

# Ag Biology

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Week 3 Jan. 30<sup>th</sup> – Feb. 3<sup>rd</sup>

Body Systems – Nervous, Immune, Circulatory and Respiratory, FFA  
– Officer Responsibilities, Choose SAE, Prepare 8<sup>th</sup> grader visit



# Vinnie & Tank







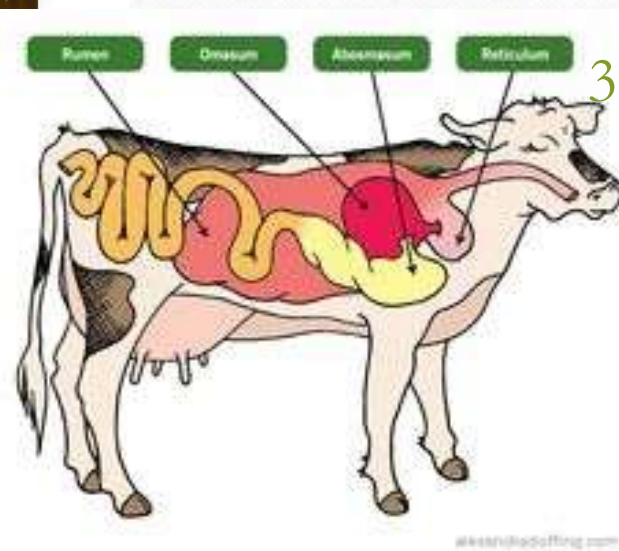
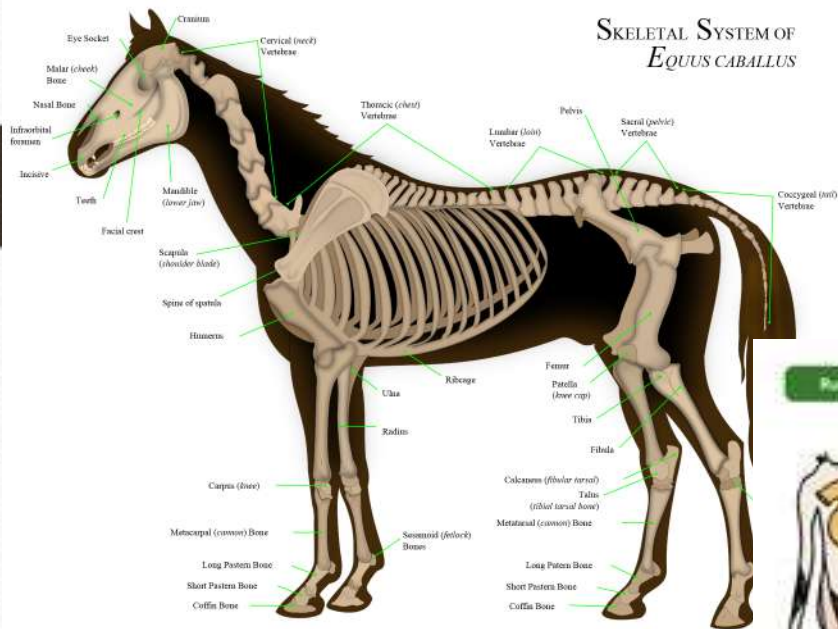
UC Davis  
Classic  
Prospect Sale





## 1/30 Physiology – Ag Style

Obj. TSW apply what they have learned about the body systems to what they need to know to care for animals and plants. P. 20 NB



# Animal and Body Systems Project

## 50 point Project Due February 9th

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- You may work alone or with a partner.
- Choose a domestic farm Animal, choose a Body System.
- On a Poster Board, or Power Point Show both systems, label the parts. You can use pictures or draw.
- During your presentation explain how the systems are similar, and how they are different.
- Explain in detail why it is important that we understand that system in your animal, and for us as a human.
- Have a works cited page.



