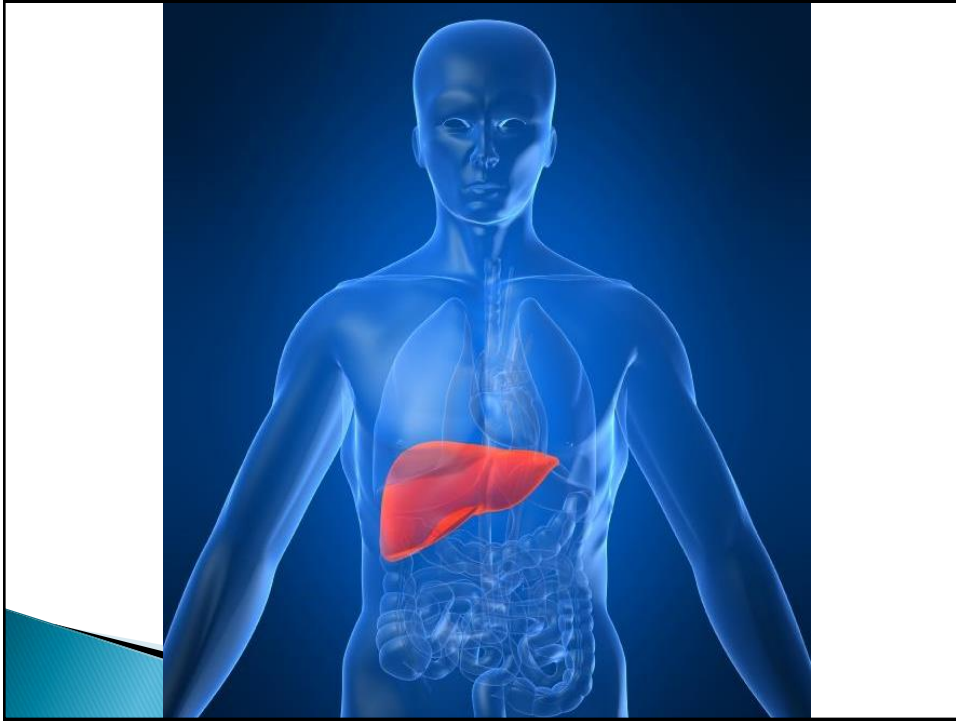


# Living With Your Liver

Lab #34

## Pre-Lab Questions

1. What does your liver do?
2. How big is your liver?
3. What kinds of things can harm your liver?
4. Do you need your liver to stay alive?
5. Where is your liver located?



## Vocabulary:

- ▶ **Liver:** The bile-secreting organ that aids with digestion and removal of toxins from the blood.
- ▶ **Toxin:** any substance that can cause damage to the body.
- ▶ **Regulate:** To control

## Directions:

- ▶ Read Pgs. B-15 to B-18
- ▶ Answer Analysis questions 1-3 in your lab notebook.

## Analysis Questions

1. What are some of the functions of the liver?

## Analysis Questions

2. People who have cirrhosis of the liver are usually on a strict diet. They have to be careful of what they eat and drink. Why do you think this is?

## Analysis Questions

3. How can understanding how your liver works help you make decisions about your health?

## Analysis Questions

4. Your liver is able to “regenerate”. What does this mean?

## Conclusion

- ▶ Explain what you learned about the liver that you may not have known before.
- ▶ Cirrhosis
- ▶ Importance of the Hepatitis Vaccine
- ▶ Regeneration



# Traffic Stop

Lab #35

## Vocabulary:

- ▶ **Impaired:** Diminished, damaged, or weakened in such a way that functioning becomes poor or ceases.

## Background Information

- ▶ Driving under the influence (DUI) or driving while intoxicated (DWI) is a crime in all 50 states.
- ▶ The blood-alcohol test is generally considered to be the most reliable test
- ▶ Measures the mass of alcohol in a given volume of blood.
- ▶ All states recognize a blood alcohol content of 0.08% as being legally intoxicated.

## Background Information

- ▶ Nearly 88,000 people die from alcohol-related causes annually, making it the third leading preventable cause of death.
- ▶ In 2014, alcohol-impaired driving fatalities accounted for 9,967 deaths.

## Background Information

- ▶ In 2014, impaired-drivers were responsible for 20% of children (0–14) who died from car crashes.

## Focus Question

- ▶ What human body systems are affected by alcohol?





## Hypothesis:

- ▶ Answer the focus question

## Procedure:

- ▶ Read through the role-play in groups on pages B-5 to B-8.
- ▶ Answer analysis questions #1-5 on page B-9

## Analysis Questions:

1. Explain how alcohol affects each of the following body organs: skin, heart, kidneys, brain, liver, stomach
2. What are some of the signs that a person is impaired by alcohol?
3. What qualitative evidence is there that a person may have been drinking?
4. What quantitative evidence is there that a person may have been drinking?
5. How can a police officer determine if a person is impaired by alcohol?

## Conclusion

- ▶ Summarize what the reading was about.
- ▶ What did you learn from the reading?
- ▶ What is the difference between qualitative and quantitative evidence? Give examples.

# Breakdown

Lab 36

## Focus Question:

- ▶ Why is it important to chew your food?  
**other than preventing choking!**

## Hypothesis: BAD PRACTICES

- ▶ “It is important because...”
  - **Not a complete sentence.**
  - **Does not explain what is important.**

## Hypothesis:

- ▶ It is important to chew your food because... OR
- ▶ Chewing your food is important because...

## Vocabulary:

### ▶ **Mechanical Breakdown:**

The physical process of breaking down larger substances into smaller pieces without any chemical reactions.

## Vocabulary:

### ▶ **Chemical Breakdown:**

The breaking up of larger substances into smaller ones through the action of chemicals.

## Materials:

- ▶ Paper Towels
- ▶ 250mL beaker
- ▶ 4 Antacid Tablets
- ▶ Water
- ▶ Safety Glasses

## Directions

- ▶ Measure 50mL of water into your beaker
- ▶ Place the antacid tablet into the water
- ▶ Time how long it takes to completely dissolve (in seconds)
- ▶ Pour out water and repeat for the other trials.

## Data:

Tablet	Solution	Time to dissolve (seconds)
Whole Tablet (control)	50 mL water	
Tablet broken in halves	50 mL water	
Tablet broken in 4ths	50 mL water	
Crushed tablet	50 mL water	

## Analysis:

1. In your experiment, what variables did you keep the same?
2. What variables did you change?
3. What part of digestion was modeled by breaking up the tablet?
4. What part of digestion was modeled by the water?
5. How does the size of your food affect the speed at which chemical breakdown occurs?

## Conclusion: Bad Practices

- ▶ “We read through the directions.”
- ▶ “We recorded our data.”
- ▶ “We did some calculations.”
- ▶ “We took notes.”
- ▶ “Everyone in our group helped out.”

## Conclusion: Bad practices

- ▶ “We wrote a hypothesis.”
- ▶ “We analyzed our data.”



## Conclusion

1. The purpose of this lab was to...
2. We set up the lab by...
3. We found out that...
4. I learned that chewing your food is important because...

## Digestion

Lab 37

## Focus Question:

- ▶ How does your digestive system work?

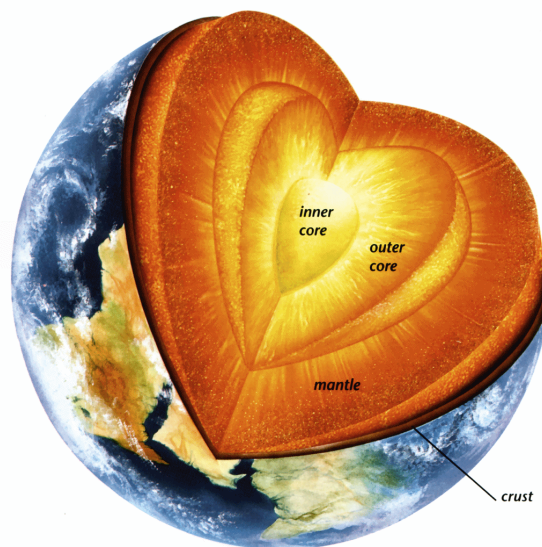
## Hypothesis:

- ▶ “I believe the digestive system works.....”

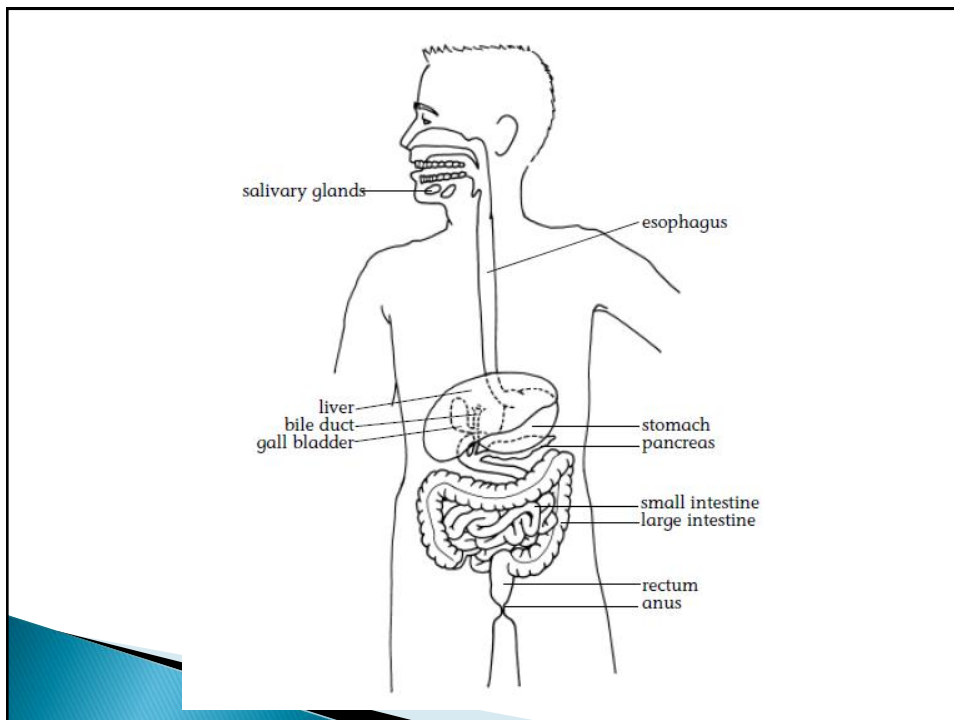
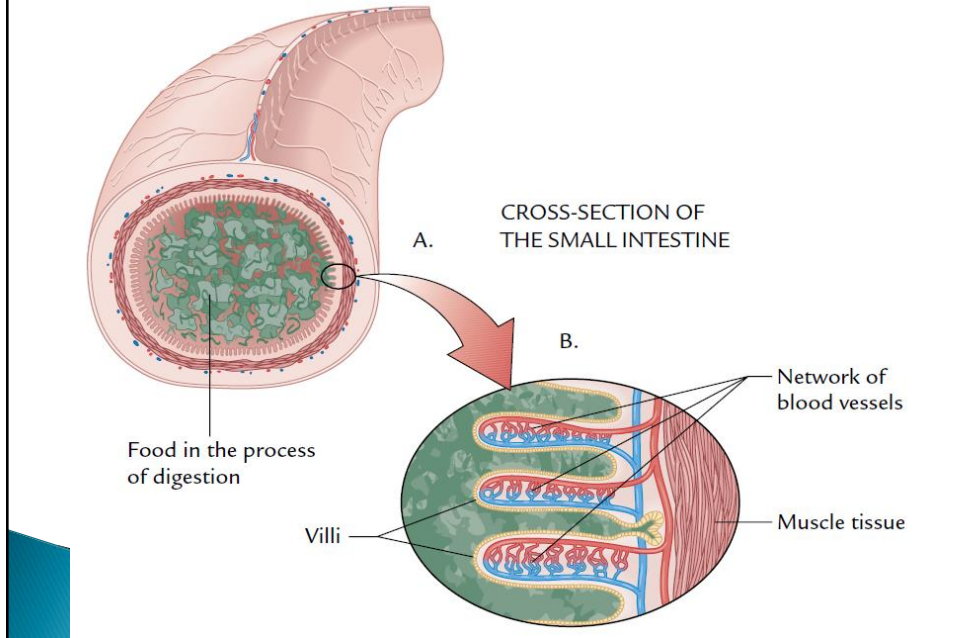
## Vocabulary:

- ▶ **Absorb:** to take in or soak up
- ▶ **Cross-section:** A type of representation that shows what a view would look like when cutting through an object.

