Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDHS Per: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_

**Cardiopulmonary System**

Cardio – heart

Pulmonary - lungs

**Gas Exchange in Humans**

1. : air entrance

open - allows air into \_\_\_\_\_\_\_\_\_\_\_\_

Larynx:

- air passing over vocal chords causes vibration

2. : Wind Pipe - in front of esophagus

- reinforcement

3. :

Trachea splits into bronchi

Each bronchus splits further into more **­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

4. : air sac

- located at the end of bronchioles

- enveloped by  for gas exchange

5. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Inhale: lots of oxygen - diffuses across membrane into blood - fixed by hemoglobin - binds to the iron at the center of the  subunit

- oxygen binds less well in  environments (control mechanism)

Blood has lots of  - diffuses out of RBC into alveoli

1. : RBC move throughout body and O2 diffuses with concentration gradient to cells via the  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

- CO2 diffuses opposite direction

**RESPIRATION CONTROL**

1. : moving air in and out of lungs

: mammals, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

- generated by  (muscle separating the pulmonary and abdominal cavities) and  muscles (muscles between )

- diaphragm contracts and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Result: decreases  in lungs (more volume)

-

- diaphragm relaxes and moves up -

2. :

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- chemoreceptors in  and  monitor pH

- when pH drops () a signal is sent to the breathing control center (medulla oblongata) in the brain which signals the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circulatory System**

Function: distribute nutrients and oxygen

transport waste products for removal

immune system

**Structures of Circulatory Systems**

Vessels:

**Arteries** **Veins**

move blood  blood \_\_\_\_\_\_\_\_\_\_\_\_\_

**\_\_\_\_\_\_\_** layer of smooth muscle **\_\_\_\_\_\_\_\_** layer of smooth muscle

Branch into **\_\_\_\_\_\_\_\_\_\_\_\_** Formed from converging **\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: smallest blood vessels - transfer of nutrients and waste

**\_\_\_\_\_\_\_\_\_\_\_\_\_**: Pumping mechanism: cardiac muscle tissue

Compartments:

**\_\_\_\_\_\_\_\_\_\_\_\_**: receive blood from veins pump blood to ventricles

**\_\_\_\_\_\_\_\_\_\_\_\_**: typically larger chamber with thicker wall - pump blood into arteries

**Human Circulatory Systems**

Parts/Pathway:

1. **\_\_\_\_\_\_\_\_\_\_\_\_**: - largest veins: **\_\_\_\_\_\_\_\_\_\_\_\_** (anterior) - head and forelimbs and **\_\_\_\_\_\_\_\_\_\_\_** (posterior) - torso and legs

2. **\_\_\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**)-** receives blood from vena cavas

3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** **\_\_\_\_\_\_\_\_\_\_\_\_**valve

- passes blood to RV - separates the right chambers

- prevents  of blood from RV so blood only moves forward

4.  thicker **\_\_\_\_\_\_\_\_\_\_**- pumps blood to Pulmonary Artery

5. : gateway to pulmonary artery - prevents blood from flowing into the **\_\_\_\_\_\_\_**

6. : carries blood to lungs for oxygen - **NOTE**: blood is leaving the heart through an artery but is \_\_\_\_\_\_\_\_\_\_\_\_\_

- in lungs the arteries branch into arterioles and then into a capillary net around the alveoli allowing for gas exchange

7. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: from lungs to LA - carries **\_\_\_\_\_\_\_\_\_\_** blood

8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** receives O2 rich blood and pumps it into the LV

9. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** - aka **\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

- prevents backflow from LV

10.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** : pumps blood into Aorta

11.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** : prevents blood from flowing back into LV

12. **\_\_\_\_\_\_\_\_\_\_\_\_**: main artery - branches

- sends blood to body systems

13. **\_\_\_\_\_\_\_\_\_\_\_\_\_**:

- branch into **arterioles** and then into capillaries

14. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:

- gas and nutrient exchange

15. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: capillaries merging into larger vessels like streams into rivers

[THE HEART](http://www.youtube.com/watch?v=D3ZDJgFDdk0&feature=related)

In 1 year, the average human heart circulates from 770,000 to 1.6 million gallons of blood through the body. This is enough fluid to fill 200 tank cars, each with a capacity of 8,000 gallons

[Beating Heart/Heart Surgery](http://www.youtube.com/watch?v=Zxqj1BcBpIg&feature=related)

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: **\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_**: blood being forced into the **\_\_\_\_\_\_\_\_\_\_\_**

- larger pressure because of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

: relaxing of the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Increased blood pressure**:

- higher amounts of **\_\_\_\_\_\_\_\_\_\_\_\_** in the blood due to increased **\_\_\_\_\_\_\_\_** content

- **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

- decreased **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of blood vessels – **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Capillary Exchange**:

- nutrient rich blood from arteries enters capillaries

- water, food and gases leave blood to cells

- metabolic wastes enter blood and nearly all of the fluid that left the capillary