# 6 Types of SAE's

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- **Ownership/ Entrepreneurship** – caring for Chickens, Bunnies, Guinea Pigs, other animals
- **Placement/ Internship** – Fiery Ginger Farms, Dave Vierra Farms, Andrew Codd
- **Research-** best fertilization methods in plants, Aquaculture project
- **Exploratory** – Research possible Careers in **AFNR**
- **School Based Enterprise** – After or before school, managing working school garden, fresh food drive, research in a greenhouse, Biodigestion, Composting, Tower Gardens, Recycling program
- **Service Learning** – Farm to Fork Festival, Bryte Community Parking Lot Sale

# Ag Ed Term Quiz

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Supervised Agricultural Experience B

Placement SAE A

Entrepreneurship SAE E

Exploratory SAE F

Supplemental SAE G

Program of Activities (POA) C

Improvement SAE H

Research SAE D

# Page 21 NB

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1. E
2. H
3. B
4. C
5. F
6. D
7. A
8. G

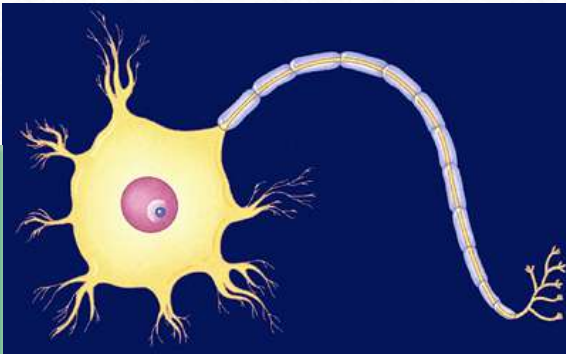




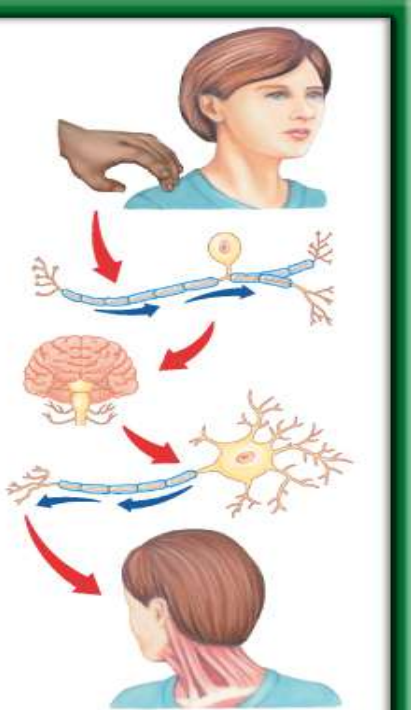
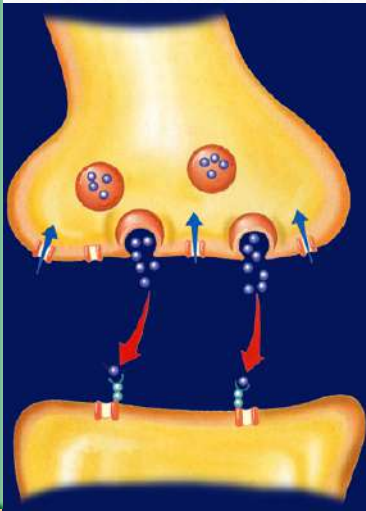
West  
Sacramento  
FFA &  
Woodland  
Christian FFA  
Pancake &  
Pajama Night

## 1/31 Nervous System 36.1

Obj. TSW explain the roles of the sensory neurons, interneurons, and motor neurons in sensation, thought and response by doing a lab on reaction response. P.22 NB



1. Describe, draw, and label a neuron.
2. Explain the functions of each type of neuron: sensory, interneuron, and motor.
3. What is a reflex, write an example?





# Ag Work Day

This Saturday at RCHS, 10am – 2 pm in the Garden

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- Yes! This is 4 hours of Service learning
- Yes! It counts as part of an SAE. Enter what you did in The AET.com Record Book
- Wear your old cloths you don't mind getting dirty.
- Bring Gloves, or McAllister can bring you a pair.

## Learning about FFA Activity

Match each of the following FFA words to what they are: P. 15 NB

- SALUTE

- Written By E. M. Tiffany
- I believe in the future of agriculture,...
- National Blue and Corn Gold
- MOTTO
- This consists of 5 symbols: cross section of Corn, the rising Sun, the Plow, the Eagle, the Owl

- EMBLEM

- Learning to Do, Doing to Learn, Earning to Live, Living to Serve.

- CREED

- I pledge allegiance to the Flag of the United States of America and to the Republic for which it stands, ...

