

# **Circulatory & Respiratory Systems**

# The Functions

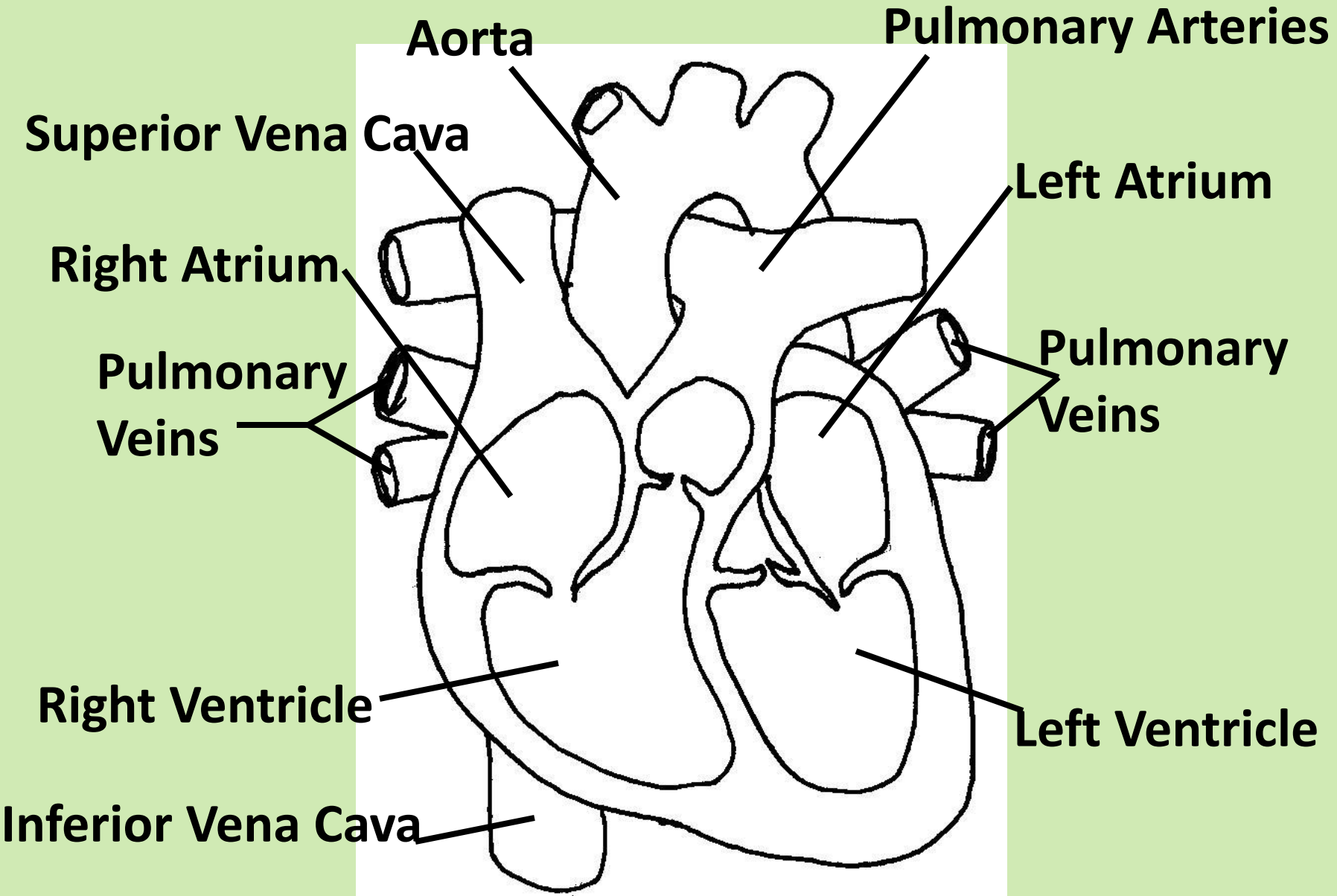
- Transports oxygen, nutrients, and other substances throughout the body
  - Removes wastes from tissues
- \*Remember we learned that the kidneys filter the wastes out of the blood



