

CORNELL NOTES

Directions: You must create a minimum of 5 questions in this column per page (average). Use these to study your notes and prepare for tests and quizzes. Notes will be stamped after each assigned sections (if completed) and turned in to your teacher at the end of the Unit for scoring.

UNIT 6: PHYSIOLOGY

Chapter 30: Respiratory and Circulatory Systems

I. Respiratory and Circulatory Functions (30.1)

A. The **respiratory** and **circulatory** systems work together to maintain _____

1. Every cell in body needs _____ and _____ to function

a. **Circulatory system**- transports blood and other materials vital to the cells and carries away _____

b. **Respiratory system**- _____ exchange takes place (pick up _____ and get rid of carbon dioxide)

2. Two systems work together to maintain **homeostasis**

B. The **respiratory system** moves **gases** into and out of the _____

1. Functions to bring _____ into body and to expel _____ and _____

2. **Respiratory system** consists of specialized structures

a. **nose and mouth**- _____ points.

1). nose _____ and _____ the air

2). Tiny **hairs** (_____) and _____ help filter dust and pathogens from air

b. _____ - "windpipe" (tube to lungs)

1). _____ open and closes to keep food or saliva from entering the airway

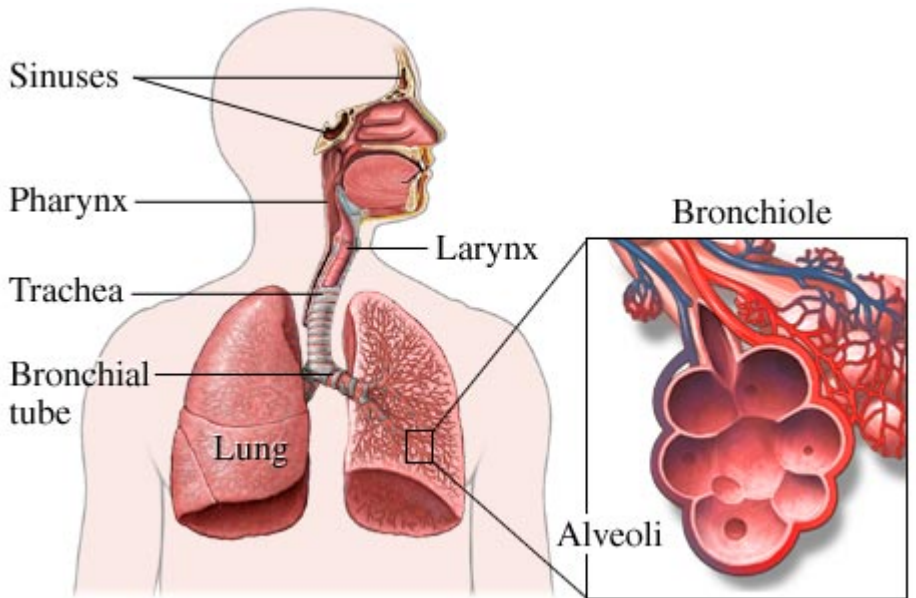
2). Branches divides into two _____ leading to each lung

c. _____ - organ that absorbs **O₂** from air

1). Bronchi _____ into tiny **bronchioles**

2). _____ - clusters of tiny sacs where gas exchange takes place

d. _____ - dome-shaped muscle at base of rib cage that allows lungs to expand and contract



C. The **circulatory system** moves blood to all parts of the body

1. Functions to transport **O₂** and _____ to body cells and carry **oxygen poor blood** and **CO₂** back to the _____ and _____

2. Main parts of system are **heart, blood, and blood vessels**

a. **Heart**- muscular _____

b. **Blood**- circulates through a _____ system

1). About ___ liters

2). Takes about _____ seconds for round trip

c. **Blood vessels**- _____ types

1). **Arteries**- carries blood _____ from heart (oxygen _____)

2). **Veins**- carries blood _____ to heart (oxygen _____)

3). **Capillaries**- smallest vessels where materials can _____ into and out of cells

3. **Circulatory system** performs two other important functions to maintain **homeostasis**

a. Collects **waste materials** produced by _____ and _____ and delivers to **kidneys** and **liver** to be filtered out of blood

b. Helps maintain **body** _____ by distributing _____ produced by muscles and internal organs

II. Respiration and Gas Exchange (30.2)

A. **Gas** _____ occurs in the **alveoli** of the lungs

1. **O₂** and **CO₂** move in and out of blood by _____

2. **Red blood cells** contain _____ that carries **O₂**

3). Gas exchange regulated by _____ **system** (brain stem)

B. **Respiratory diseases** interfere with _____ exchange

1. **Emphysema**- caused mainly by _____ and destroys _____.

2. **Asthma**- causes bronchioles to _____ due to muscle spasms. Can be triggered by allergies, stress, exposure to smoke and chemicals or exercise.