- COLORS



# I love my neighbor who...

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- Everyone clear the center tables to the sides of the classroom.
- Place the chairs in a circle, 1 less than the number of people.
- McAllister starts, standing in the center, & says “I love my neighbor who...”
- Then everyone who can agree or has seen that, done that, has that, gets to get up from their chair and move to a chair that is **NOT** next to the chair they are currently sitting in.
- If you are the one who is left out, you are the next person to stand in the center and say “I love my neighbor who...”
- If you are in the center, you can not go back to the previous chair you were sitting in before you were the last one without a chair.

# Inventory what needs to be fixed in our program with the Bunny Hutch and Chicken Tractors and Garden Beds

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- Students use measuring tapes and phones to take pictures.
- Our Ag Advisory Panel will be here in February. We have to have everything up to snuff.
- Clean Chicken Tractors, Bunny hutch, Evaluate Tank – New Bunny 😊, Sweep concrete, spray “Bugs” stain. Pull any dead or yellowing leaves & feed to chickens – Yes you can let them out.



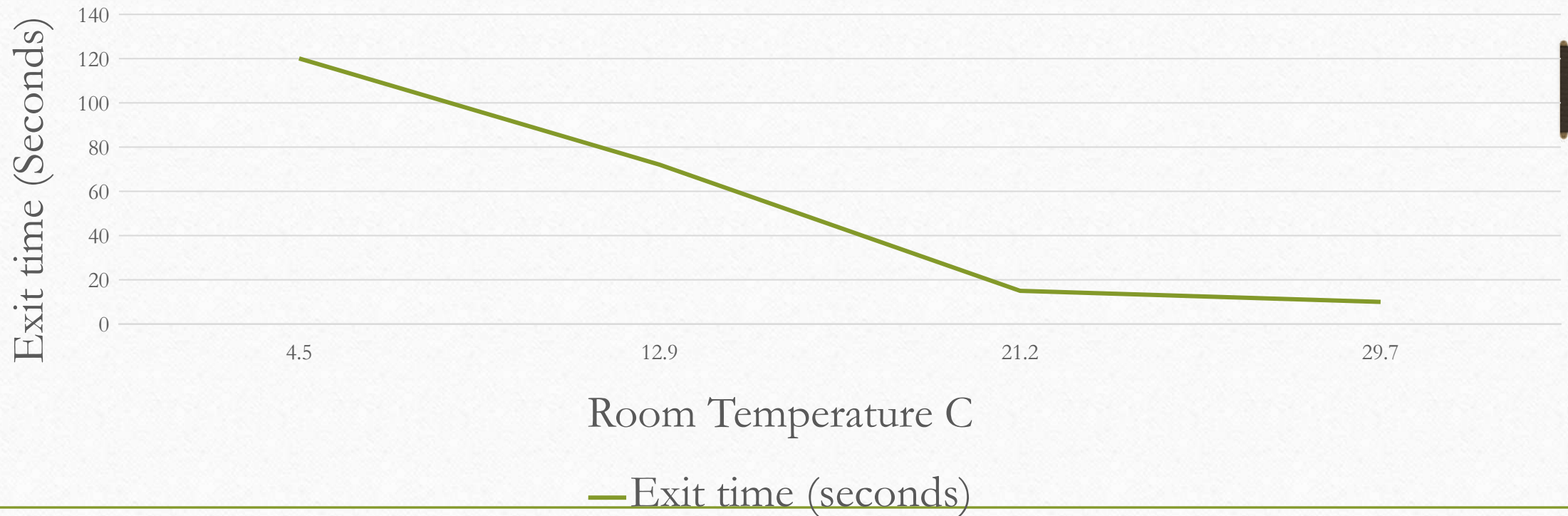
# Experimental Design Practice p. 17 NB

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- #1
- The independent variable (What Margaret changed) is the amount of moisture.
- The dependent variable ( What she measured) is the number of worms.
- The correct X axis label for a graph of Margaret's data is the "Amount of Moisture, (mL)"
- The correct Y axis label for a graph Margaret's data would be " The number of Worms present".
- The Correct title for Margaret's graph would be," The Effect of Moisture on the Number of Worms Present".

# Winnie & the Frogs p. 17 NB

The Effect of Temperature on the Exit time frogs jump out of a Target





# Scientific Method Sponge Bob

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1. Group B are the Control Group, because they are the original, not the new sauce.
2. The independent Variable is the New Sauce.
3. The Dependent Variable is the amount of gas production.
4. Mr. Krab's conclusion is that the new sauce decreases gas production.
5. The 8 people in Group B reported feeling better due to the placebo effect, they felt better because they wanted to feel better.