# **The Heart**

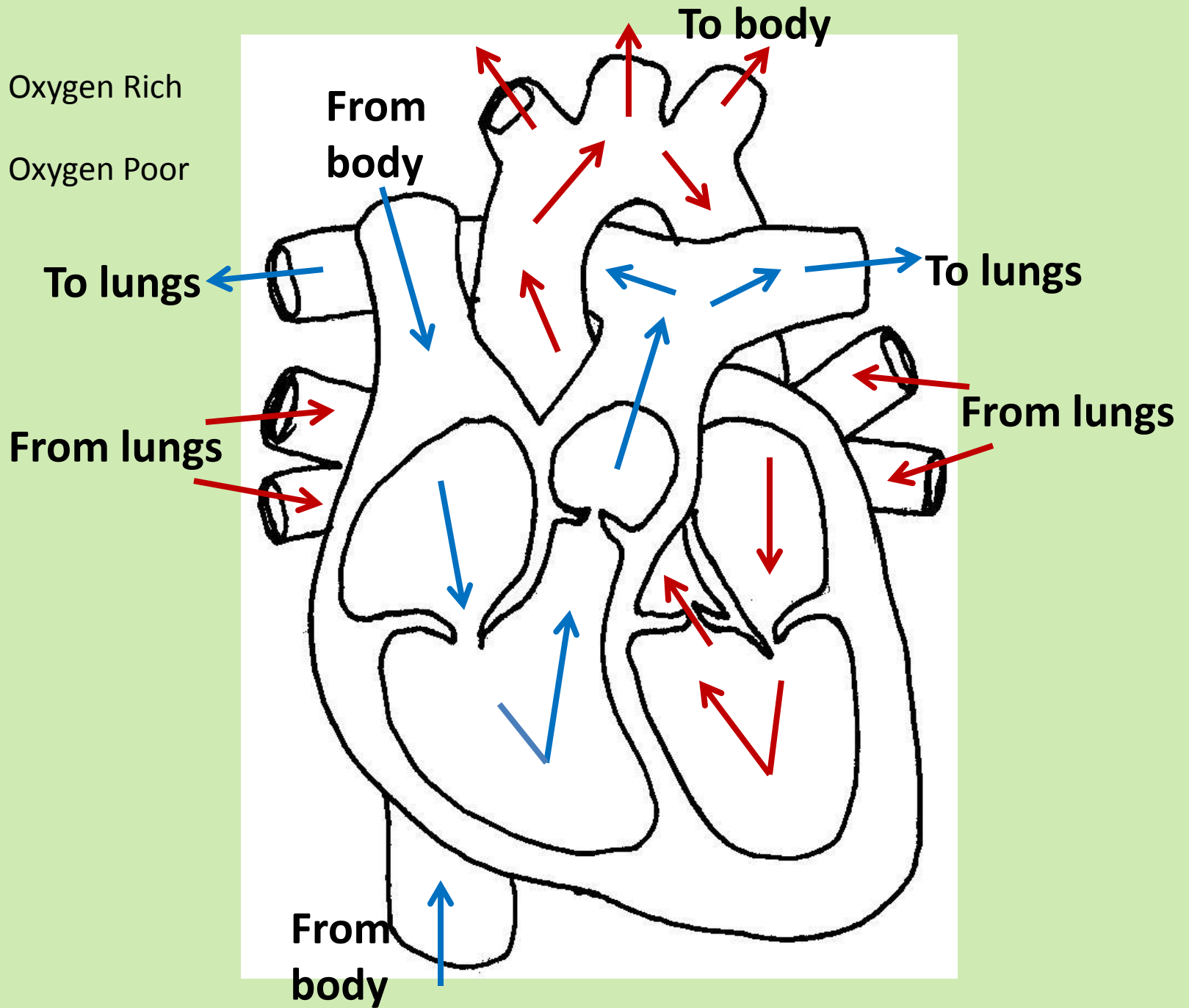
- A muscular organ that pumps blood through the circulatory system
- 4 chambers in the human heart
- The sides of the heart are separated by a wall called the septum