## Cross Section of Earth



## Cross Section of Small Intestine



## Stopping to Think:

- 1.
- 2.
- 3.
- 4.

## Stopping to Think #1

- ▶ a. How does your mouth contribute to the process of digestion?
- ▶ b. Explain how your stomach helps break down food.

## Stopping to Think #2

- ▶ a. Explain the relationship between food and nutrients.
- ▶ b. What role(s) does your small intestine play in digestion?

## Stopping to Think #3

- ▶ Why does blood travel to your liver before transporting nutrients to other parts of your body?

## Stopping to Think #4

- ▶ The reading describes three components of human solid waste. Which two of these do you think are the main components?

## Analysis:

1. What are some of the functions of the digestive system?

## Analysis question #2:

Organ (or Structure)	Mechanical breakdown	Chemical breakdown	Nutrient absorption	Water absorption and solid waste production
Mouth	X	X		
Stomach				
Small Intestine				
Pancreas				
Liver				
Large Intestine				

## Analysis question #3:

Imagine taking a bite of a burrito. Follow the beans in the burrito through the process of digestion. Explain what types of changes take place and where each change happens.



## Analysis question #4:

Most substances are absorbed in the small intestine and not in the stomach. Aspirin is a common exception; it is absorbed in the stomach. Some alcohol is absorbed in the stomach, but most is absorbed in the intestine.

## Analysis question #4:

- a. Why would you want medicines, like aspirin, to be absorbed in the stomach instead of the small intestine?
- b. What is the effect of some alcohol being absorbed in the stomach?

## Analysis question #5:

- ▶ Copy the list of words shown below:

List 1	List 2	List 3
pancreas	liver	chemical breakdown
stomach	pathway for food	small intestine
esophagus	esophagus	saliva
digestive organs	stomach	teeth
heart	large intestine	pancreas
gallbladder	small intestine	liver

## Analysis question #5:

- ▶ In each list, look for a relationship among the words. Cross out the word or phrase that does not belong.

List 1	List 2	List 3
pancreas	liver	chemical breakdown
stomach	pathway for food	small intestine
esophagus	esophagus	saliva
digestive organs	stomach	teeth
heart	large intestine	pancreas
gallbladder	small intestine	liver

## Analysis question #5:

- ▶ In each list, circle the word or phrase that includes the others.

List 1	List 2	List 3
pancreas	liver	chemical breakdown
stomach	pathway for food	small intestine
esophagus	esophagus	saliva
digestive organs	stomach	teeth
heart	large intestine	pancreas
gallbladder	small intestine	liver

## Analysis question #6:

Take a closer look at the villi of the small intestine. How do the villi help nutrients move into the blood quickly?

## Conclusion:

1. What was the main topic of the reading?
2. What did you learn about the digestive system that you did not know before?
3. Why is it important to understand how body systems function?

# Gas Exchange

Lab 38

## Vocabulary:

- **Indicator:** A chemical that indicates the presence, absence, or concentration of a particular substance.
- **Respiratory System:** The system of organs that work together to take oxygen into the body and remove carbon dioxide from the body.

## Vocabulary:

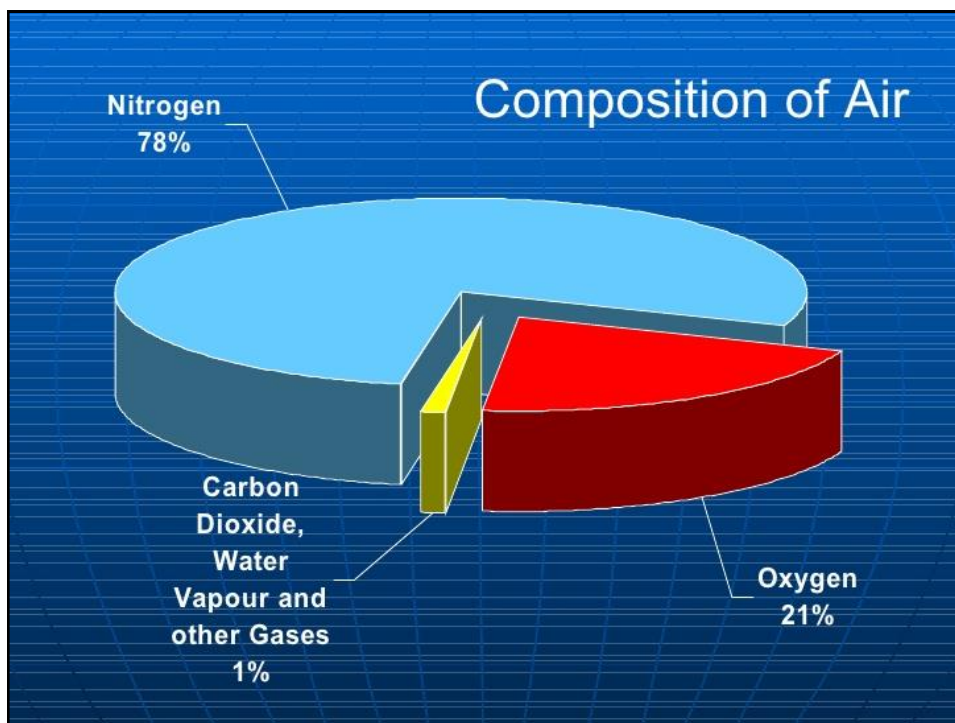
- ▶ **Bromothymol Blue (BTB):** A chemical indicator for weak acids and weak bases. Turns from blue to yellow in the presence of an acid.

## Focus Question

- ▶ **What percentage of your exhaled breath is made of carbon dioxide?**

## Hypothesis

- ▶ **“Answer the Focus Question”**



## Materials:

- ▶ Clear plastic cup
- ▶ Straw
- ▶ Graduated cylinder
- ▶ BTB solution
- ▶ Paper towel

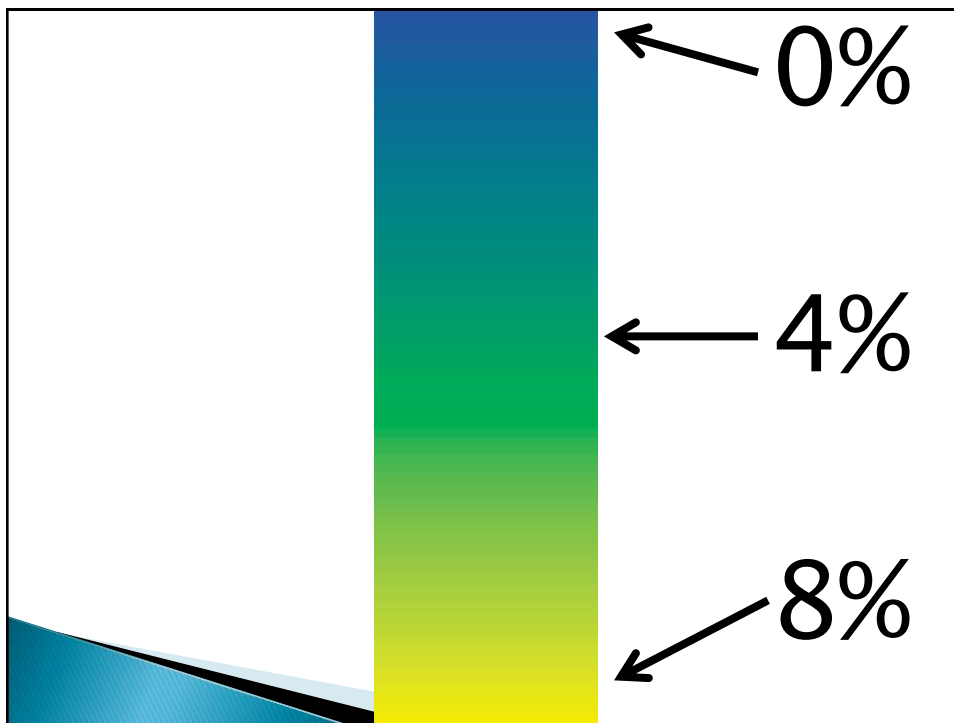
## Procedures:

- ▶ Obtain a clear plastic cup and fill with 50mL of water.
- ▶ Add exactly 20 drops of BTB to the water. Swirl to mix.
- ▶ Use a straw to blow bubbles through the solution until a color change occurs.
- ▶ Indicate any color changes that occur in your data.

## DATA:

Initial color of solution in cup	
Color of solution after blowing bubbles	
Percentage of CO <sub>2</sub> in exhaled breath.	





## Analysis Questions

1. What was the purpose of using the BTB blue solution?
2. Why did the solution turn to green when you blew through the straw?
3. Was your percentage of CO<sub>2</sub> higher or lower than you expected?
4. Were these observations qualitative or quantitative?

# Conclusions

- ▶ What was the lab about?
- ▶ What did we do during this lab?
- ▶ What did you find out by completing this lab?

## What's Happening Inside?

Lab 39

## Vocabulary:

- ▶ **Cell:** The smallest structural unit enclosed by a membrane that makes up all living organisms.

## Vocabulary:

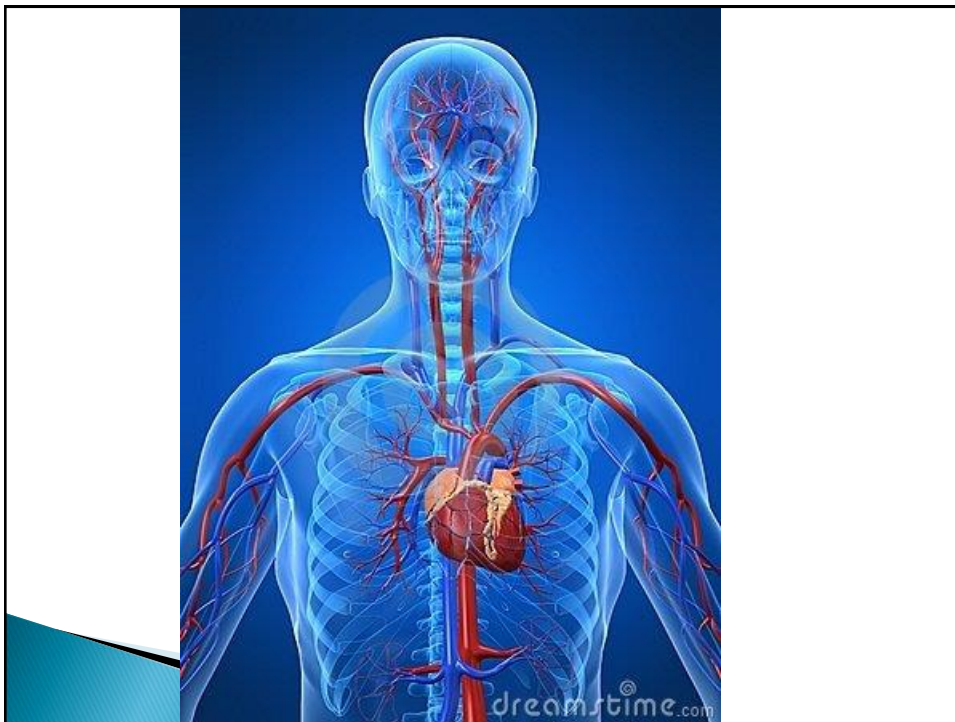
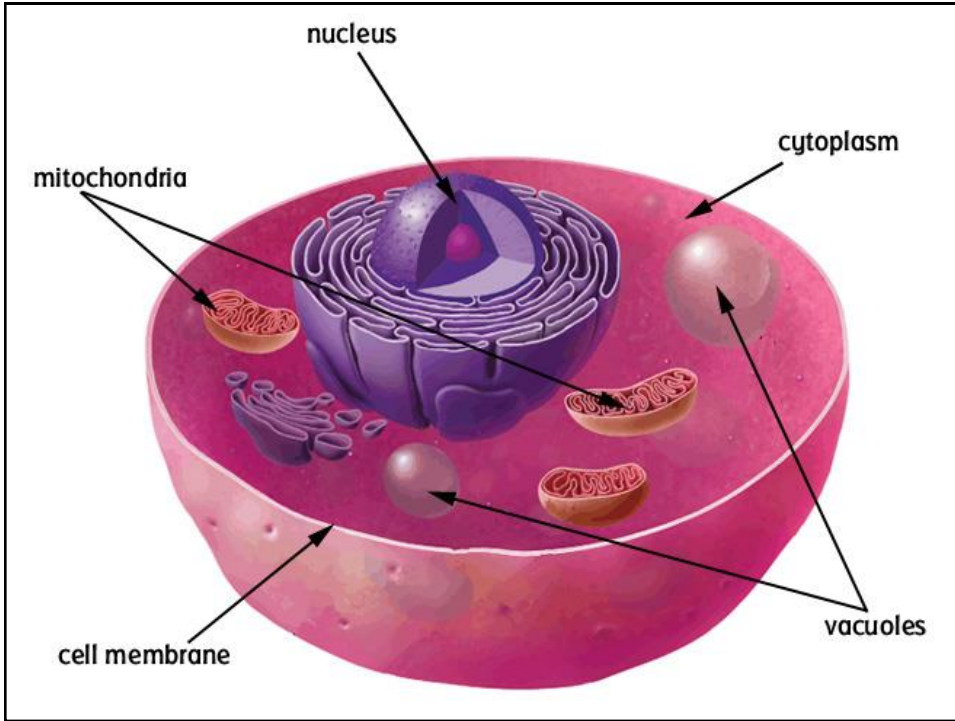
- ▶ **Function:** the specialized activities performed by a system, organ, body part, or device.