III. The Heart and Circulation (30.3)

A. The tissues and structures of the heart make it an efficient _____

1. Consists of **four** _____

a. _____ - right and left sides (smaller chambers)

b. _____ - right and left sides (larger chambers)

c. **Valves**- flaps of tissue that prevent blood from flowing _____

2. Heartbeat consists of two _____

a. Starts in _____ and then _____

b. _____ - group of cells that generates electrical signal that starts contractions\

3. Blood flow in heart

- a. Oxygen _____ blood enters **right atrium** and pumped into right ventricle
- b. **Right ventricle** pumps blood to _____ for gas exchange
- c. Returns to **left** _____ and pumped to left ventricle
- d. **Left ventricle** pumps blood to rest of _____ (this is the largest chamber)

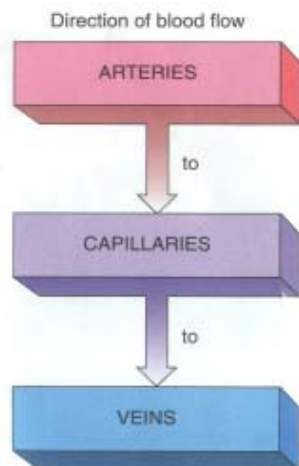
B. The heart pumps blood through **two** main _____

1. **Pulmonary circulation**- between _____ and _____
2. _____ **circulation**- between heart and rest of body

IV. Blood Vessels and Transport (30.4)

A. Arteries, veins, and capillaries transport blood to all parts of the body

1. **Arteries**- _____ and _____ because blood under great pressure
 - a. surrounded by layer of smooth _____ and elastic fibers
 - b. Pumping heart moves blood
2. **Veins**- large diameter but thinner walls because under less _____.



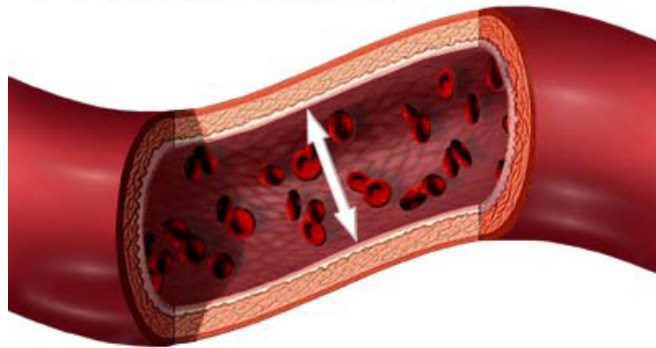
- a. Skeletal _____ help maintain circulation
- b. Contain _____ that keep blood from moving backwards
3. **Capillaries**- thin walled to allow _____ of gases.

B. Blood pressure- _____ with which blood pushes against wall of an artery (E.g. 120/70)

1. _____ **pressure** (top, higher number)- pressure when ventricle contracts

2. _____ **pressure** (bottom, smaller number)- pressure when ventricle relaxes

Blood pressure is the measurement of force applied to artery walls



3. Blood pressure depends on how _____ and _____ the arteries are and strength of heart contractions

4. High blood pressure (_____) can lead to heart attack or stroke

C. Lifestyle plays a key role in circulatory _____

1. Increased _____ of developing circulatory disease with: smoking, lack of exercise, excessive weight, long-term stress, diet high in saturated fats

2. **Arteriosclerosis**- artery walls become _____ and _____

3. **Artherosclerosis**- blood flow partially or fully blocked by sticky material called _____

V. Blood (30.5)

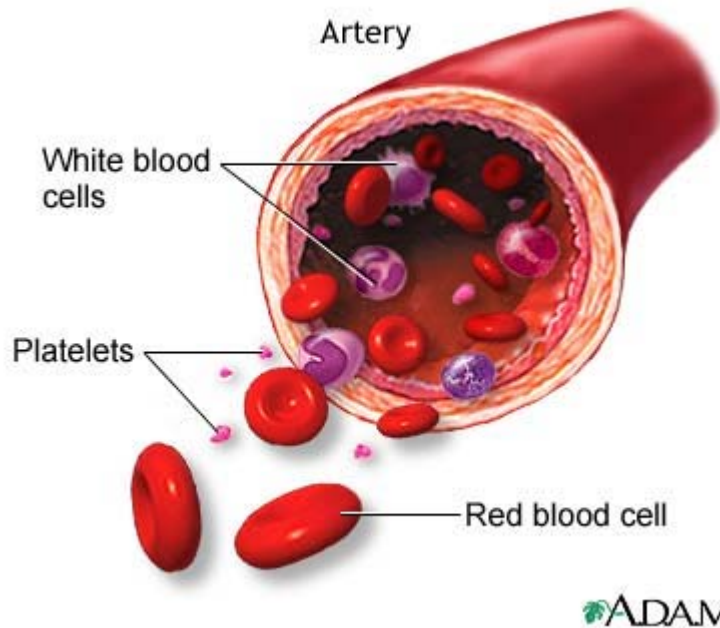
A. Blood is composed mainly of cells, cell fragments, and plasma

1. **Blood cells**- includes _____ and _____ blood cells as well as **platelets** (cell _____)

a. Produced in _____

b. Each has specialized shape and function

2. **Plasma**- mostly _____ and includes many types of molecules that help maintain homeostasis



B. **ABO Blood Groups** and Rh Factors

1. Red blood cells have surface _____ markers that define your blood type

2. Important if you give or receive blood _____

C. **Platelets** and **blood clotting**

1. **Platelets** are cell fragments that help form _____ that control _____

2. Example of _____ **feedback mechanism**

3. _____ is genetic disorder in which key clotting factor is missing

VI. Lymphatic System (30.6)

A. **Lymph** is collected from _____ and returned to the circulatory system

1. **Lymphatic system**- complex network of _____, **vessels**, and _____ throughout the body

a. **Collects** excess _____ that leaks out of blood

b. _____ fluid to remove dead cells and microorganisms

c. **Returns** cleaned fluid to circulatory system

2. **Lymph** (fluid) is transported in vessels and collects in _____ (small rounded structures) that filter and trap bacteria, viruses, fungi, and cell fragments

B. The lymphatic system is a major part of the _____ system

1. **Tonsils, thymus,** and _____ also function as part of immune system

2. Function to help body _____ itself

3. Help _____ **pathogens** and produce special white blood cells called _____ that attack pathogens