# Scientific Method

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1. Independent Variable: The mass of the paper clip.
2. Dependent Variable: The length the paper airplane would fly.
3. Control: The airplane flown without any paper clips
4. Constants (things kept the same): airplane, paper clips, location.



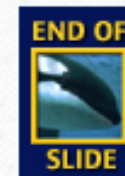
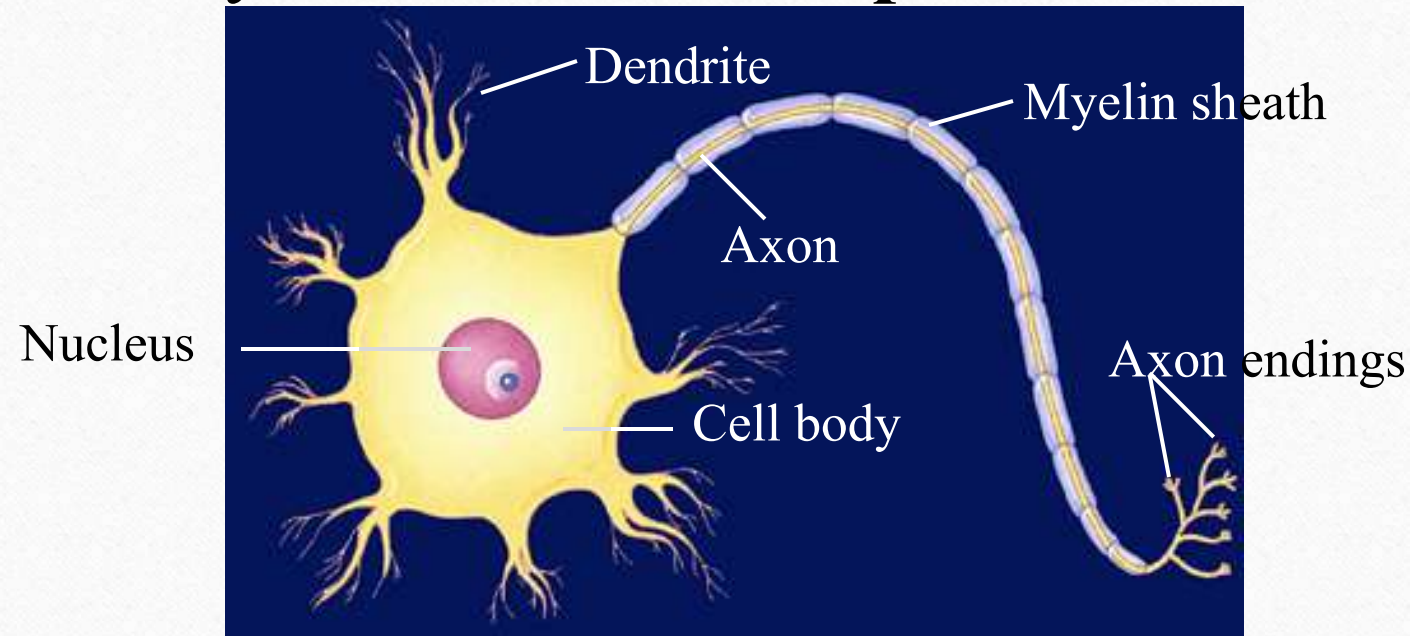
# Opening and Closing Ceremony Activity

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- Name the Officers:
- Everyone should have an FFA Manual
- Choose your role, We will do a dry run through.
- All Official FFA Officers are expected to memorize their parts, and be in Official dress during meetings.
- Our next meeting is Feb. 8<sup>th</sup> at RCHS room 310 at 3:30.

