

Good Stuff Goes In, Bad Stuff Goes Out: Homeostasis

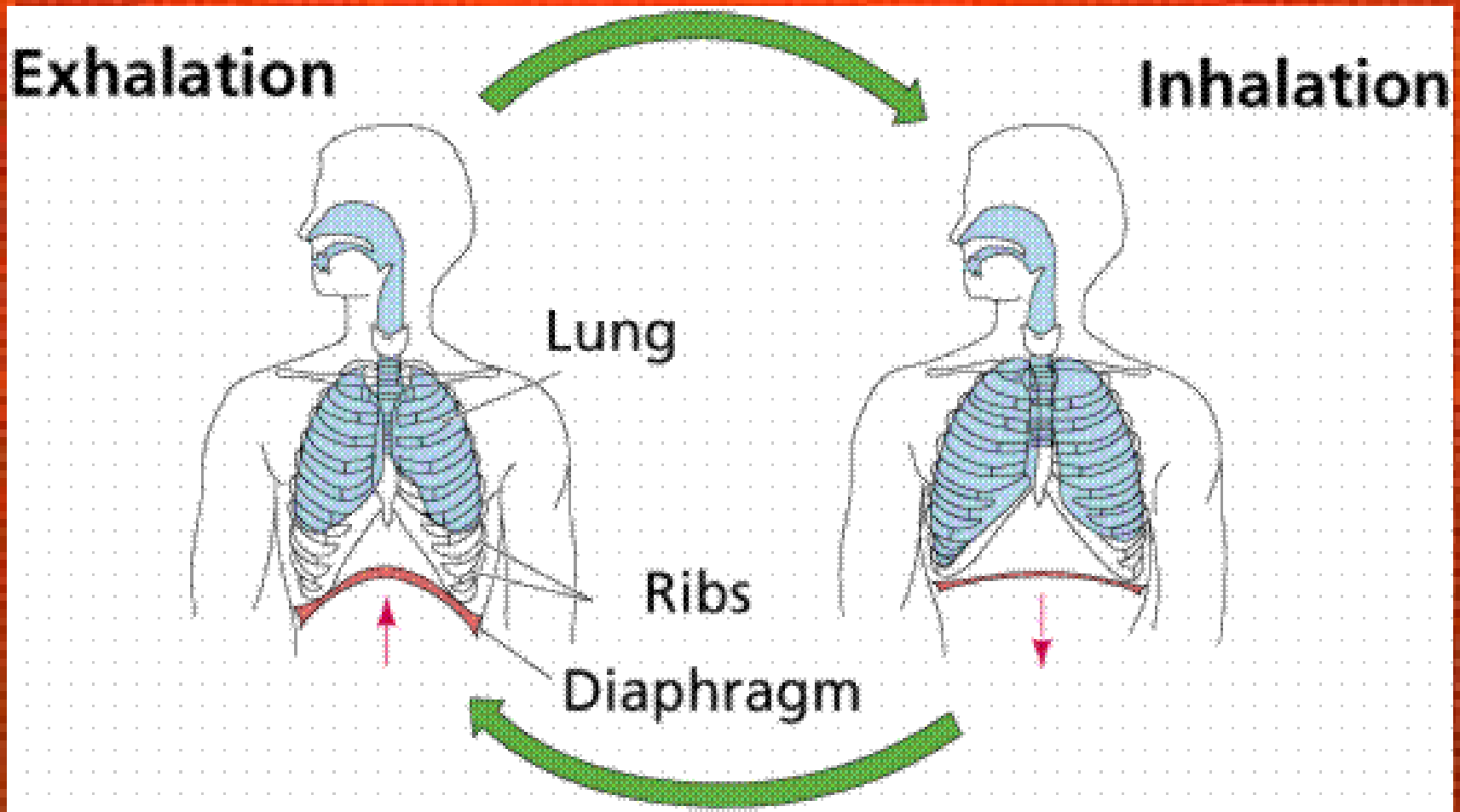
Human Body Systems

Standard 1

Describe the path an oxygen molecule takes from when it enters the lungs to when it diffuses into a red blood cell.