## Vocabulary:

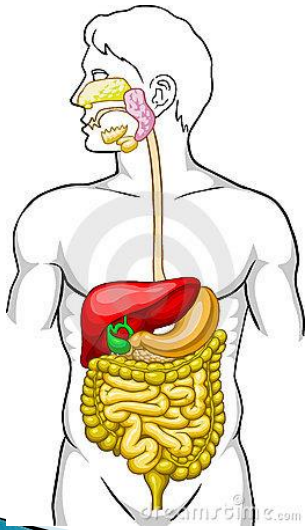
- ▶ **Organ:** Structure composed of one or more tissues that perform a function or a group of functions in the body.
- ▶ **Structure:** The way that an organ or body part is made up, including shape and types of tissues

## Vocabulary:

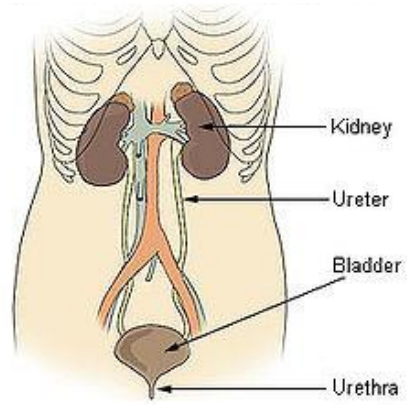
- ▶ **Body System:** several organs working together to perform a function
- ▶ **Tissue:** a group of similar cells that perform a particular function.

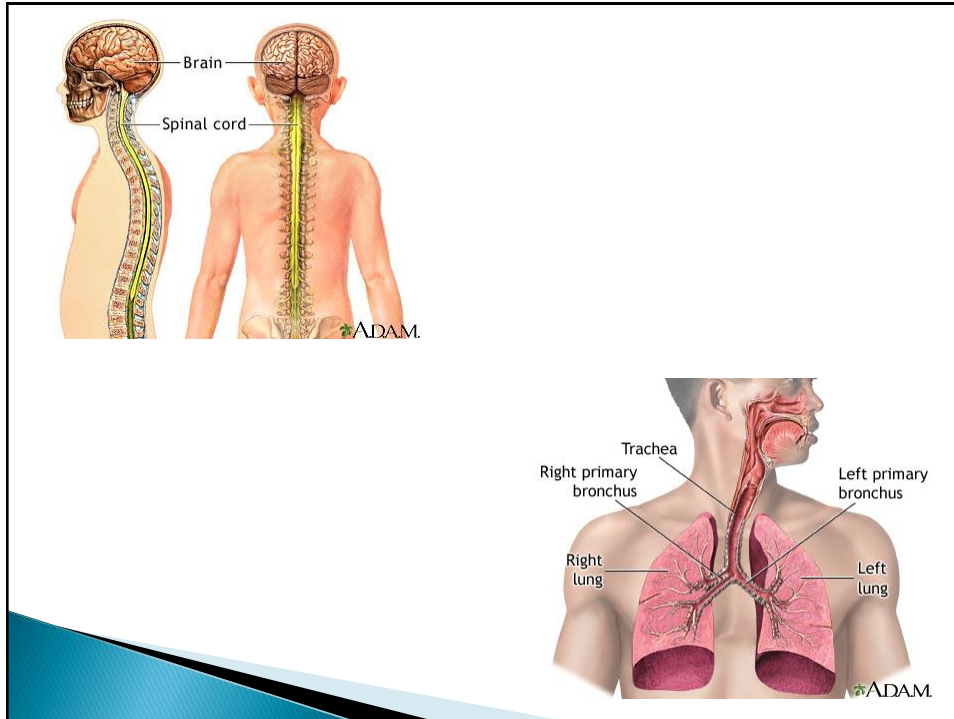


### Digestive System



### Excretory System





## Part 1: What's Happening Inside?

**Use your body systems reference sheets to create a scale model of the human body systems.**

# Today:

- ▶ Sculpt each organ to the accurate scale size and shape.
- ▶ Be as detailed as possible.
- ▶ Use toothpicks to help create textures.
- ▶ Use the saran wrap in the back of the model to help with cleanup.

- ▶ **Muscles of back and buttocks**
- ▶ **Trachea (windpipe)**
- ▶ **Lungs**
- ▶ **Spinal cord**
- ▶ **Liver, Pancreas**
- ▶ **Heart**
- ▶ **Kidneys**
- ▶ **Ureters**
- ▶ **Bladder**
- ▶ **Rib cage**
- ▶ **Esophagus**
- ▶ **Stomach**
- ▶ **Small intestine**
- ▶ **Large intestine**



Today:

## Part 2

- ▶ Organize each organ/structure into the correct body system.

## Part 3

- ▶ Match each organ with its correct function.
- ▶ Place the purple organ on top of its yellow function card.

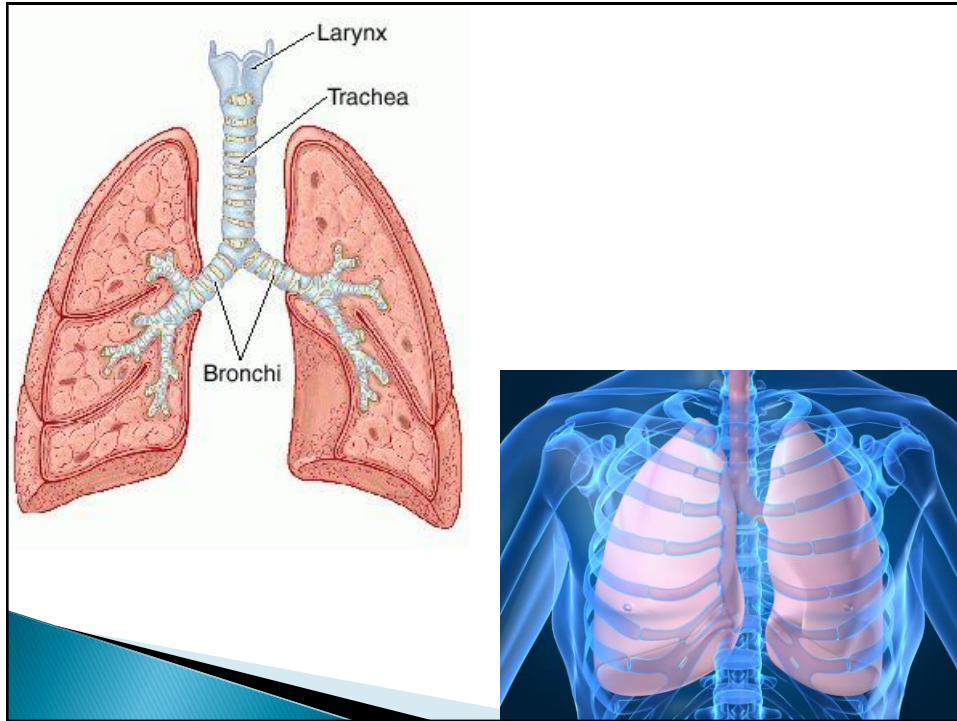
## Data:

- ▶ **Brain:** The brain signals the body to react to changes in the environment such as danger or the smell of food.
- ▶ **Spinal Cord:** A bundle of nerves that connects your brain to the rest of your body.



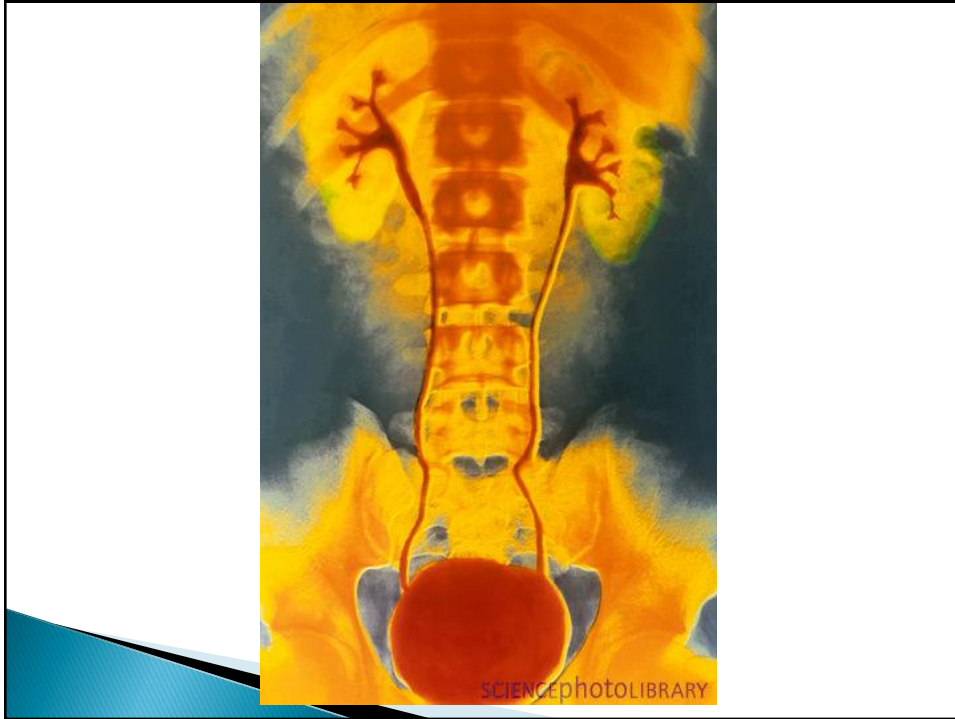
## Data:

- ▶ **Trachea:** This tube connects the throat and the nose to the bronchial tubes.
- ▶ **Lungs:** Where oxygen is exchanged between the blood and the circulatory system.



## Data:

- ▶ **Kidney:** Removes wastes from the blood and transfers them to urine.
- ▶ **Ureters:** Urine passes through these on its way from the kidneys to the bladder.
- ▶ **Bladder:** Holds urine before it is removed from the body.



## Data:

- ▶ **Skull:** Protects the brain from injury
- ▶ **Rib Cage:** Protects the lungs and supports breathing.
- ▶ **Spine:** Protects the spinal cord and supports the head and back.



## Data:

- ▶ **Esophagus:** Moves food from mouth to stomach.
- ▶ **Liver:** Produces bile, digests fats, breaks down toxins.
- ▶ **Stomach:** holds and digests food.

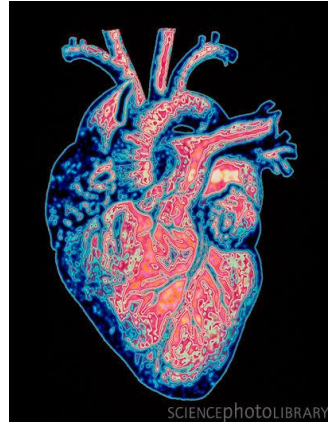


## Data:

- ▶ **Small Intestine:** nutrients are absorbed from food and enter the bloodstream.
- ▶ **Large Intestine:** absorbs water from food and stores and eliminates waste.
- ▶ **Rectum:** holds solid waste before it is eliminated from body.

## Data:

- ▶ **Heart:** Pumps blood throughout the body and works every minute of life.