## #1. Neurons: Basic Units of the Nervous System

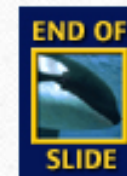
- **Neurons** conduct impulses throughout the nervous system. **Draw this picture**





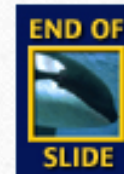
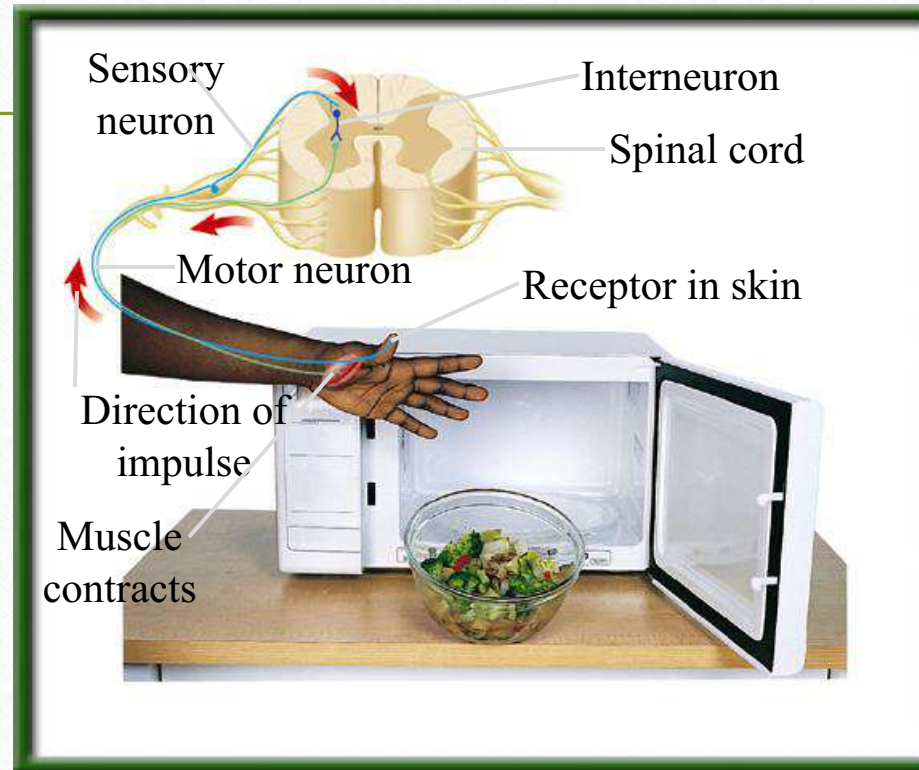
## #2. Neurons: Basic Units of the Nervous System

- Neurons fall into three categories: **sensory neurons, motor neurons, and interneurons.**
- **Sensory neurons** carry impulses from the body to the spinal cord and brain.



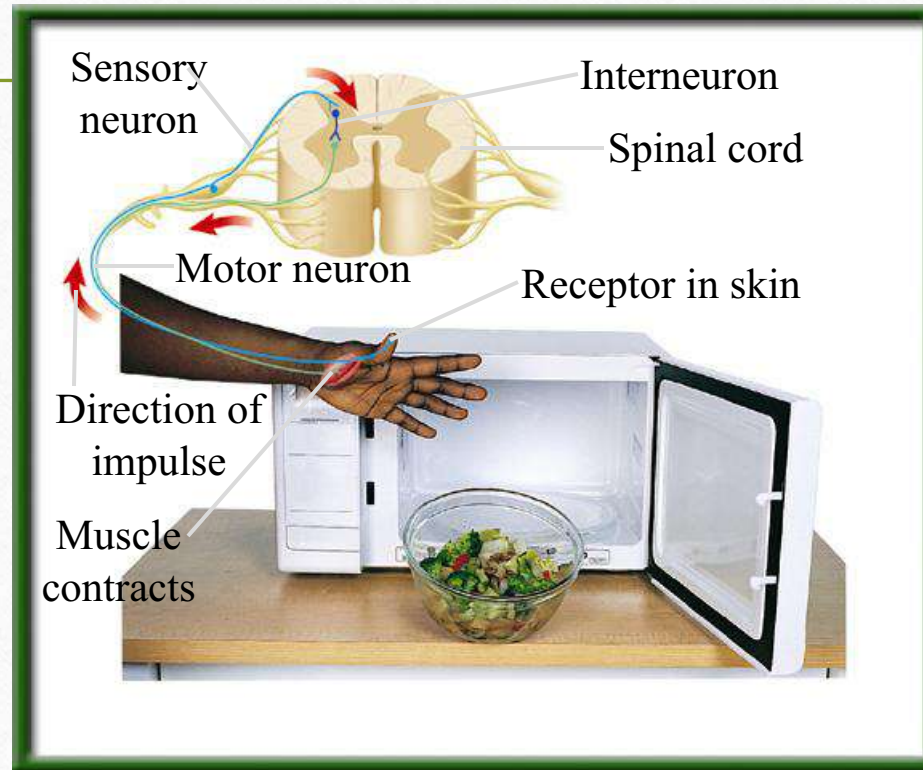
# Neurons: Basic Units of the Nervous System

- **Interneurons** are found within the brain and spinal cord.