1. Diffusion of oxygen from an area of high concentration (air) to an area of low concentration occurs in the alveoli of the lungs. Thus oxygen diffuses down its concentration gradient (from air where it is plentiful to the body where it has been used up).
2. The surface of the lungs must be moist so that O₂ molecules stick and then diffuse through the outer membrane.
3. Once inside the lung cell, oxygen diffuses through the cytoplasm of the cell until it reaches the opposite membrane.
4. It diffuses through each membrane easily since it is a small nonpolar molecule.
5. The oxygen molecule into and out of a capillary cell in the same manner it entered the lung cell by diffusing down its concentration gradient.
6. Finally the oxygen enters the blood plasma where it attaches to a hemoglobin molecule on the surface of a red blood cell.

How do you think oxygen gets transported into and out of the lungs in the first place?



What can tobacco do to you to impair the effectiveness of you lungs and respiratory system?

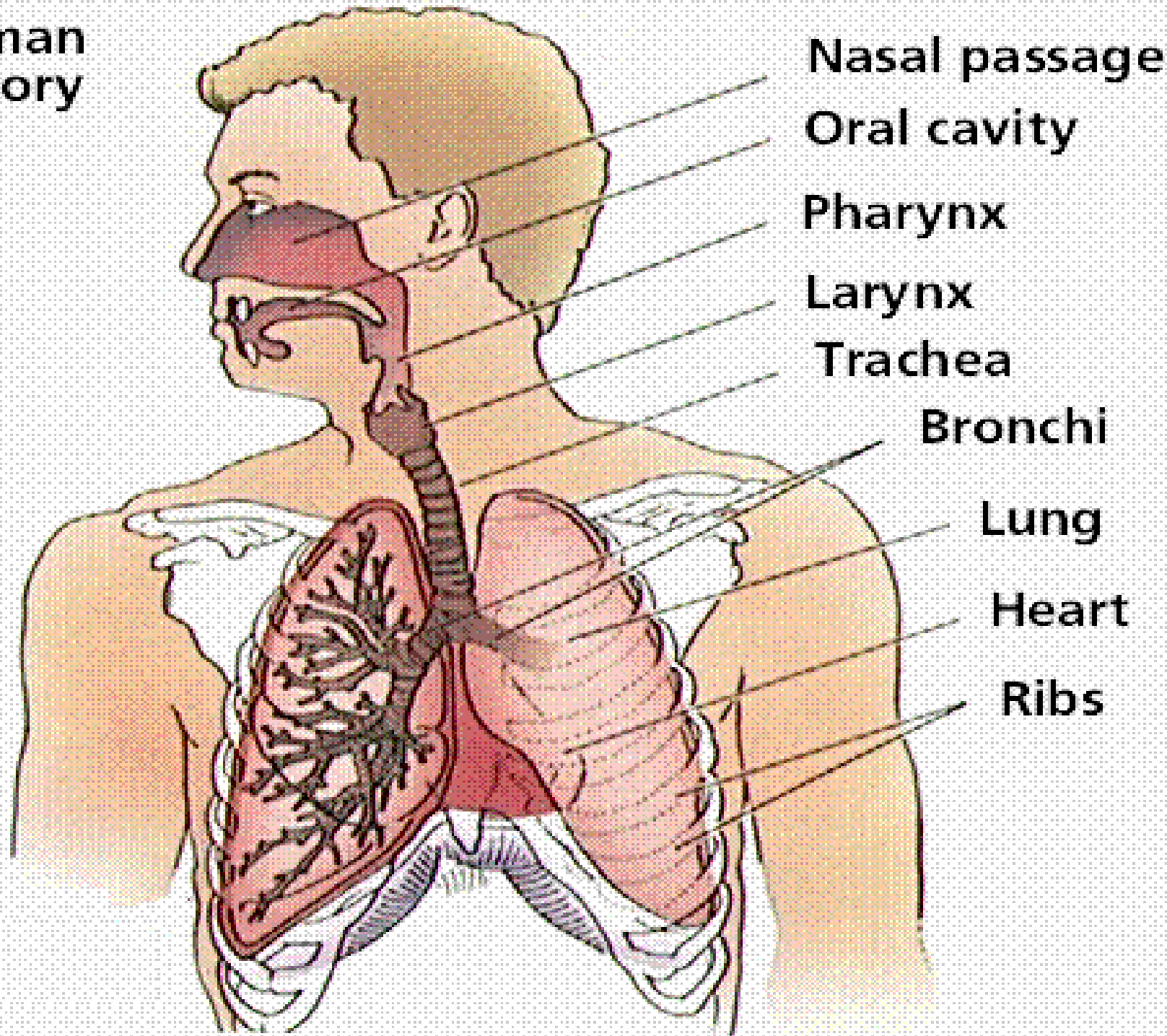
- Kill cilia that cleans air entering lungs
- Block passageways with tar
- Cover alveoli with tar
- Heart disease reduces flow to lungs
- Lung Cancer, Emphysema