## Conclusion:

Discuss the your clay body model:

- Do you think all of the organs were made to the correct scale size?
- What was the most difficult part of making the model?
- Do you think the organs were placed in the correct position/location?

What did you learn about the human body by completing the activities in this lab?



# Heart-ily Fit

Lab 40

## Vocabulary:

**Pulse:** Rhythmic stretching of arteries caused by blood being forced through the arteries by contractions of the heart.

**Recovery Time:** The time it takes for your pulse to return to its resting pulse after you exercise.



## Vocabulary:

### **BPM (beats per minute):**

Units used to measure heart rate. It is equal to the amount of times your heart beats in one minute.

## Pre-Lab Questions:

1. When you are at rest, how many times do you think your heart beats in one minute (bpm)?
2. Immediately after running for 1 min, what do you think your heart rate would be?

## Focus Question:

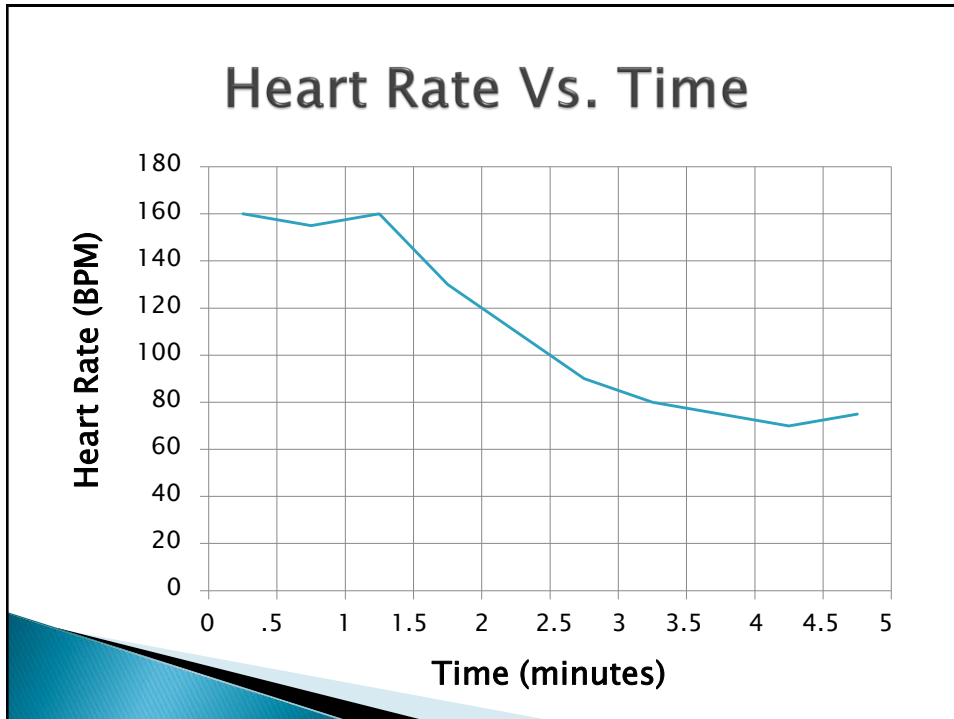
- ▶ What does it mean to be physically fit?

## Hypothesis:

- ▶ (Write your answer to the question above.)

## DATA:

- ▶ Prepare a line graph of your pulse during the time of the recovery period.



## Analysis:

1. What happened to your breathing rate during exercise? Discuss what was happening inside your body that caused this to happen.
2. What caused the difference between your resting pulse and your pulse after exercise? Think about what was happening inside your body that caused your pulse to change.

## Analysis:

3. Recovery time is the time it takes for your pulse to return to within 20% of your resting pulse. Calculate this by multiplying your resting pulse by 1.2
4. How many minutes after you stopped exercising did it take you to return to within 20% of your resting pulse?

## Conclusions

- ▶ If you improve your level of physical fitness, would you expect your resting pulse to increase or decrease? Explain.
- ▶ What would happen to your recovery time if you exercised more often than you do now?

# Heart Parts

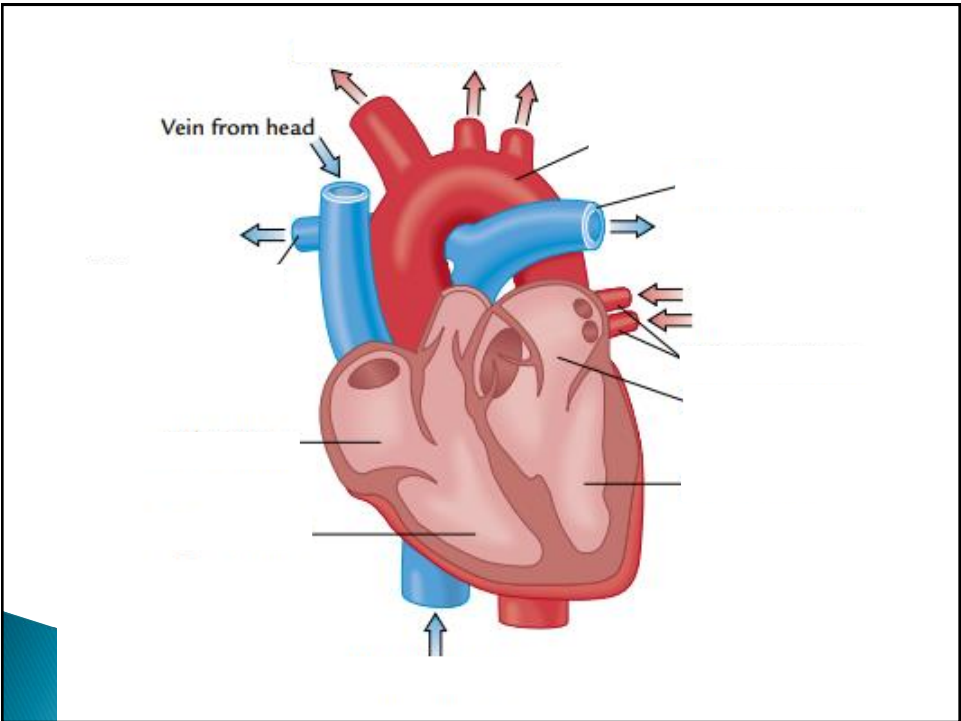
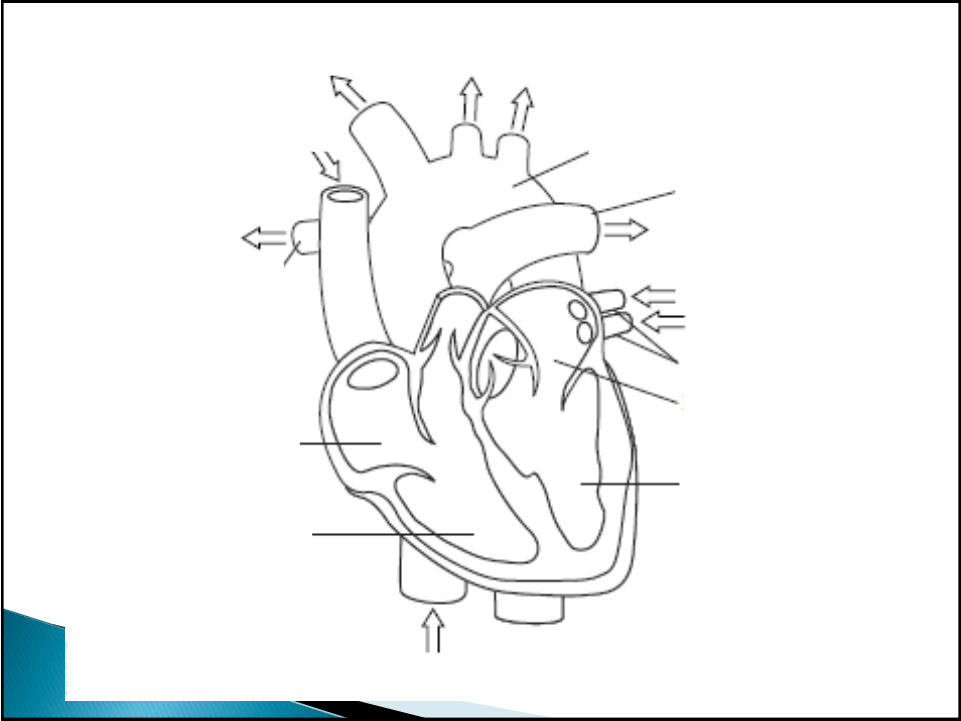
Lab 41

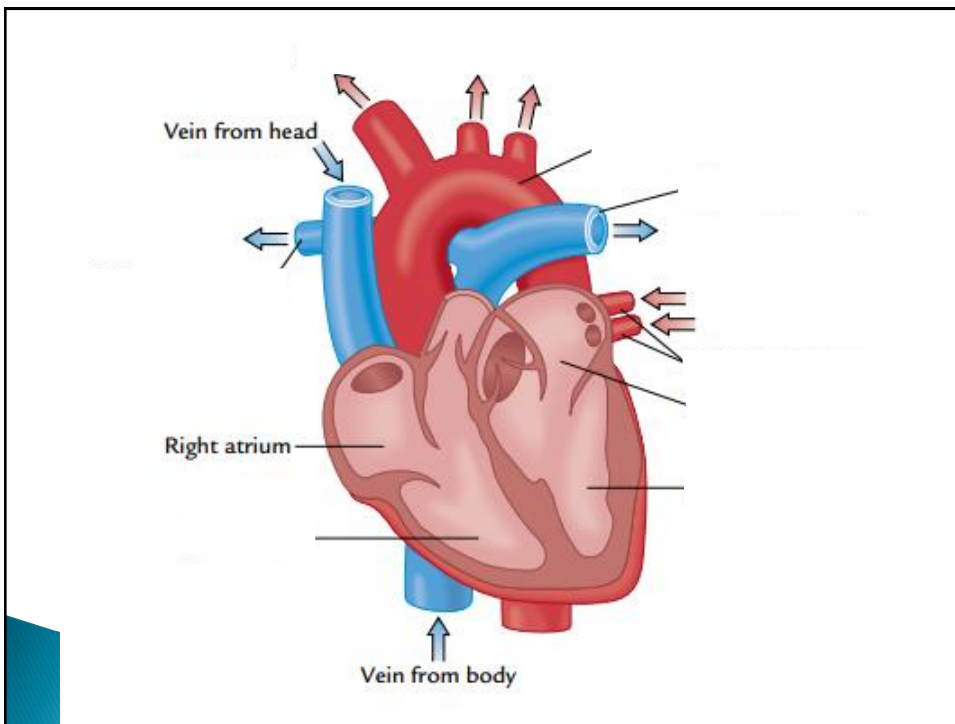
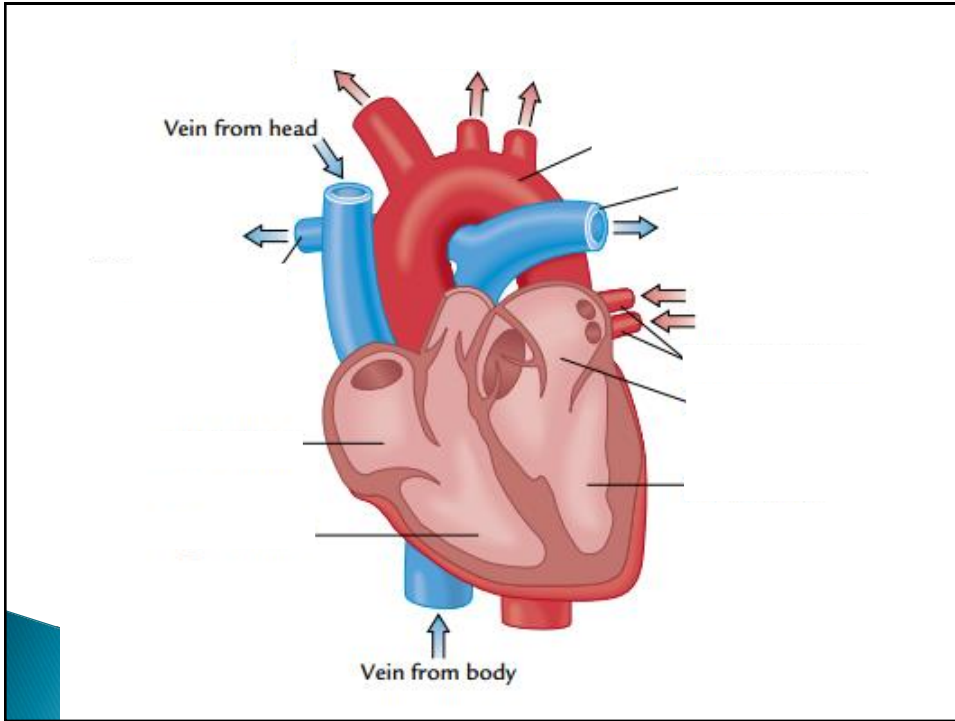
## Focus Question:

