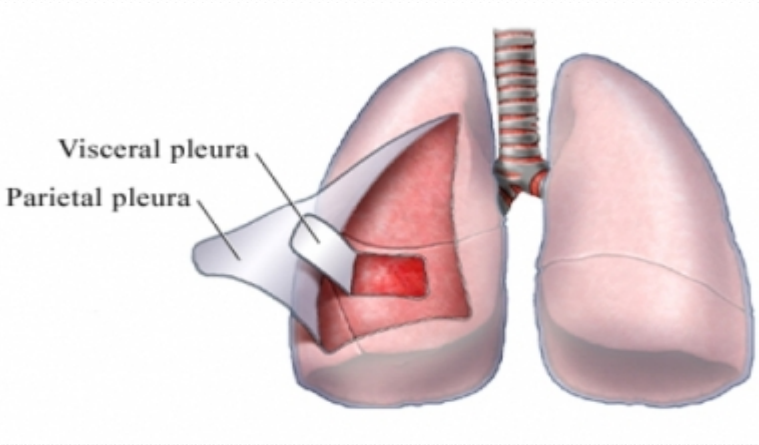
1. **Breathing is powered by this thick, dome-shaped muscle on the floor of the thoracic cavity (chest cavity)**

2. **This sheet of muscle separates the chest cavity from the abdominal cavity**



K. Pleural Membranes

1. Lungs are enclosed by two pleural membranes
   a. Outer pleural membrane sticks closely to the walls of chest and the diaphragm
   b. Inner pleural membrane is stuck to the lungs



2. The two lie very close to each other
3. In between is fluid to make for an air-tight seal
4. Pressure between the two is less than outside air pressure (or else the lung collapse when a puncture wound occurs) Three Kings Clip

L. Thoracic Cavity

1. A "**sealed**" chamber
2. Contains **lungs, heart**
3. **Ribs** form top and sides
4. **Diaphragm** forms bottom
5. Used to perform **inspiration** and **expiration**