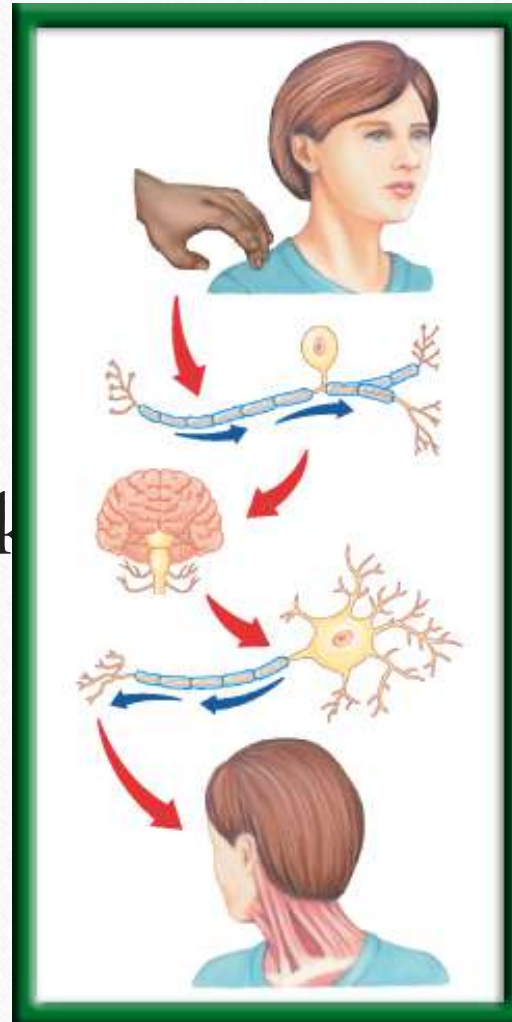
# Neurons: Basic Units of the Nervous System



- **Motor neurons** carry the response impulses away from the brain and spinal cord to a muscle or gland.



# How the Central Nervous System Works



## Sensory Neuron

-You sense the touch

## Interneuron

-The brain processes that you have been touched.

## Motor Neuron

-You turn your head to see who touched your shoulder





## 2/1 Distraction/ Reaction Lab CH 36

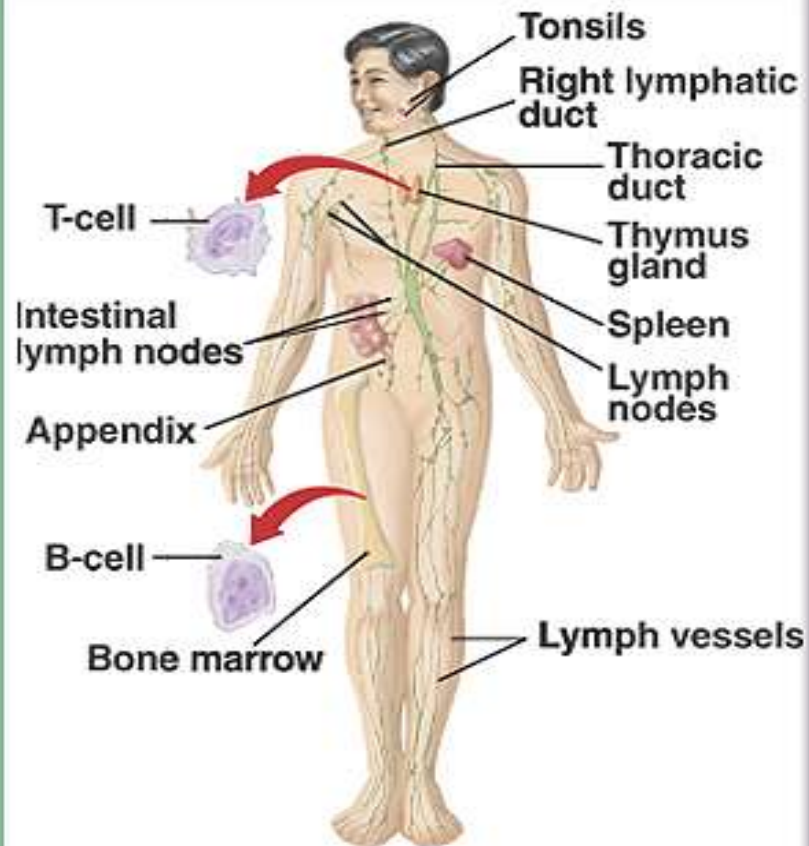
Obj. TSW calculate reaction times under different conditions. P. 24 NB



