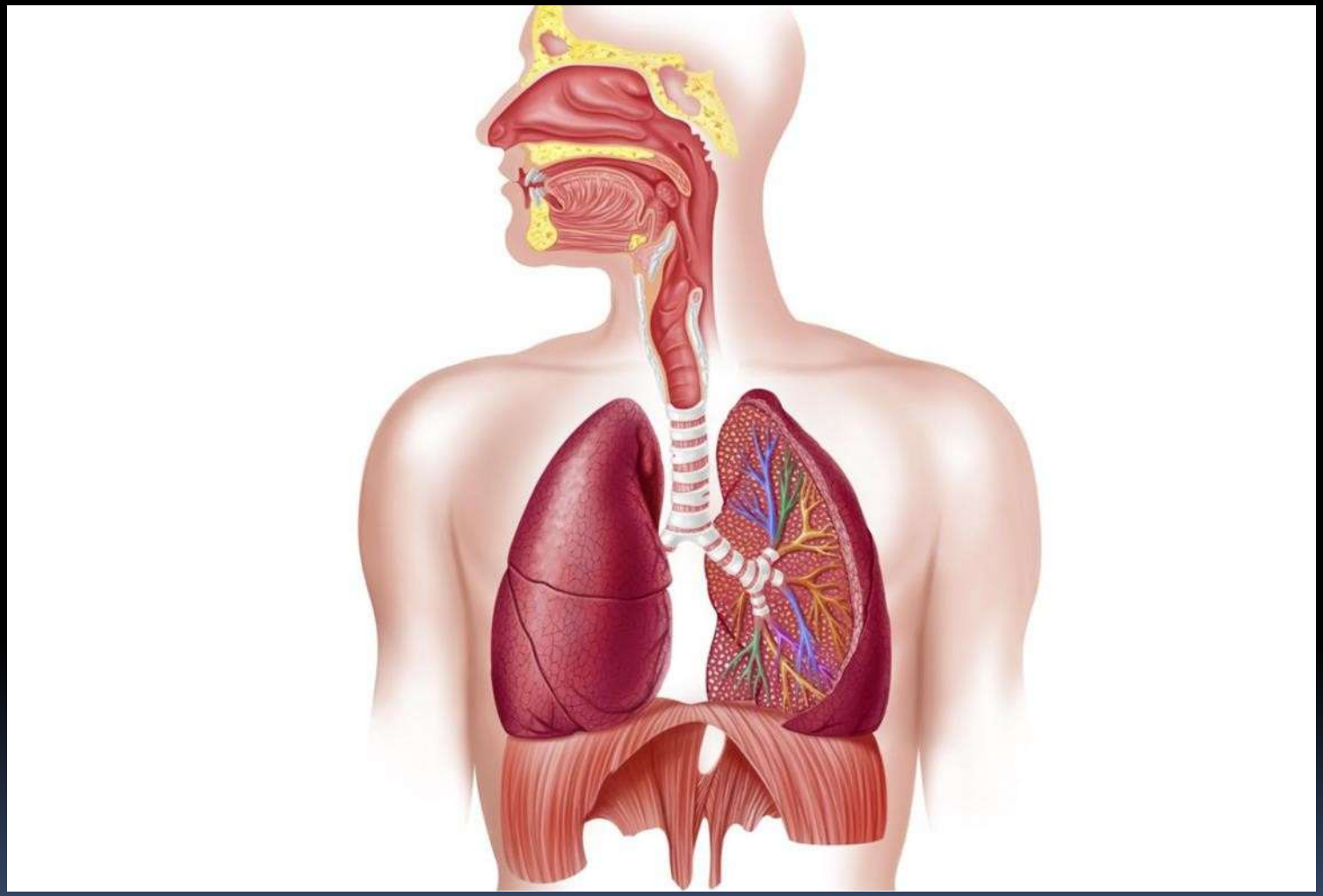
Physiology of Respiratory System

2nd Lecture

2nd Term



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Functions of the Respiratory System