The Parts of the Respiratory System

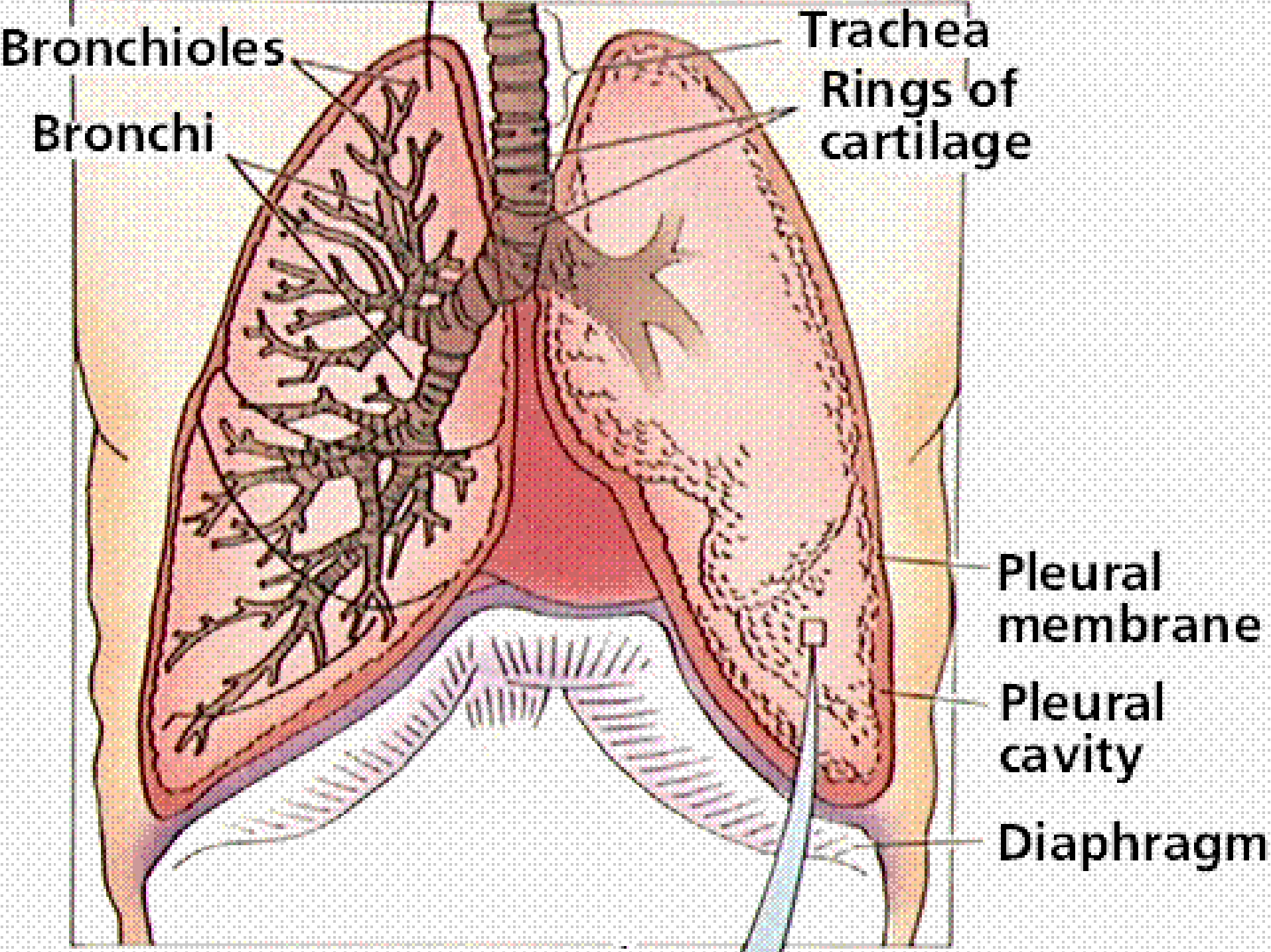
- **Nose** – Filter & warm incoming air
- **Pharynx** – Commonly called the throat; connects the nose & the windpipe.
- **Trachea** – Commonly called the windpipe; where air travels to the lungs
- **Bronchi** (bronchus; singular) – The trachea branches into 2 tubes (the bronchial tubes); these tubes continue to branch until each tube finally ends in a tiny air sacs called **ALVEOLI**.