1. What type of neurons will you use in the distraction/ reaction lab?
2. Is this lab an example of a reflex reaction? Why or why not?
3. What other body systems work together with your nervous system to help you catch the meter stick?

## Defense Against Infectious Diseases 39.1 & 39.2

2/2 TSW understand and explain the role of antibodies in the body's response to a bacterial infection during the warm up. P. 26 NB



1. What is a pathogen?
2. Identify cells, tissues and organs that make up the immune system.
3. Explain the role of antibodies in response to infection.

T – cell production



**MiniLab**  
**36.1****Distractions and Reaction Time**

Experimenting

Have you ever tried to read while someone is talking to you? What effect does such a distracting stimulus have on your reaction time?

**Procedure**

- 1 Work with a partner. Sit facing your partner as he or she stands.
- 2 Have your partner hold the top of a meterstick above your hand. Hold your thumb and index finger about 2.5 cm away from either side of the lower end of the meterstick without touching it.
- 3 Tell your partner to drop the meterstick straight down between your fingers.
- 4 Catch the meterstick between your thumb and finger as soon as it begins to fall. Measure how far it falls before you catch it. Practice several times.
- 5 Run ten trials, recording the number of centimeters the meterstick drops each time. Average the results.
- 6 Repeat the experiment, this time counting backwards from 100 by fives (100, 95, 90, . . .) as you wait for your partner to release the meterstick.

**Analysis**

1. Did your reaction time improve with practice? Explain.

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2. How was your reaction time affected by the distraction (counting backwards)?

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3. What other factors, besides distractions, would increase reaction time?

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Trials	Without Distraction (cm)	With Distraction (cm)	Opposite hand (cm)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
<b>Average</b>			

# What does it mean to have a relationship?

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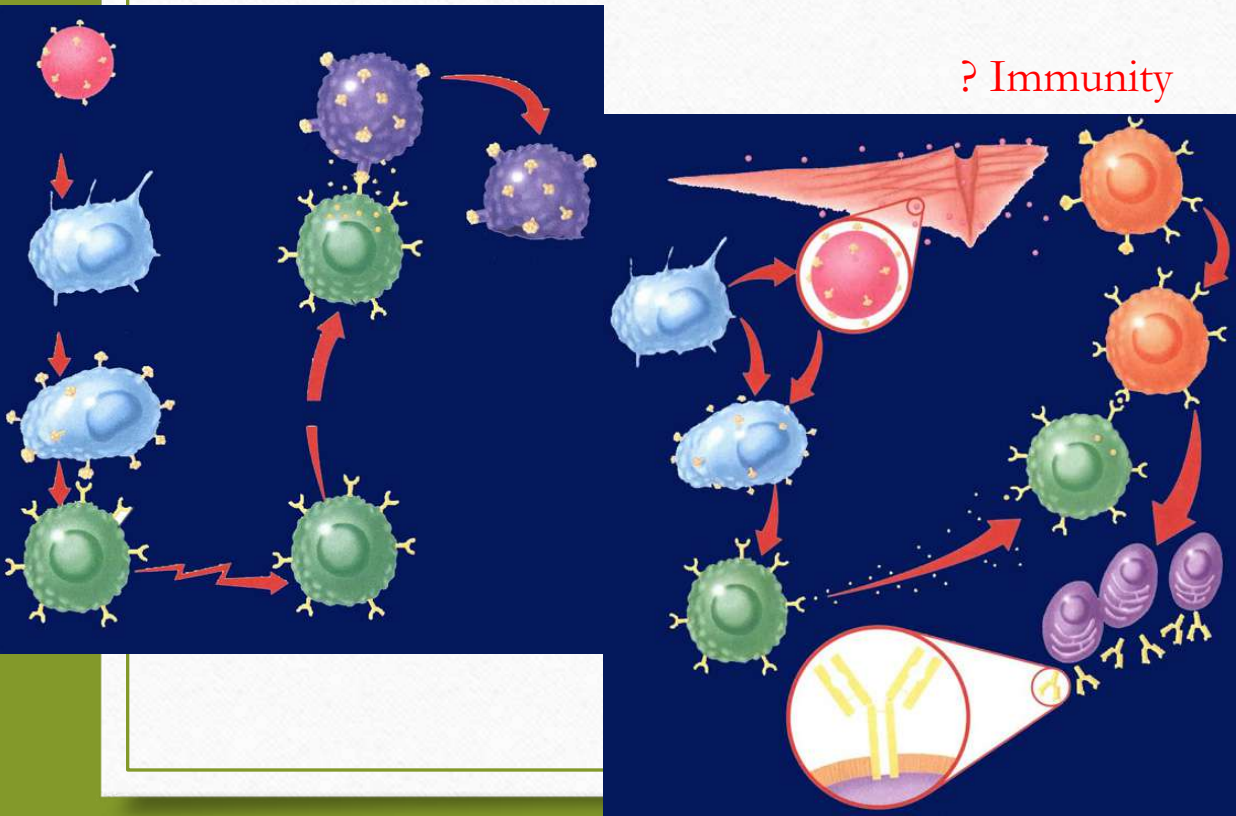
- Why are relationships important?
- Do animals count?
- How can animals make a positive difference in our lives?
- Can they make us healthier?