Air Distributor

Gas exchanger

Filters, warms, and humidifies air

Influences speech

Allows for sense of smell

The Parts of the Respiratory System

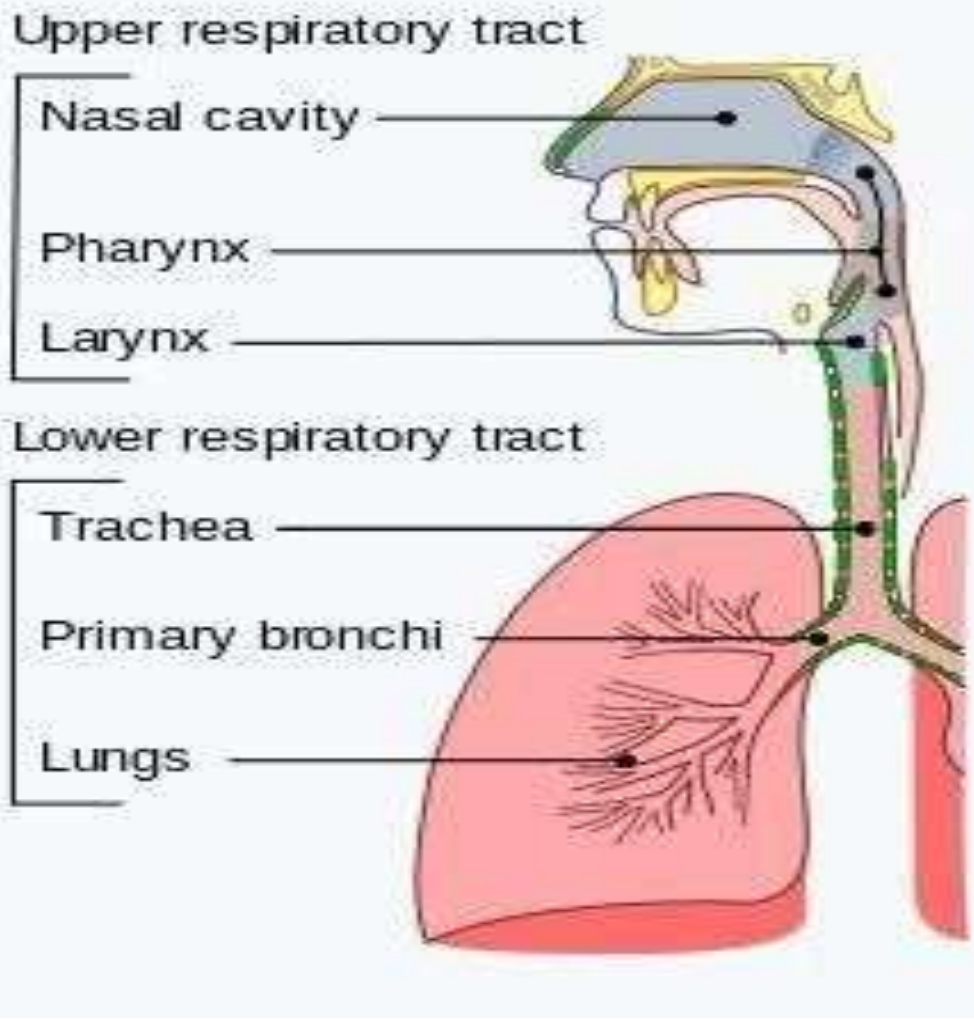
The respiratory system can be divided into the upper respiratory system and the lower respiratory system.

Upper respiratory Tract

Nose
Pharynx
Larynx

Lower respiratory Tract

Trachea
Bronchi
Lungs


Upper respiratory tract
Nasal cavity
Pharynx
Larynx
Lower respiratory tract
Trachea
Primary bronchi
Lungs

The flow of air from the environment moves through the respiratory system in these sequential steps during inspiration:

Nose or mouth > pharynx > larynx > trachea > the right or left bronchi of the lung > bronchioles of the lungs > alveoli of the lungs.

