

## 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

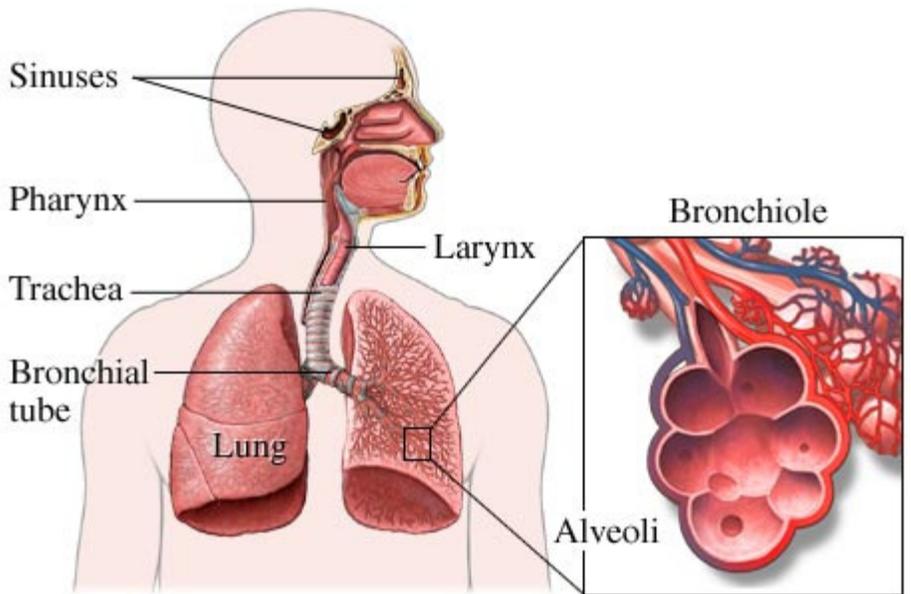
2). Branches divides into two \_\_\_\_\_ leading to each lung

c. \_\_\_\_\_ - organ that absorbs **O<sub>2</sub>** 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 **O<sub>2</sub>** and \_\_\_\_\_ to body cells and carry **oxygen poor blood** and **CO<sub>2</sub>** 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. **O<sub>2</sub>** and **CO<sub>2</sub>** move in and out of blood by \_\_\_\_\_

2. **Red blood cells** contain \_\_\_\_\_ that carries **O<sub>2</sub>**

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)

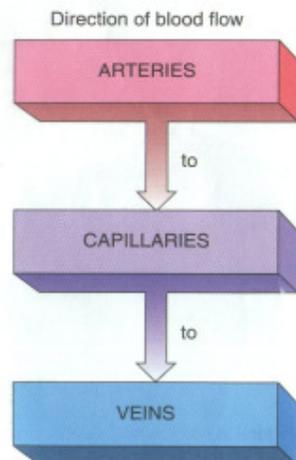
B. The heart pumps blood through **two** main \_\_\_\_\_

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 \_\_\_\_\_.



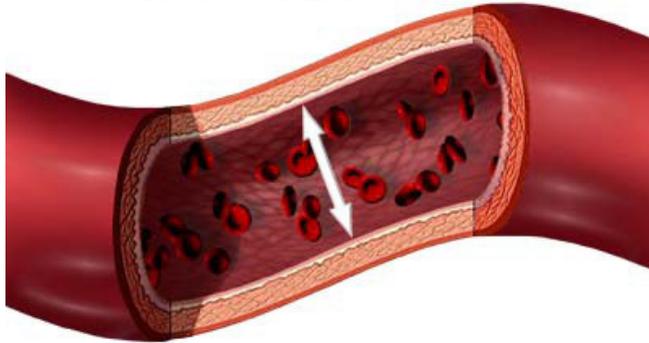
- a. Skeletal \_\_\_\_\_ help maintain circulation
- b. Contain \_\_\_\_\_ that keep blood from moving backwards
3. **Capillaries**- thin walled to allow \_\_\_\_\_ of gases.

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)

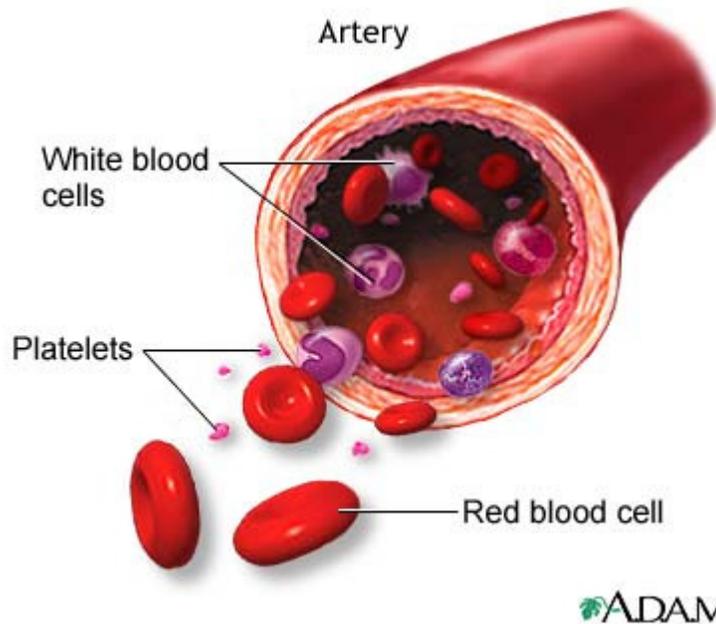
A. Blood is composed mainly of cells, cell fragments, and plasma

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