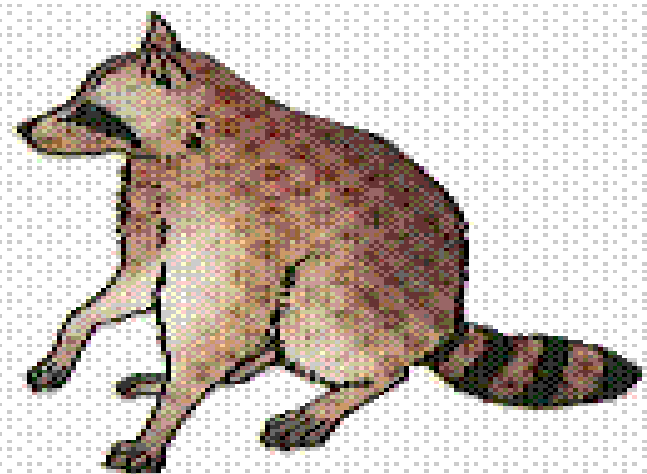
The Human Respiratory System



The Parts of the Respiratory System

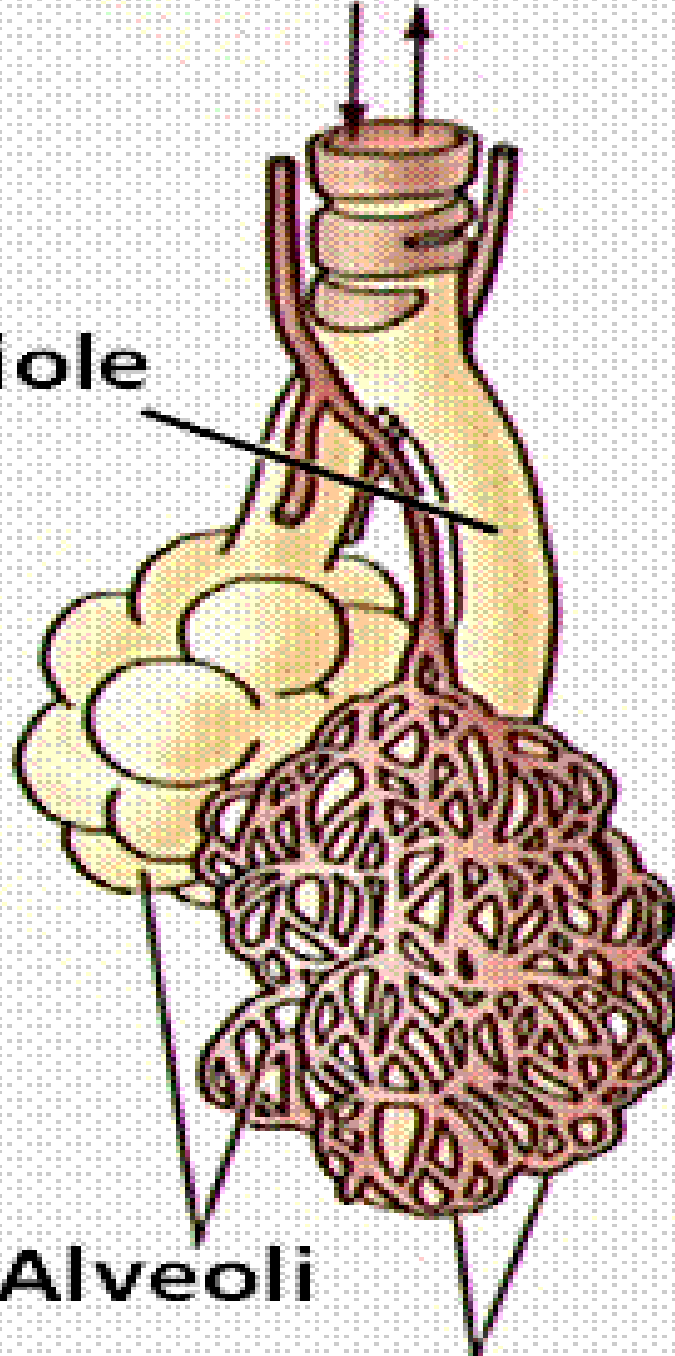
- **Bronchioles** – smaller branches of the bronchi.
- **Lungs** – The lungs are composed of about 300 million alveoli. At the **alveoli** is where gas exchange occurs. The lungs also act to filter out air entering the body.