Respiration

Respiration is the movement of oxygen (O2) from the outside environment to the cells within tissues, and the transport of carbon dioxide (Co2) in the opposite direction.

Or, it is the exchange of gases between the atmosphere, lungs, blood, and tissues; where the O2 is taken in and Co2 is given out.

Stages of Respiration

Respiration occurs in two stages:
1. Inspiration during the air enters the lungs from atmosphere.
2. Expiration during the air leaves the lungs

Types of Respiration

Respiration is often classified into two types:
1. External respiration that involves exchange of respiratory gases, O2 and Co2 between lungs and blood.
2. Internal respiration which involves exchange of gases between blood and tissues

The term respiration includes 4 basic separate processes:

1. Pulmonary ventilation= (breathing)

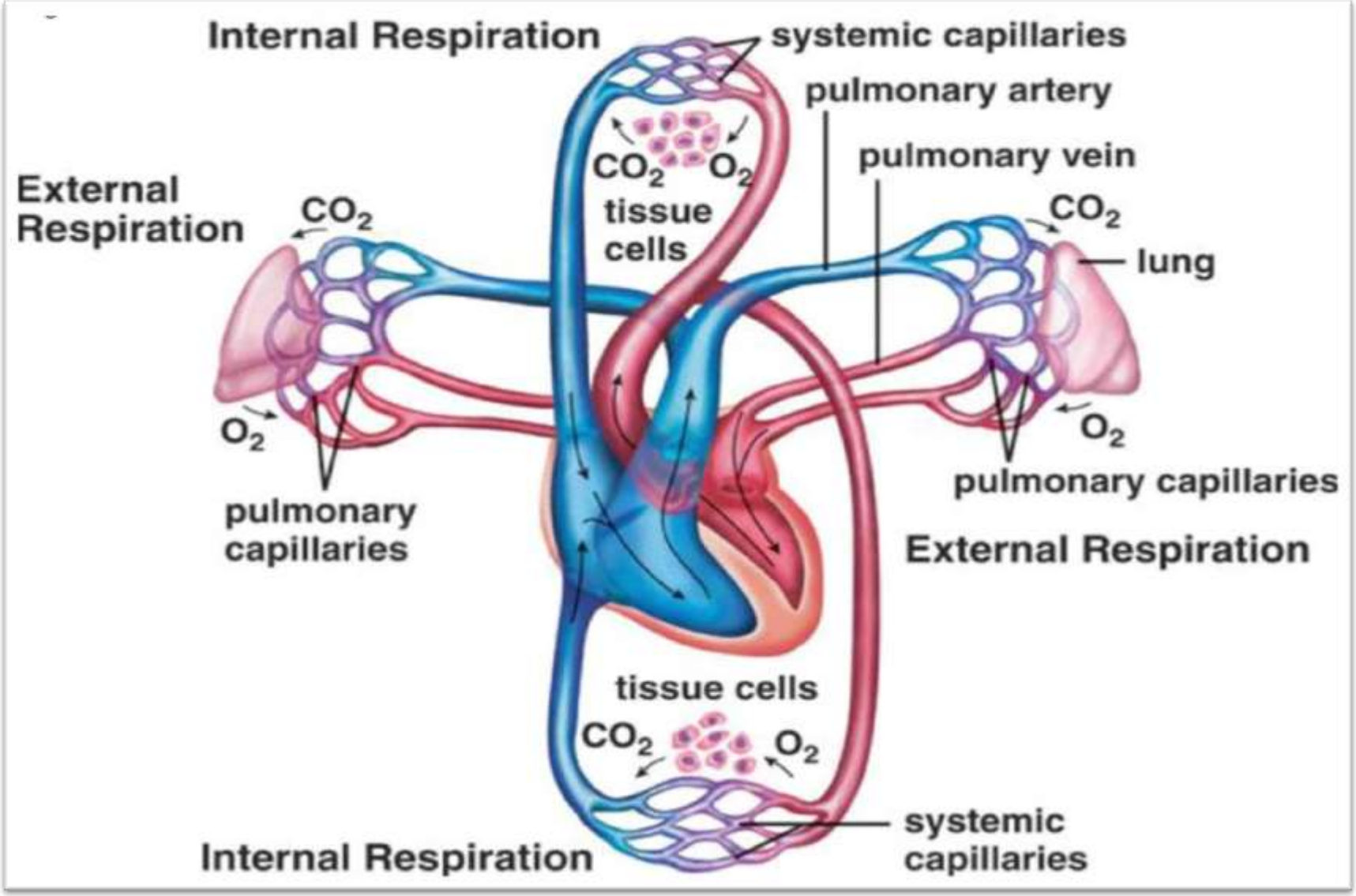
It is the inhalation (inflow) & exhalation (outflow) of air. Involve the exchange of air between the atmosphere and lungs alveoli (in and out).