# 2 PATHWAYS OF CIRCULATION

<b>Circulation Pathway</b>	<b>Side of Heart Pumping</b>	<b>Destination After Leaving Heart</b>	<b>Blood Change</b>
<b>Pulmonary</b>	<b>Right</b>	<b>Lungs</b>	<b>CO<sub>2</sub> diffuses out &amp; O<sub>2</sub> diffuses in</b>
<b>Systemic</b>	<b>Left</b>	<b>Body</b>	<b>O<sub>2</sub> diffuses out &amp; CO<sub>2</sub> diffuses in</b>



-  Oxygen Rich
-  Oxygen Poor



# Blood Vessels

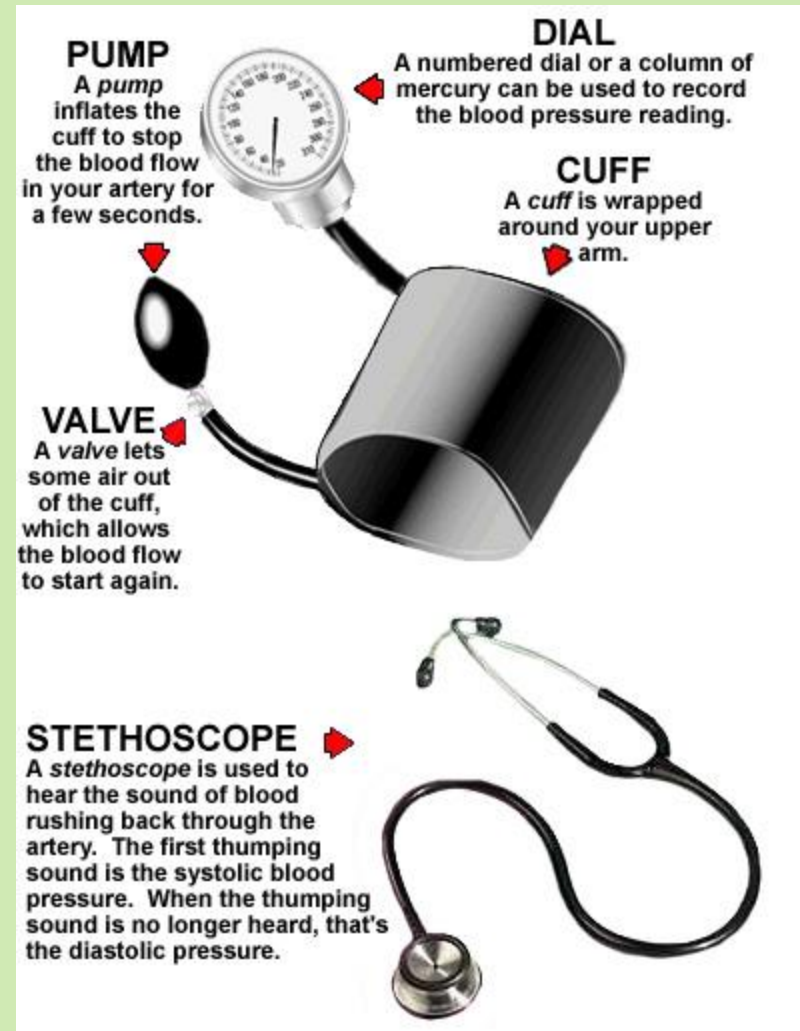
<b>Blood Vessels</b>	<b>Structure</b>	<b>Function</b>
<b>Arteries</b>	<b>Thick, elastic walls</b>	<b>Carries blood AWAY from the heart (pulse can be felt)</b>
<b>Veins</b>	<b>Contain valves to help pump blood against gravity</b>	<b>Carries blood TOWARD the heart</b>
<b>Capillaries</b>	<b>Smallest vessels; thin walls (blood cells pass through single file)</b>	<b>Connects arteries and veins; materials diffuse through them</b>

# Blood Pressure

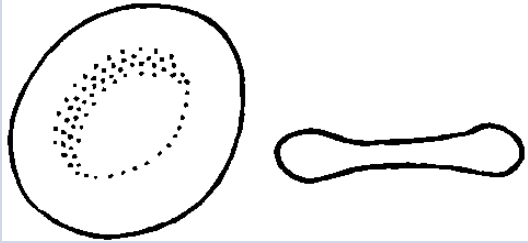


- **Blood pressure-** measures the pressure on the walls of the arteries when the heart is beating and relaxing.
- Formula: Systolic (Heart contracting)  
Diastolic (Heart relaxing)
- Normal human BP is ***120/80***.