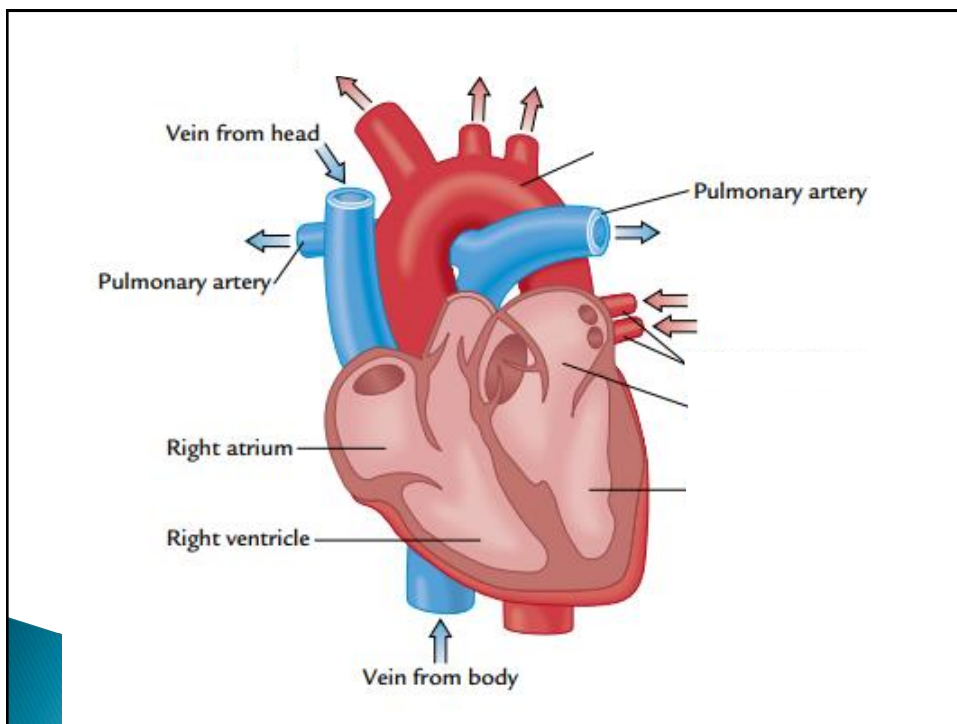
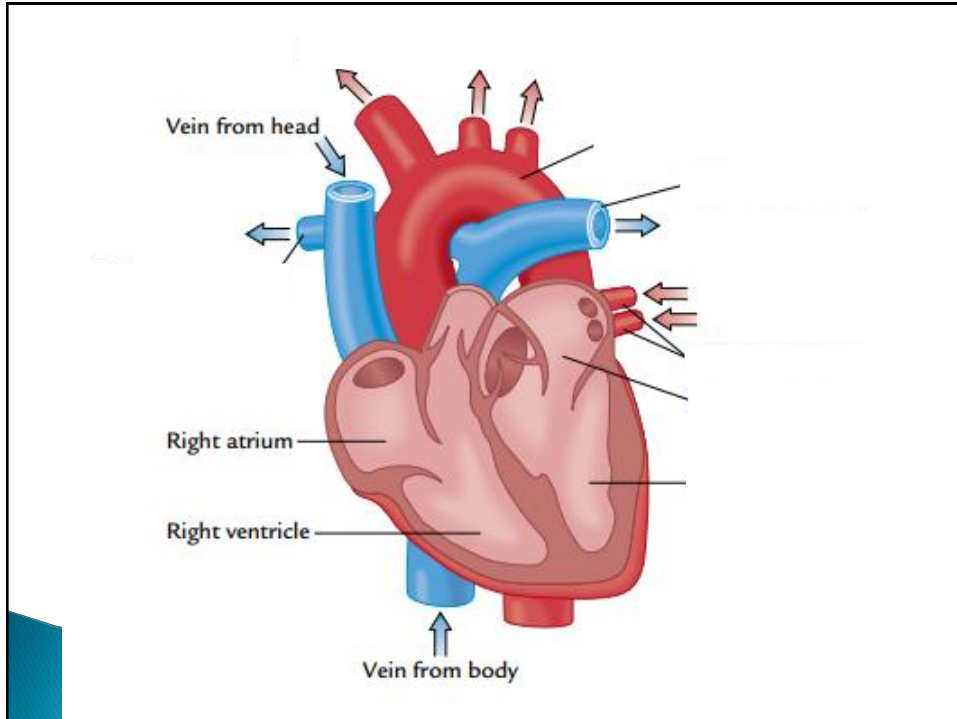
- ▶ How does your heart work?

## Hypothesis:

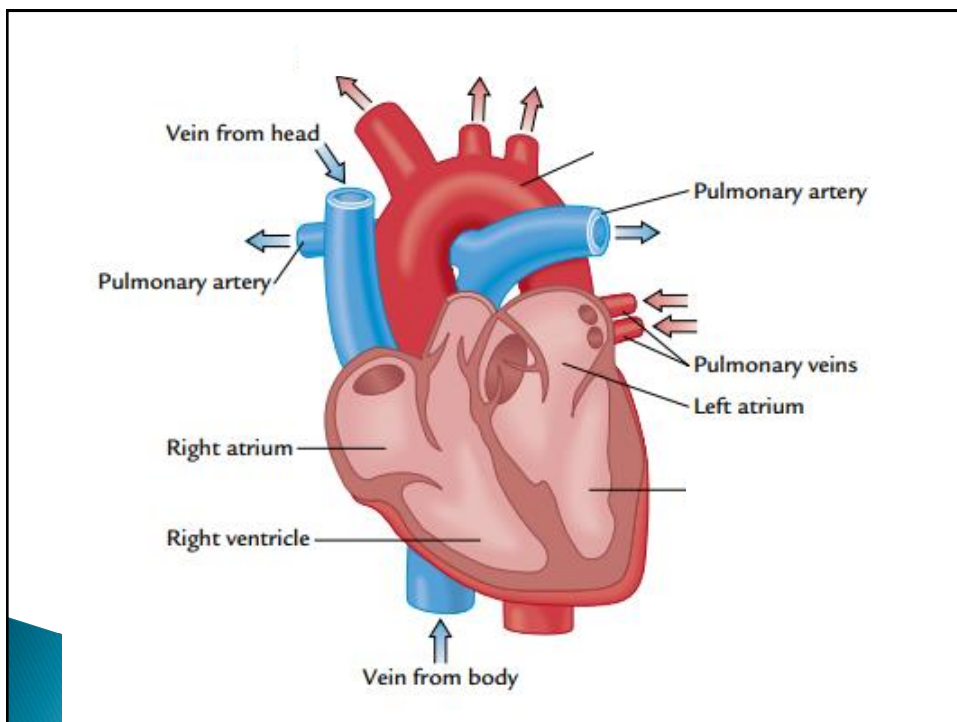
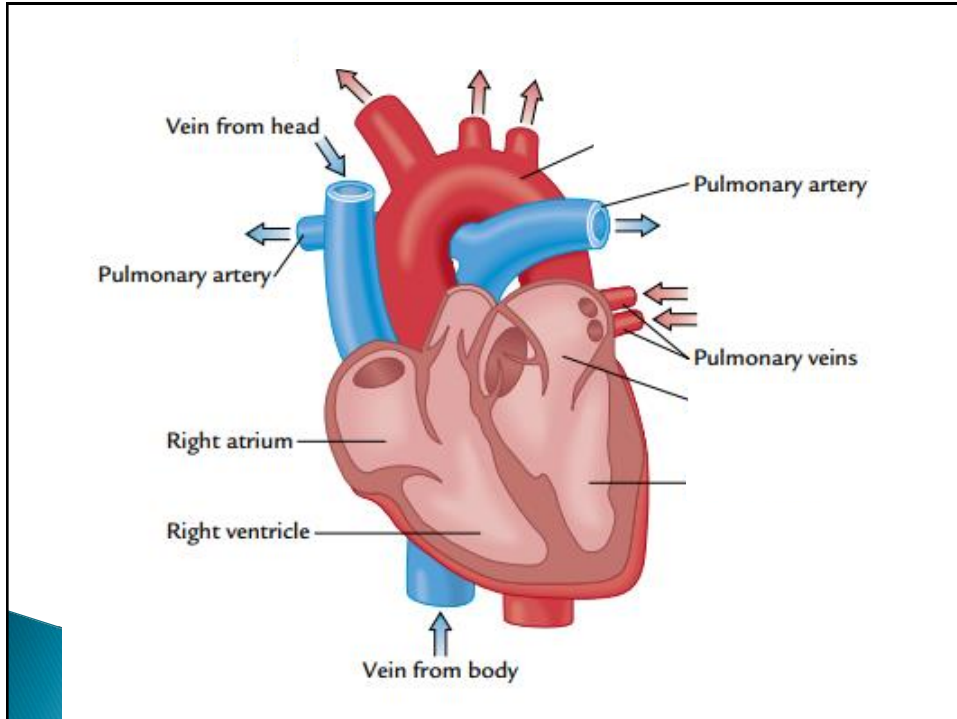
- ▶ Write your answer to the question above.

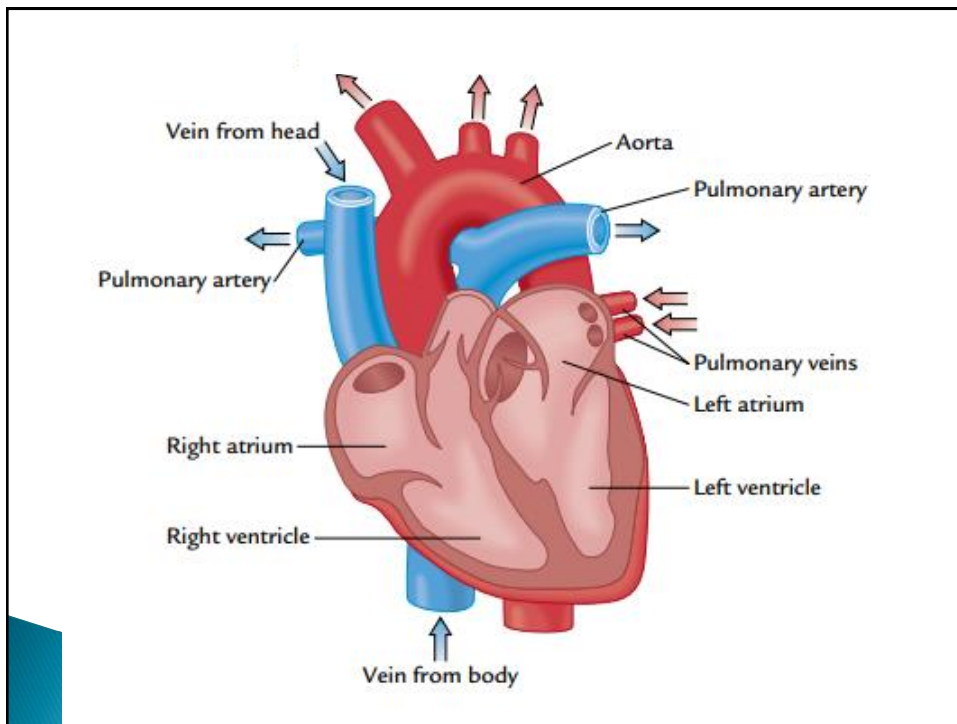
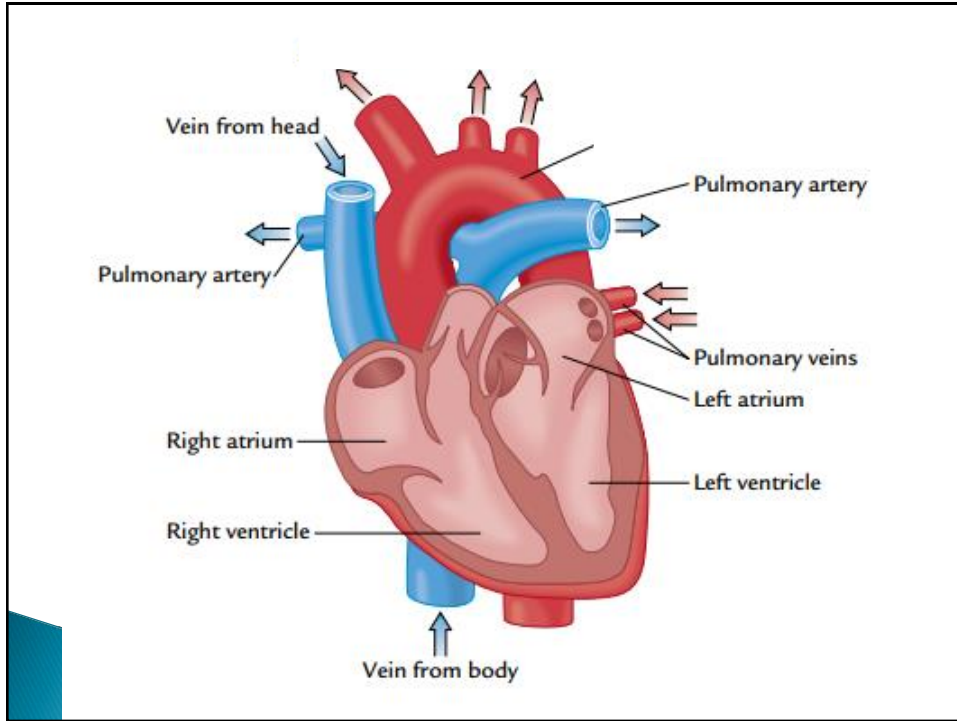