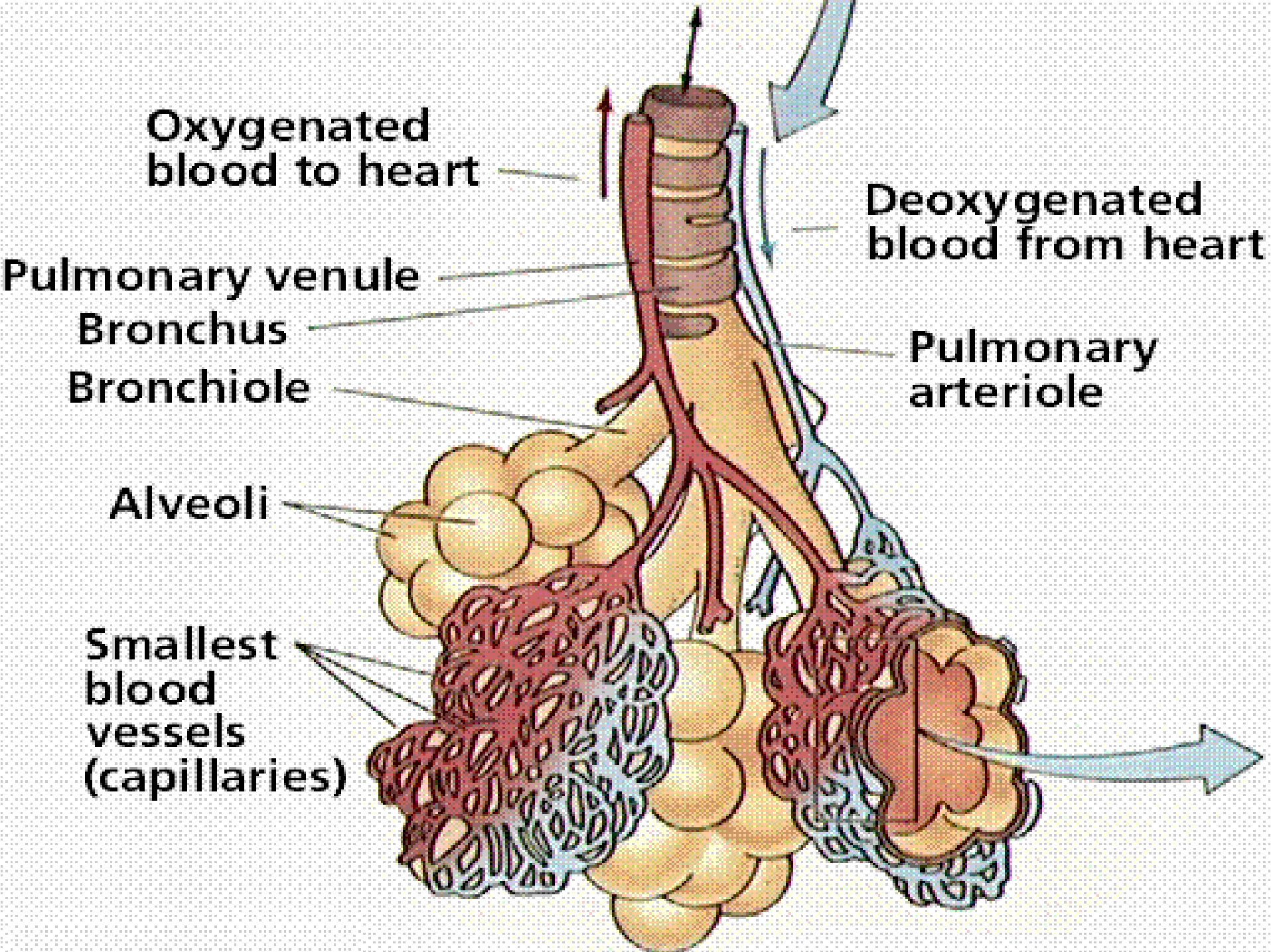
Air flow in mammal lung

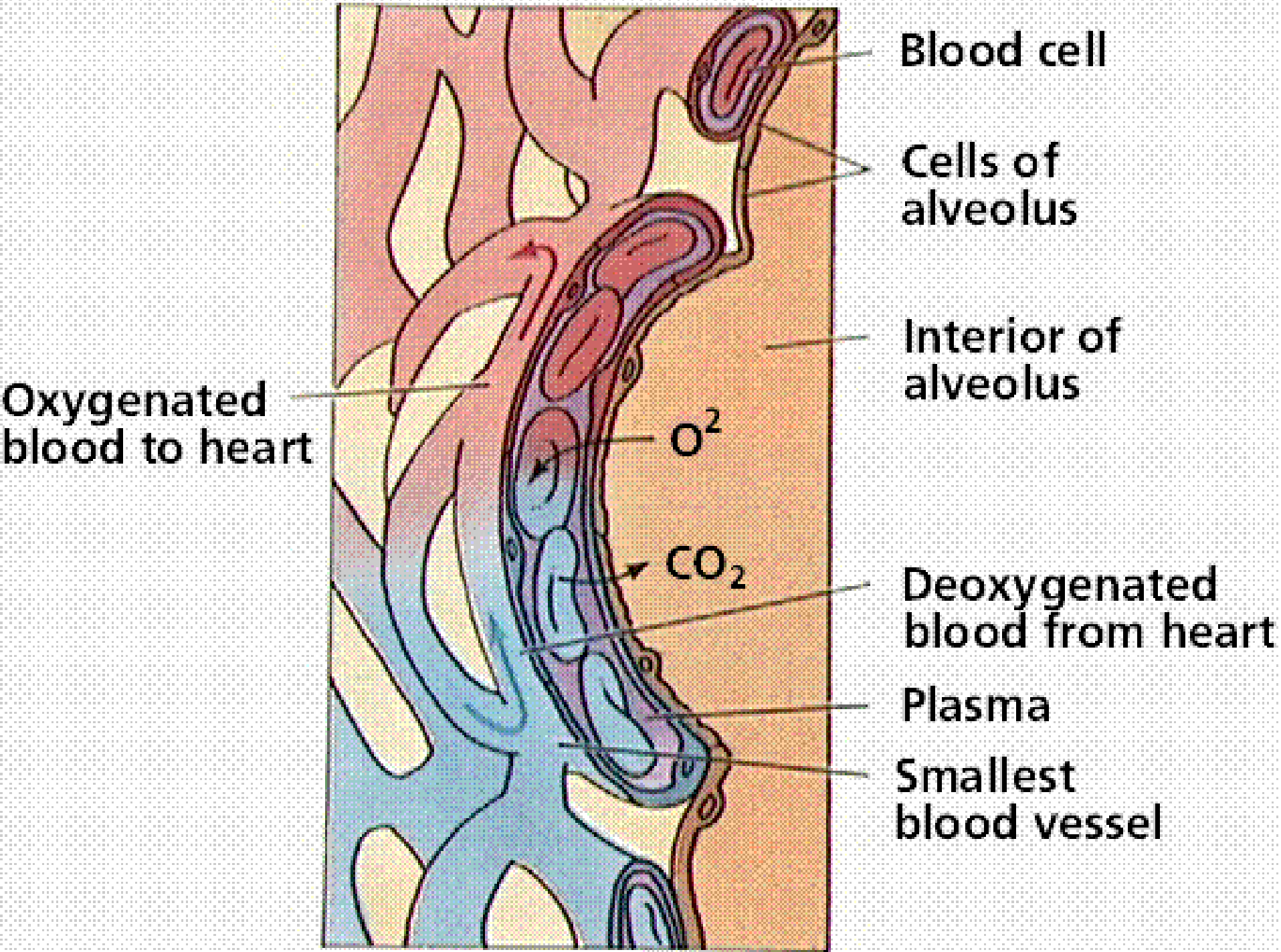
Bronchiole



Alveoli

Blood capillaries





The Parts of the Respiratory System

- **Diaphragm** – Large muscle that lies flat at the bottom of the chest cavity. The diaphragm aids breathing by moving up & down
- **Rib Muscles** – Work together with the diaphragm to aid in breathing.

How We Breathe

Exhalation

Inhalation