# Sphygmomanometer



# Blood Cells

Blood Cells	Sketch of the Cell	Function
<b>Red Blood Cell (RBC)</b>		<b>Carries O<sub>2</sub> (contains hemoglobin)</b>
<b>White Blood Cell (WBC)</b>		<b>Fights infection</b>
<b>Platelet</b>		<b>Clots the blood</b>

# Lymphatic System

A network of vessels, nodes, and organs that collects the lymph (intercellular fluid) that leaves the capillaries

- This network of structures screens the lymph for **MICROORGANISMS** then returns the fluid to the circulatory system
- Lymph nodes act as **FILTERS**, trapping microorganisms and other stray cells or substances. When many things are trapped in the lymph node, it **ENLARGES** (“swollen glands”).

# RESPIRATORY SYSTEM

(LUNGS AND WHAT NOT)

# Why do we need it?


1. Brings OXYGEN into the body.  $O_2$  is needed to convert sugar into energy for the cells to operate.
2. Releases CARBON DIOXIDE from the body.  $CO_2$  is a waste product from the cells.

BY DOING THESE TWO THINGS, IT HELPS  
MAINTAIN HOMEOSTASIS!

# Gas Exchange

In order to work properly, lungs or other respiratory surfaces must be:

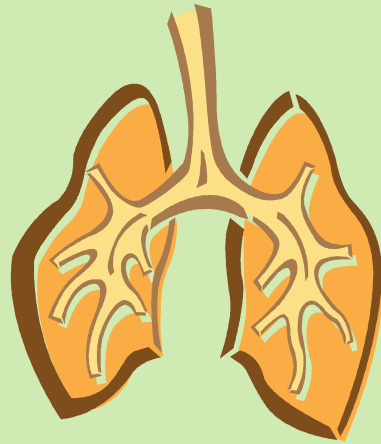
1. Thin walled
2. Moist
3. Contact a source of oxygen
4. Come in contact with the transport (circulatory) system



**Let's Practice!**  
**Label the diagram**

[CLICK HERE](#)