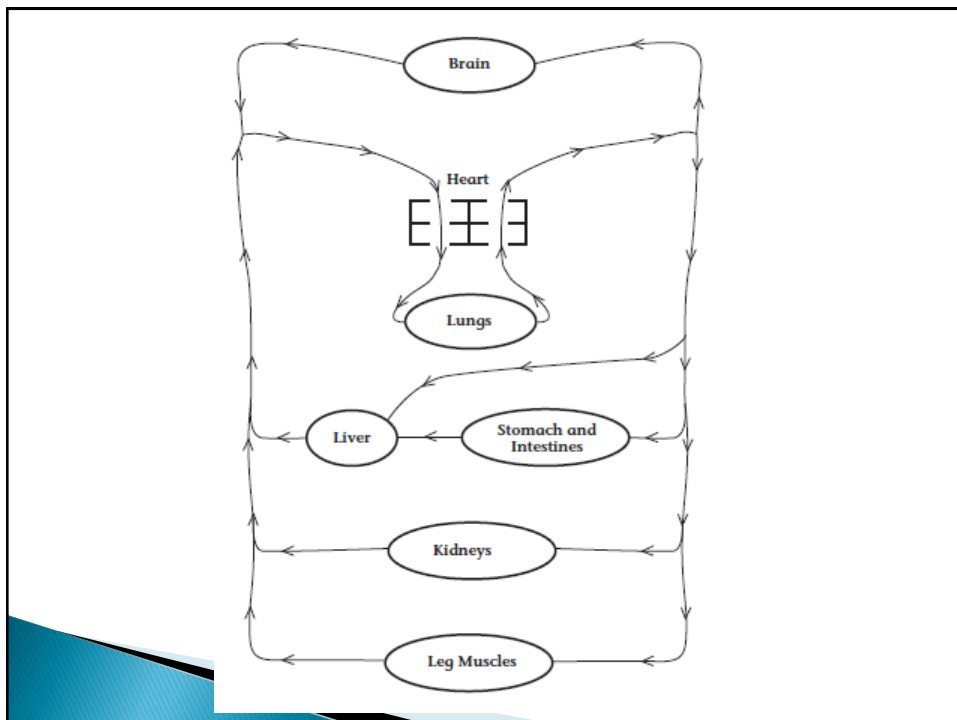
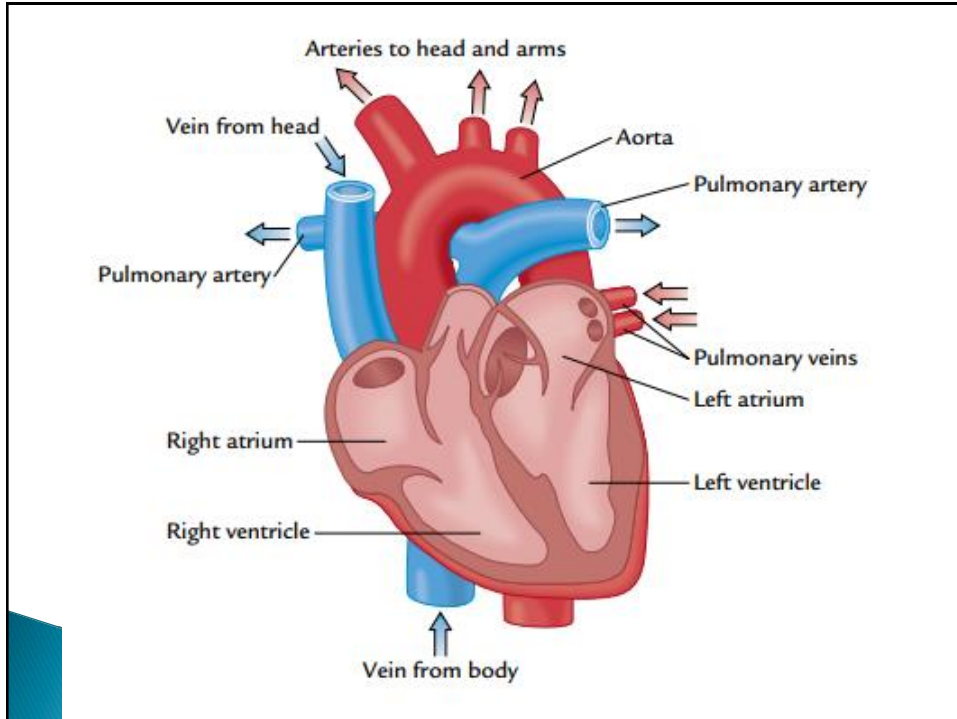


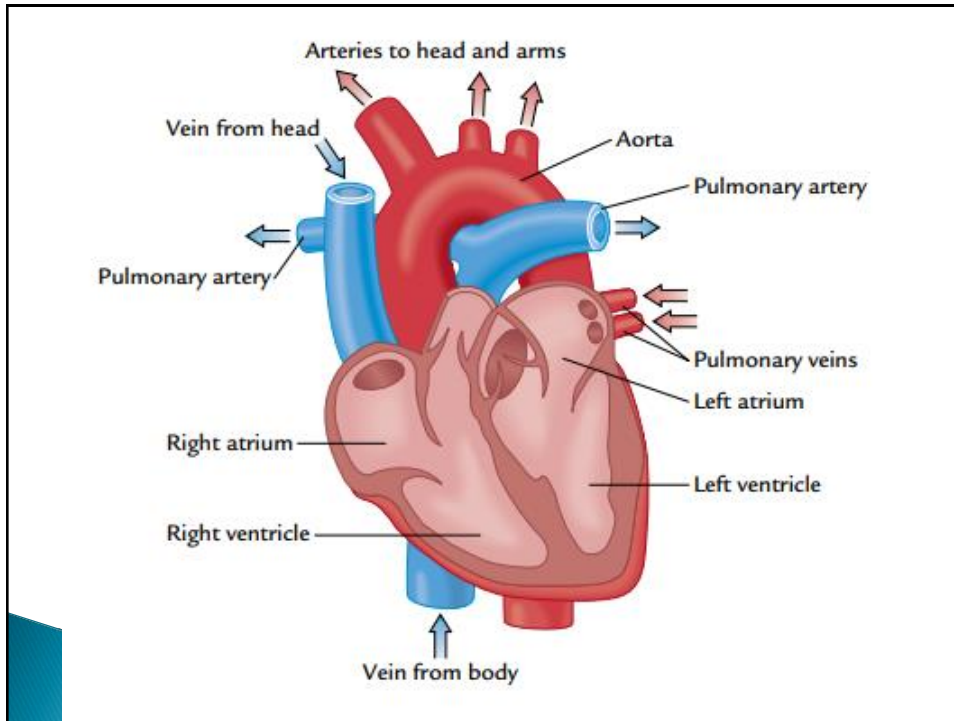












## Vocabulary:

- **Atrium:** One of the two upper chambers of the human heart that receives blood returning from the body or lungs

## Vocabulary:

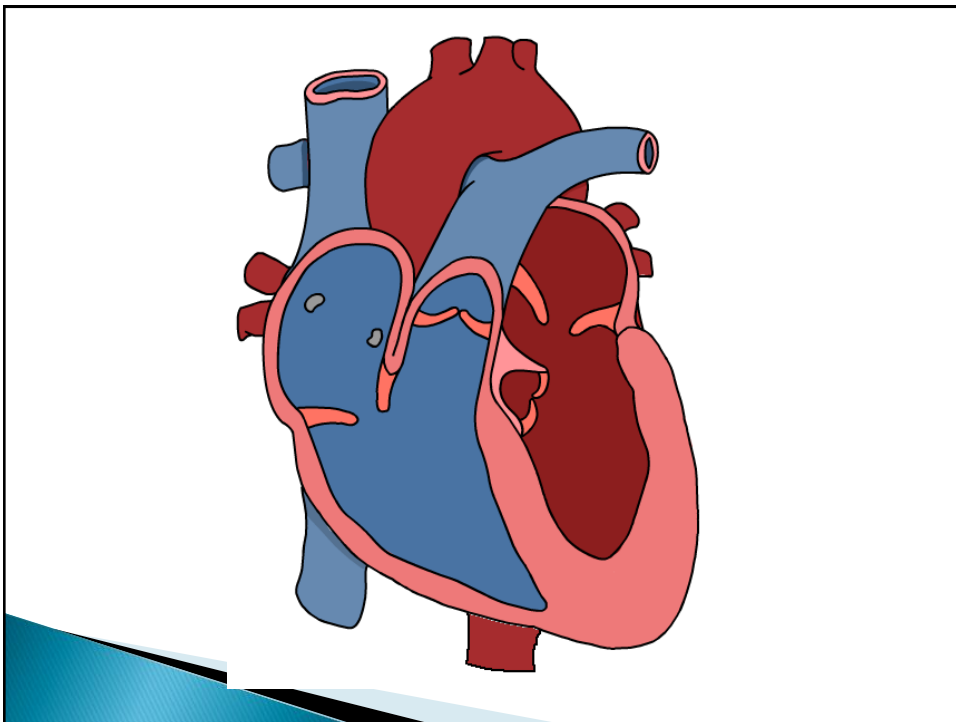
- **Ventricle:** The large, lower chambers of the heart that pump blood

## Vocabulary:

- **Valves:** Structures that allow fluids to flow only in one direction

## Vocabulary:

- **Arteries:** Blood vessels that carry blood away from the heart.
- **Veins:** Blood vessels that carry blood back to the heart.
- **Capillaries:** Tiny blood vessels that allow oxygen to diffuse into cells.



**Open textbooks to  
page B-65**

## **Analysis Questions:**

- ▶ **Complete Analysis Questions  
2,3,4, and 7**

## Stopping to Think:

## Conclusions:

- ▶ Write a brief conclusion of what you learned about the heart. Explain the chambers of the heart and how blood circulates veins and arteries.



# Healing the Heart

Lab 42  
Pg. B-72

## Vocabulary:

- **Ethics:** A system of principles that can guide decisions and practice in terms of whether something is morally right or just.

## Focus Question:

- ▶ What are some of the risks in developing new treatments for heart problems?