2. External respiration= (pulmonary) within the lungs.

It is exchange of gases between lung's alveoli & blood in pulmonary capillaries which gains O2 and loses Co2.

3. Transport of respiratory gases= (via the blood). Oxygen and carbon dioxide transported to and from the lungs and tissue cells of the body via the bloodstream.

4. Internal respiration = (cellular respiration) within the tissue "O2 utilization"
It is exchange of gases between blood in systemic capillary & tissue cells.

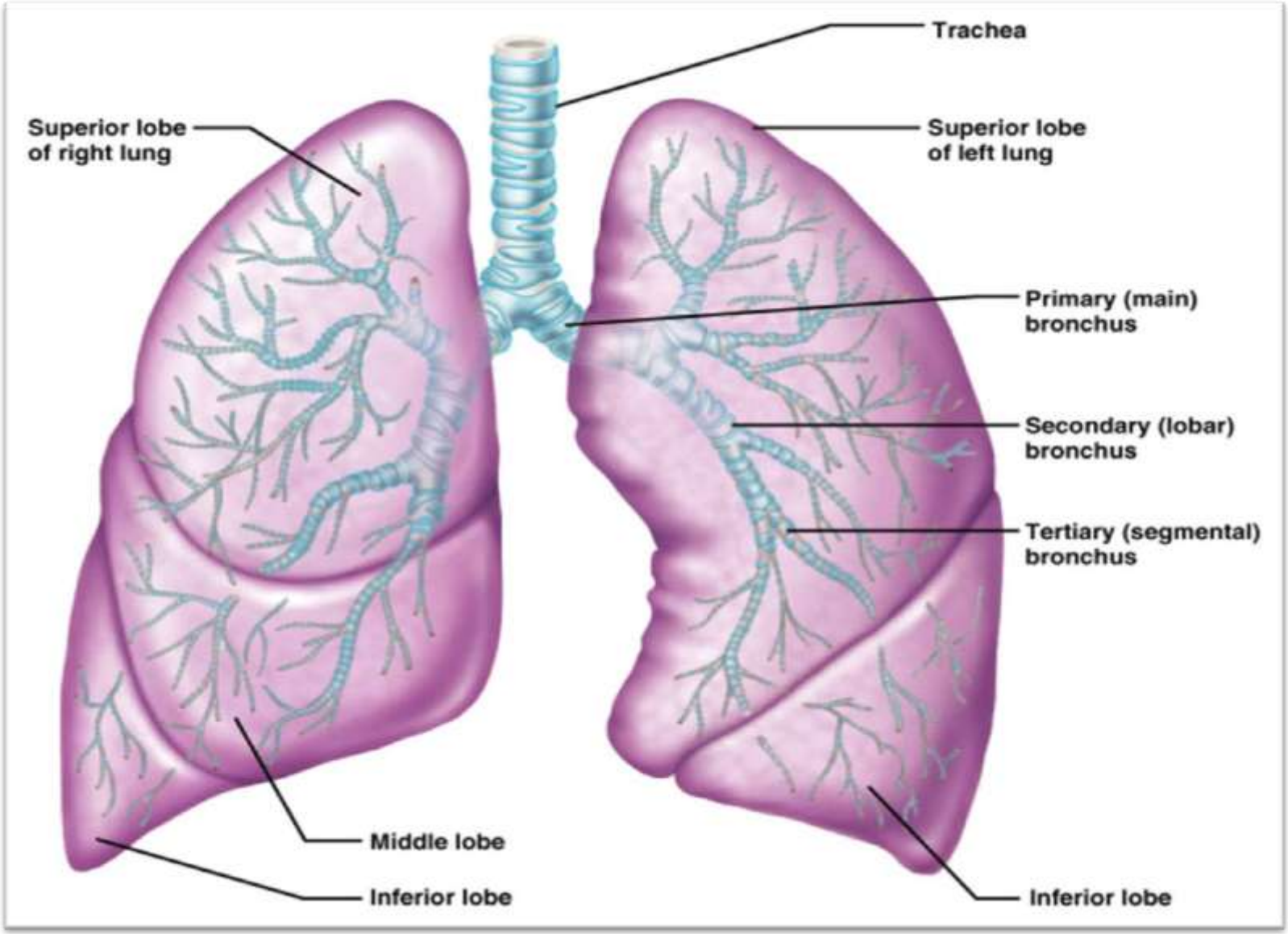


External and Internal Respiration

Lungs

The human body has two lungs which are the right lung and the left lung. The lungs share space in the thoracic, or chest cavity, of the human body with the heart which lies between the left and right lungs.

The right lung is larger than the left lung, The left lung has two lobes are the upper lobe and the lower lobe; and the right lung have three lobes are the upper lobe, the middle lobe, and the lower lobe.


Trachea
Superior lobe of right lung
Superior lobe of left lung
Primary (main) bronchus
Secondary (lobar) bronchus
Tertiary (segmental) bronchus
Middle lobe
Inferior lobe
Inferior lobe

Inspiration

The expansion of the lungs during inspiration is possible because the muscular diaphragm and the muscles between the ribs, which are referred to as the intercostal muscles, actively allow the chest and the lungs to expand when a person breathes in.

Expiration