# What happens when I breathe?

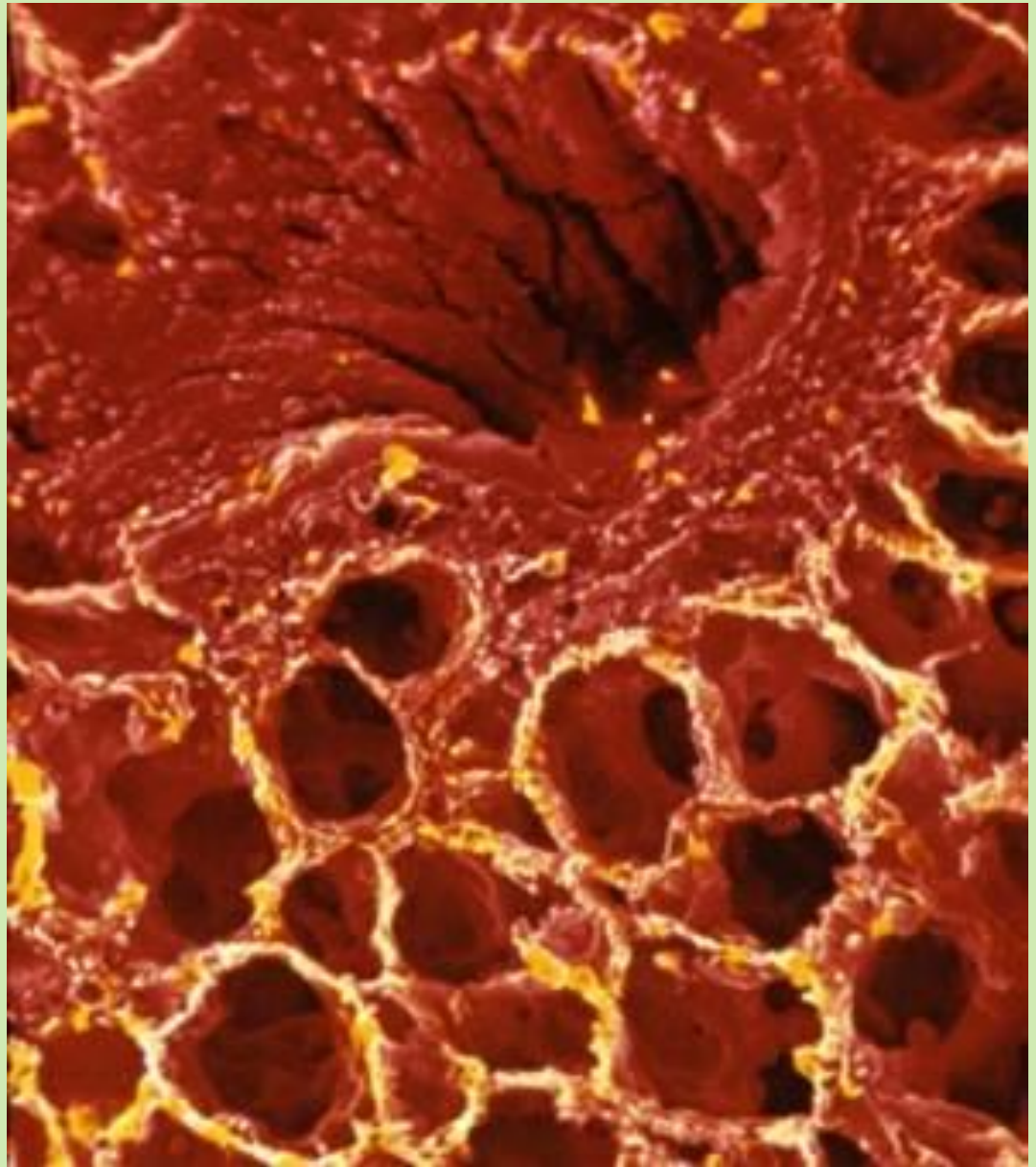


Click the lungs to see  
an animation



# Alveoli

Tiny air sacs  
in the lungs;  
where gas  
exchange  
occurs



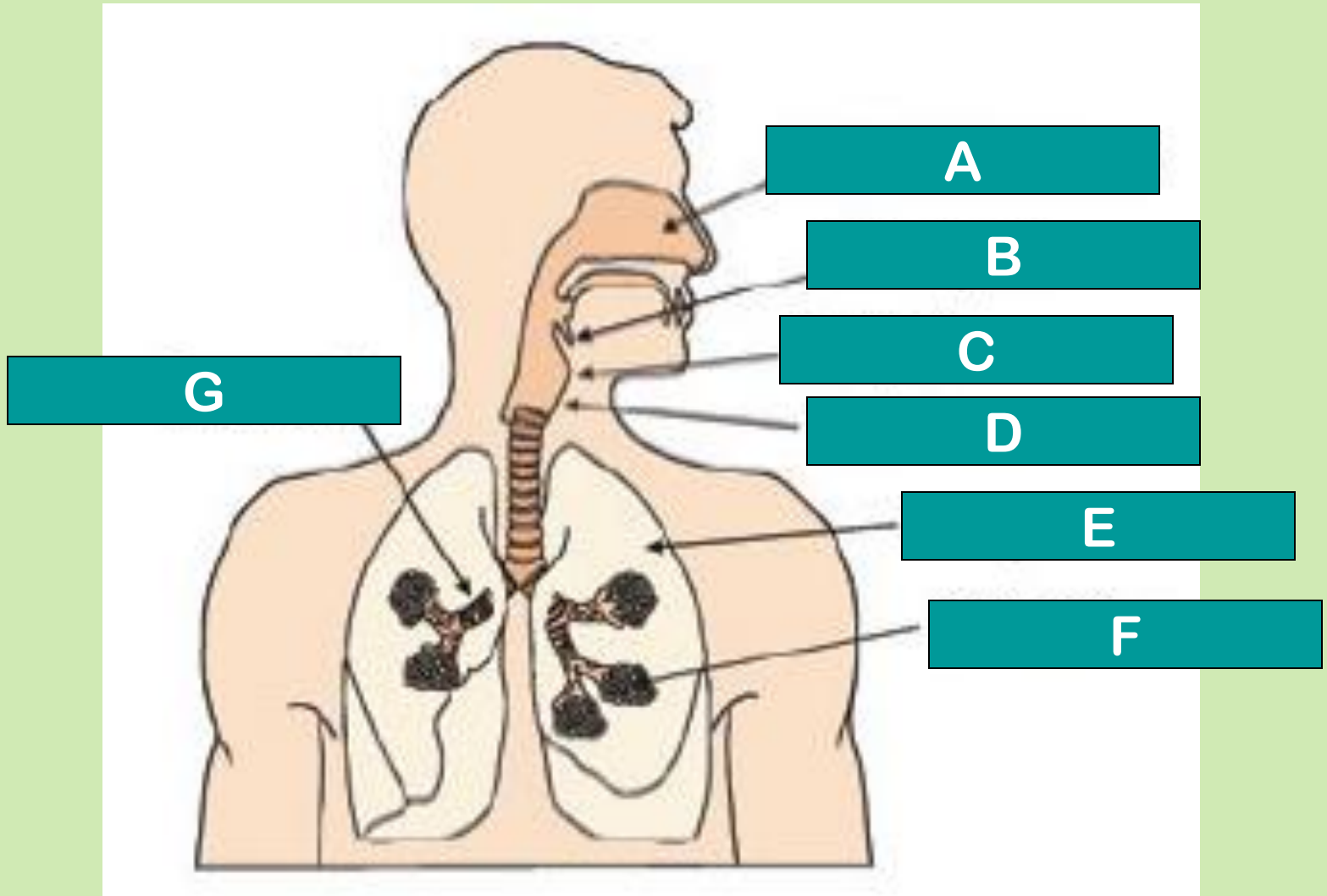
## Diseases of the Respiratory System

- Asthma- an allergic reaction to an irritant or even something harmless could trigger an attack
- Bronchitis- an inflammation of the bronchial tubes

## Diseases Caused by Smoking

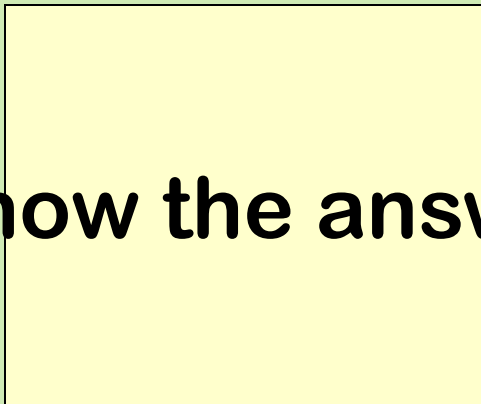
- Chronic Bronchitis
- Emphysema- loss of elasticity and tissue in lungs
- Lung Cancer

# Let's Review

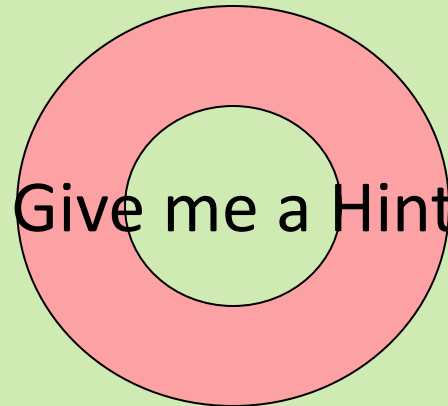


**By what process does oxygen  
get into the blood and  
carbon dioxide get out of it?**

**I know the answer**



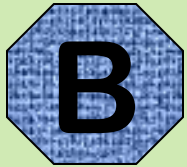
**Give me a Hint**



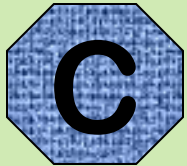
# OK, here are some choices...



Active Transport



Diffusion



Infusion



Bioluminescence

**Try Again**

**Go Back**



I'm all  
ears...what's  
your answer?

x



# You Win!

In diffusion  
molecules  
move from a  
high  
concentration  
to a low one





The END