## Hypothesis:

- ▶ “Write your answer here”

## Procedures:

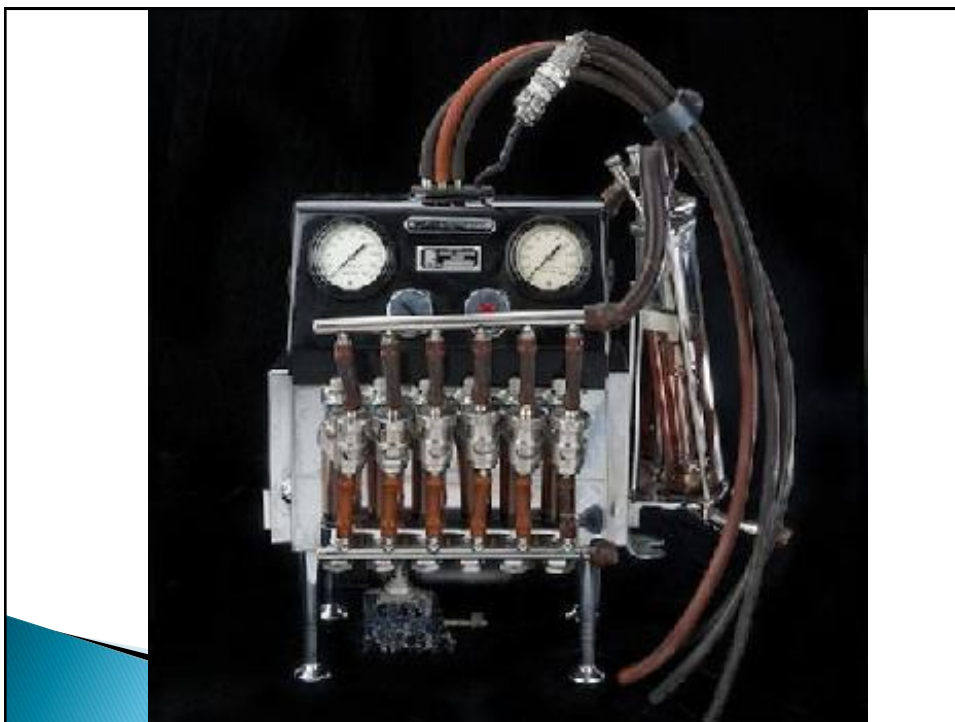
- ▶ Read pages B–73 to B–76 and complete the “Heart Surgery Timeline”

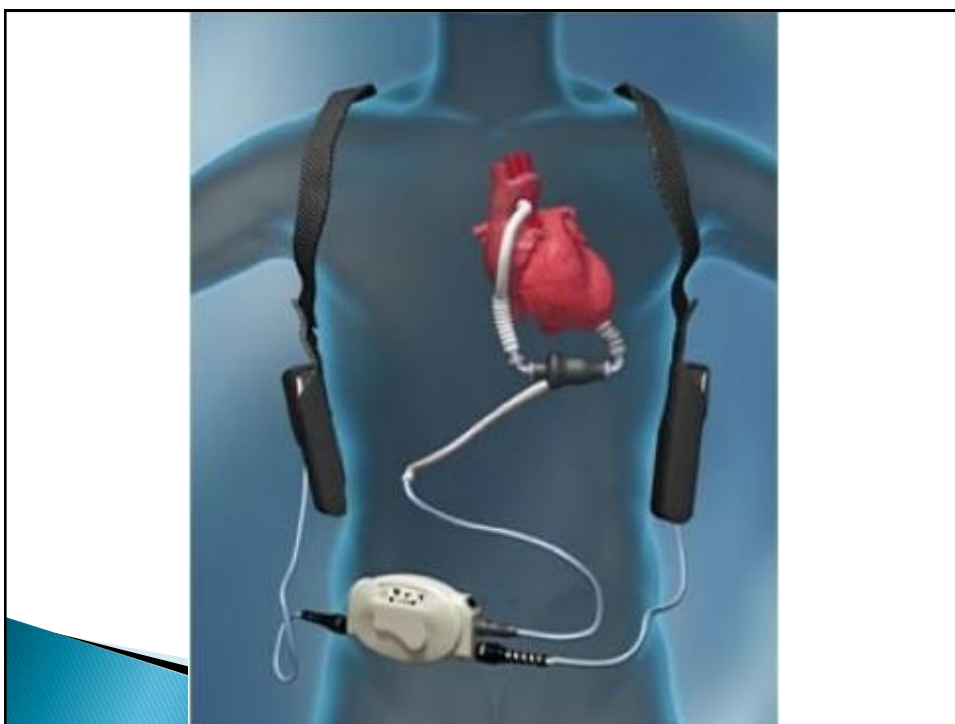
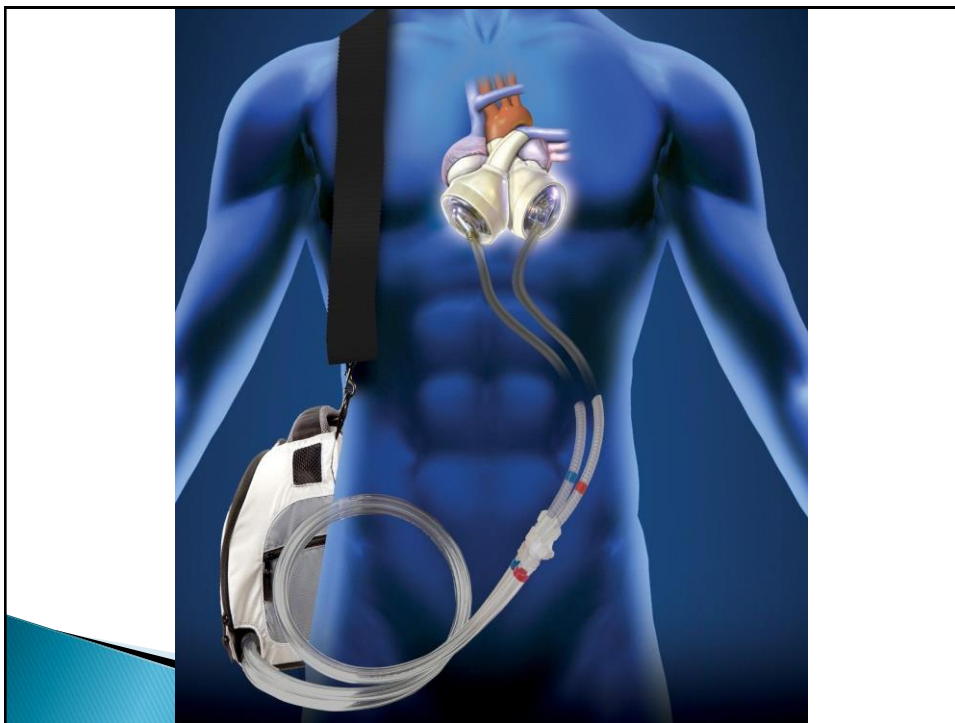
## DATA:

- ▶ Turn in Heart Surgery Timeline worksheet.

## Milestones:

- ▶ 1893: Dr. Daniel Hale Williams performs the first successful open-heart surgery.
- ▶ 1967: South African surgeon Christiaan Barnard performs the first transplant of a whole heart from one person to another.
- ▶ 1982: American physician Robert Jarvik designs the first permanent artificial heart and American surgeon Willem DeVries implants it.





## Analysis Questions:

1. What is the age range of most transplant patients?
2. What is a heart transplant patient's chance of survival after: One year? Three years? Five years?

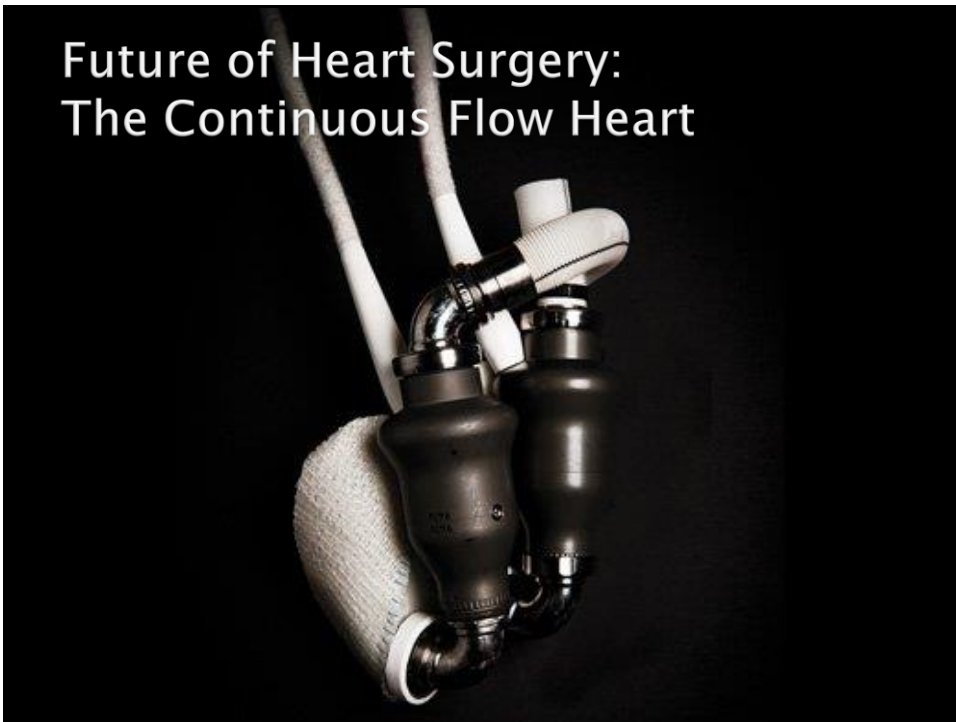
## Analysis Questions:

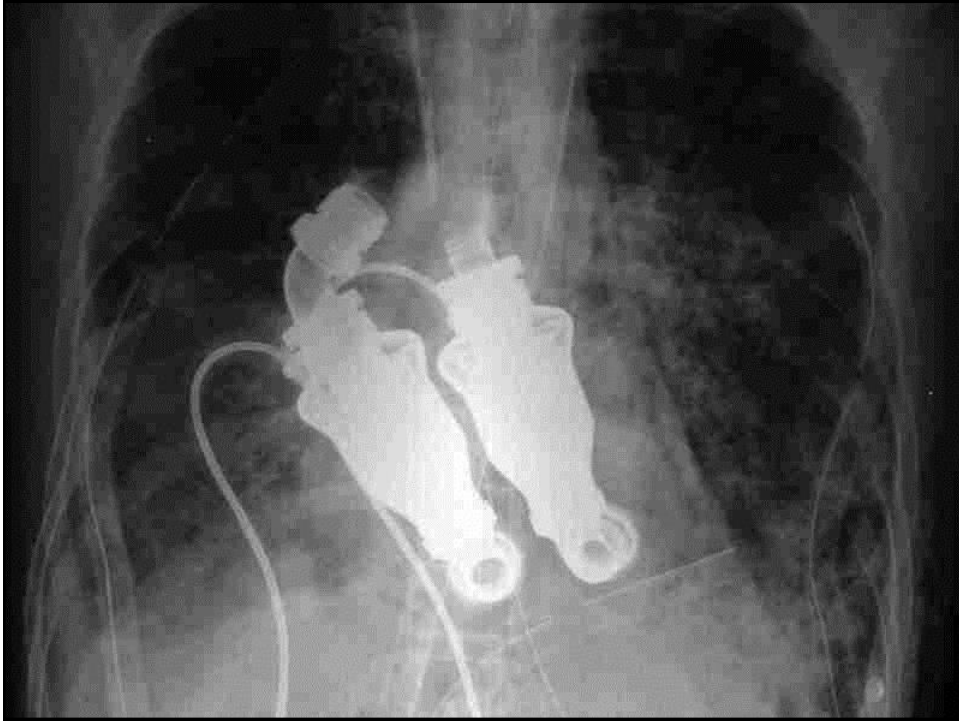
3. Compare the percentages of male and female transplant patients. Why do you think there is a difference? Explain.

## Analysis Questions:

4. Why did the early heart transplant patients agree to a transplant when it was so risky?

### Future of Heart Surgery: The Continuous Flow Heart





# Heart Sounds

Lab 43





## Vocabulary:

- **Blood Pressure:** The pressure exerted by blood against the walls of the blood vessels, generated by contractions of the heart.

## Vocabulary:

- **Coronary arteries:** The arteries that supply blood to the tissue of the heart.
- **Risk factors:** Factors that increase the chance of something negative happening.

## Focus Question:

- ▶ What information might a doctor learn by listening to a person's heart?

## Hypothesis:

- ▶ "Write your answer here"

# Find Page B-78

## Stopping To Think

- ▶ 1. What happens to oxygenated blood when there is a hole between the ventricles of the heart?

## Stopping To Think

2. When the left ventricle contracts, where should the blood flow?
3. What would happen to the blood flow in the heart if the valves could not close all the way?