The contraction of the lungs during expiration is possible because the muscular diaphragm and the muscles between the ribs, which are referred to as intercostal muscles relax, thus allowing the lungs to contract and decrease in size so that the person is able to rid air and carbon dioxide from the respiratory tract during expiration.

Normally, adults breathe 16 to 20 times per minute or from 960 to 1,200 times per hour. A respiratory rate of less than 16 per minute is referred to as bradypnea or slow breathing and a respiratory rate of more than 20 per minute for an adult is referred to as tachypnea or rapid breathing.

1. Your body couldn't breathe without this system. Which one is it?

a. Perspiration system.

b. Respiratory system.

c. Photosynthesis.

d. Urinary system.

Answer: B

2. The respiratory system is made up of the trachea, the lungs, and the:

a. Liver.

b. Diaphragm.

c. Esophagus.

d. Pancreas.

Answer: c

3. Which of the following is NOT the function of the respiratory system?

a. Regulate blood pH.

b. Helps in gaseous exchange.

c. Protection against blood loss.

d. Contains receptors for the sense of smell.

Answer: c

4. The voice box is also known as the:

a. Alveoli.

b. Larynx.

c. Trachea.

d. Motormouth.

Answer: B

5. When you breathe in air, you bring oxygen into your lungs and blow out:

a. Carbon dioxide.

b. Carbon monoxide.

c. Oxygen.

d. Hydrogen.

Answer: A

6. What is the name of the tiny air sacs in your lungs?

a. Bronchioles

b. Ravioli

c. Alveoli

d. Bronx

Answer: C

7.…….. is not good for your lungs.

a. Exercising

b. Singing

c. Smoking

d. Yelling

Answer: C

8. The trachea is also called the:

a. Lug.

b. Diaphragm

c. Windpipe.

d. Bronchus.

Answer: C