## As you listen...

- ▶ Do you hear extra beats?
- ▶ Do you hear a whooshing or echo sound?
- ▶ Do you hear any unusual sounds?

## Potential Heart Problems

- ▶ Valve problems
- ▶ A hole in the heart wall
- ▶ An irregular heartbeat

### DATA:

Heart Sounds	Observations	Heart Problem
Normal Heart	"Lub-Dub"	
Abnormal Heart Sound #1		
Abnormal Heart Sound #2		
Abnormal Heart Sound #3		
Abnormal Heart Sound #4		
Abnormal Heart Sound #5		

DATA:

Heart Sounds	Observations	Heart Problem
Normal Heart	<b>“Lub–Dub”</b>	
Abnormal Heart Sound #1	<b>“Lub h–h Dub”</b>	
Abnormal Heart Sound #2	<b>“Lub Dub Ba”</b>	
Abnormal Heart Sound #3	<b>“Shh–Dub”</b>	
Abnormal Heart Sound #4	<b>“Whoo–Whoo”</b>	
Abnormal Heart Sound #5	<b>“Lub d Dub”</b>	

DATA:

Heart Sounds	Observations	Heart Problem
Normal Heart	<b>“Lub–Dub”</b>	None
Abnormal Heart Sound #1	<b>“Lub h–h Dub”</b>	Damaged Left Ventricular Valve
Abnormal Heart Sound #2	<b>“Lub Dub Ba”</b>	Damaged Artery Valve
Abnormal Heart Sound #3	<b>“Shh–Dub”</b>	Narrowing Aortic Valve
Abnormal Heart Sound #4	<b>“Whoo–Whoo”</b>	Hole in Heart Wall
Abnormal Heart Sound #5	<b>“Lub d Dub”</b>	Stiff Ventricular Muscle

## Analysis Questions

1. Cardiologists are doctors who specialize in the heart. What other types of evidence other than heart sounds are collected before diagnosis?

## Analysis Questions

2. Why might someone who has a heart defect become breathless after climbing a short flight of stairs? Explain.

## Conclusions:

- ▶ Summarize what you did during this lab .
- ▶ Explain the data you collected.
- ▶ Discuss potential problems with the heart.
- ▶ Explain what type of information a doctor would collect to make a diagnosis.

# Great-aunt Lily's Will

Lab 44



## Pre-lab Questions:

1. What are the names of organizations that raise money to treat or research specific diseases?
  1. American Heart Association
  2. American Cancer Society
  3. American Lung Association
  4. Alzheimer's Association

## Focus Question:

- ▶ What is scientific research?

## Hypothesis:

- ▶ “Write your answer to the focus question here.”

**SIGN UP. FIGHT BACK.**  
**RELAY FOR LIFE.** CELEBRATING OUR HEROES  
 JUNE 13-14  
 5 pm - 5 am  
 Pavilion Recreation Center Park  
 #FairportRelayForLife  
 www.relayforlife.org/FairportNY

**Road to Heart Disease**

**Birth**  
 7 in 10 packaged toddler meals have excess sodium.

**Toddlers**  
 23% of 2- to 5-year-olds are overweight or obese.

**Elementary School**  
 9 in 10 kids eat excess sodium. Signs of atherosclerosis and hypertension can appear at age 5.  
 1 in 3 kids is overweight or obese.

**Teenagers**  
 High-potassium diets help teens lower blood pressure. 1 in 5 teens has high cholesterol. Pizza is the second leading source of calories in teens' diets.  
 Only 2 in 10 kids eat 5 daily servings of fruits and vegetables.

**TIPS FROM FORMER SMOKERS**  
 #CDCTips  
 CDC  
 CDC.gov/tips

**PhysiciansCommittee**  
 for Responsible Medicine  
 physiciansCommittee.org

By ages 17-21, half a million Americans are eligible for statins. Heart disease is the leading cause of death in the United States.

## Procedures:

1. Open the textbook to page B-54
2. Break up into groups of four people.
3. Assign a role for each person in your group.
4. Each of you will read one role.
5. While reading, complete the "Request for Funding" handout.

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Total		---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference			
Total	\$	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000		
Total	\$	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Total	\$	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners			
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000		
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart			
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000		
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research			
<b>Total</b>	<b>\$3,392,000</b>	<b>---</b>	<b>\$1,000,000</b>

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research	\$807,000		
<b>Total</b>	<b>\$3,392,000</b>	<b>---</b>	<b>\$1,000,000</b>



# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research	\$807,000	research	
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research	\$807,000	research	
University Research Hospital			
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research	\$807,000	research	
University Research Hospital	\$1,000,000		
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000	treatment	
Heart Education partners	\$400,000	education	
Project Heart	\$685,000	education	
The State Center for Heart Research	\$807,000	research	
University Research Hospital	\$1,000,000	research	
Total	\$3,392,000	---	\$1,000,000

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Making a Difference	\$500,000		
Heart Education partners	\$400,000		
Project Heart	\$685,000		
The State Center for Heart Research	\$807,000		
University Research Hospital	\$1,000,000		
Total	\$3,392,000	---	\$1,000,000

## Totals

### Percentages: Examples

- ▶  $\$125,000 / \$1,000,000 = 12.5\%$
- ▶  $\$250,000 / \$1,000,000 = 25\%$
- ▶  $\$500,000 / \$1,000,000 = 50\%$
- ▶  $\$607,000 / \$1,000,000 = 60.7\%$

## Analysis:

1. What percentage of the money did you donate towards **treatment?**
2. What percentage of the money did you donate towards **education?**

## Analysis:

3. What percentage of the money did you donate towards **research?**

## Analysis:

4. Which category – **treatment, education, or research** – do you think would make the best use of the money? Why?

## Conclusion:

- ▶ Explain how and why you distributed the funds the way you did.
- ▶ What additional information would have helped you make a better decision on how to distribute the money?
- ▶ What effect do you think public awareness campaigns, such as a short television commercial, have on people's behavior?

# Heart Problems

Lab 45  
Pg. B-85

## Focus Question:

- ▶ What causes a heart attack or a stroke?

## Hypothesis:

- ▶ “Write your answer here”

## ANALYSIS QUESTIONS:

1. What kind of health problems can be caused by blockages in coronary arteries?
2. Why should people with many risk factors for heart disease first check with a doctor before beginning an exercise program?

## CONCLUSION:

- ▶ What can you do to maintain or improve the health of your heart?

# NOTEBOOK REVIEW

OPEN NOTE QUIZ TOMORROW!

## Living With Your Liver

Lab #30



## Vocabulary:

- ▶ **Liver:** The bile-secreting organ that aids with digestion and removal of toxins from the blood.
- ▶ **Toxin:** any substance that can cause damage to the body.
- ▶ **Regulate:** To control



## Traffic Stop

Lab #31

## Vocabulary:

- ▶ **Impaired:** Diminished, damaged, or weakened in such a way that functioning becomes poor or ceases.

# Breakdown

Lab 32

## Focus Question:

- ▶ **Why is it important to chew your food?  
other than preventing choking!**

## Vocabulary:

- ▶ **Mechanical Breakdown:**  
The physical process of breaking down larger substances into smaller pieces without any chemical reactions.

## Vocabulary:

### ▶ **Chemical Breakdown:**

The breaking up of larger substances into smaller ones through the action of chemicals.

## Data:

Tablet	Solution	Time to dissolve (seconds)
Whole Tablet (control)	50 mL water	
Tablet broken in halves	50 mL water	
Tablet broken in 4ths	50 mL water	
Crushed tablet	50 mL water	

# Digestion

Lab 33

## Vocabulary:

- ▶ **Absorb:** to take in or soak up
- ▶ **Cross-section:** A type of representation that shows what a view would look like when cutting through an object.

## Stopping to Think:

- 1.
- 2.
- 3.
- 4.

# Gas Exchange

Lab 34

## Vocabulary:

- **Indicator:** A chemical that indicates the presence, absence, or concentration of a particular substance.
- **Respiratory System:** The system of organs that work together to take oxygen into the body and remove carbon dioxide from the body.

## Vocabulary:

- ▶ **Bromothymol Blue (BTB):** A chemical indicator for weak acids and weak bases. Turns from blue to yellow in the presence of an acid.

## DATA:

Initial color of solution in cup	
Color of solution after blowing bubbles	
Percentage of CO <sub>2</sub> in exhaled breath.	

# What's Happening Inside?

Lab 35



## Vocabulary:

- ▶ **Cell:** The smallest structural unit enclosed by a membrane that makes up all living organisms.

## Vocabulary:

- ▶ **Function:** the specialized activities performed by a system, organ, body part, or device.

## Vocabulary:

- ▶ **Organ:** Structure composed of one or more tissues that perform a function or a group of functions in the body.
- ▶ **Structure:** The way that an organ or body part is made up, including shape and types of tissues

## Vocabulary:

- ▶ **Body System:** several organs working together to perform a function
- ▶ **Tissue:** a group of similar cells that perform a particular function.

# Heart-ily Fit

Lab 36

## Vocabulary:

**Pulse:** Rhythmic stretching of arteries caused by blood being forced through the arteries by contractions of the heart.

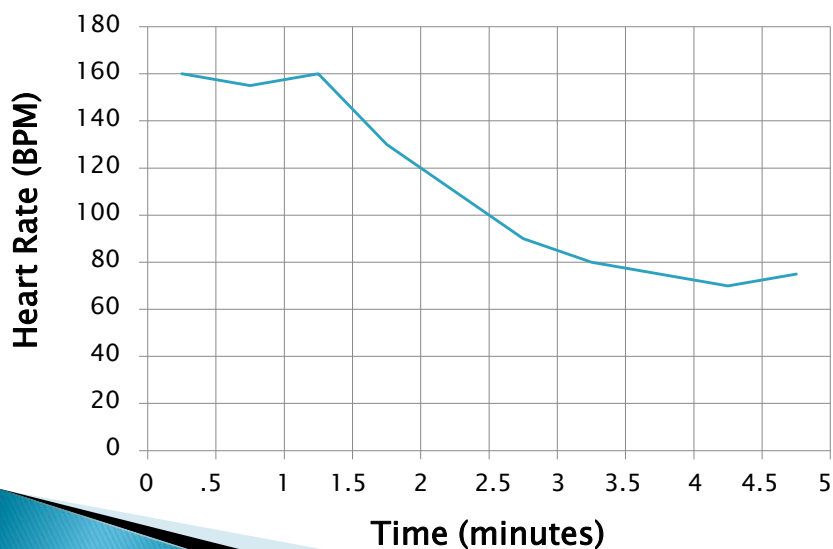
**Recovery Time:** The time it takes for your pulse to return to its resting pulse after you exercise.

## Vocabulary:

### **BPM (beats per minute):**

Units used to measure heart rate. It is equal to the amount of times your heart beats in one minute.

## Heart Rate Vs. Time



# Heart Parts

Lab 37

## Vocabulary:

- **Atrium:** One of the two upper chambers of the human heart that receives blood returning from the body or lungs

## Vocabulary:

- **Ventricle:** The large, lower chambers of the heart that pump blood

## Vocabulary:

- **Valves:** Structures that allow fluids to flow only in one direction

## Vocabulary:

- **Arteries:** Blood vessels that carry blood away from the heart.
- **Veins:** Blood vessels that carry blood back to the heart.
- **Capillaries:** Tiny blood vessels that allow oxygen to diffuse into cells.

# Healing the Heart

Lab 38  
Pg. B-72

## Vocabulary:

- **Ethics:** A system of principles that can guide decisions and practice in terms of whether something is morally right or just.

# Heart Sounds

Lab 39



## Vocabulary:

- **Blood Pressure:** The pressure exerted by blood against the walls of the blood vessels, generated by contractions of the heart.

## Vocabulary:

- **Coronary arteries:** The arteries that supply blood to the tissue of the heart.
- **Risk factors:** Factors that increase the chance of something negative happening.

## DATA:

Heart Sounds	Observations	Heart Problem
Normal Heart	"Lub-Dub"	
Abnormal Heart Sound #1		
Abnormal Heart Sound #2		
Abnormal Heart Sound #3		
Abnormal Heart Sound #4		
Abnormal Heart Sound #5		

# Great-aunt Lily's Will

Lab 40

# Data:

Name	Amount Requested	Education, Research, or Treatment	Amount Awarded
Total		---	\$1,000,000

# Heart Problems

Lab 41  
Pg. B-85