## Immune System Responses 39.2

2/3 Obj. TSW compare and contrast Antibody Immunity and Cellular Immunity by diagramming the process in their NB and drawing a Cartoon applying nonspecific & specific immune responses. P.28 NB

? Immunity



1. Identify two types of lymphocytes in Antibody Immunity.
2. Explain the process of Antibody Immunity.
3. Explain the process of Cellular Immunity.

# Data:

## Table 1:

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Explanation Sentence (10 Font):

Trials	Without Distraction (cm)	With Distraction (cm)	Opposite Hand (cm)
Sam & Olga	17.9	21	17.1
Syam & Carah & Genesis	37.8	49.7	50.2
Jewel & Elias & Angie	10.2	22.1	23.5
Roberto & Josh	13.2	16.1	63.4
Lili	36.7	41.8	48



## Learning about FFA Officer Positions Activity

Obj. TSW distinguish between different officer positions after reviewing each positions' responsibilities online. P. 29 NB

1. Use the FFA.org website or the Official Manual P. 48 and Name 5 of the 9 Officer positions.
2. What responsibilities/ behavior would you expect from the all the River City High School Bryte CCT Chapter FFA officers?
3. Would you like to run for an office next year in Farm to Fork 1?

Why or why not?



# FFA Officer Responsibility Activity

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- Use FFA.org
- FFA Manual
- Page 48 in online Manual
- Write down 3 key responsibilities for each of the offices on 3x 5 cards
- We will use flashcards and travel around to say the responsibilities and see if another person can name that officer position.
- Tape your card to page P. 19 NB
- Play Kahoots! FFA Officer Responsibilities



# Allelopathy Lab

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- **Objective:** Using the Scientific Method, test whether different seeds (Radish and Lettuce) impact each others growth.
- **Essential Question:** Can radish seeds impact the growth of lettuce seeds?
- **Background:** (Paragraph) Explain Vocabulary: Germination, Competition for Resources
  - Cite Sources: [Allelopathy: How Plants Suppress Other Plants](#) (Ferguson, Rathinasabapathi, Chase, 2013)
- **Hypothesis/ Purpose:** If radish seeds are grown with lettuce seeds, then the lettuce seeds will not germinate.

# Allelopathy Lab

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- **Materials:** Petri Dishes, Pipettes (2mL), Petri dish paper, Radish seeds, Lettuce seeds
- **Procedure:** (Make sure your procedure can be duplicated exactly by someone who has never done this lab – Be very specific.)
  - Step 1:
  - Step 2:
  - Step 3:
  - Step 4:
  - Step 5:



# Allelopathy Lab



- **Data:** (Qualitative & Quantitative – numbers, values)

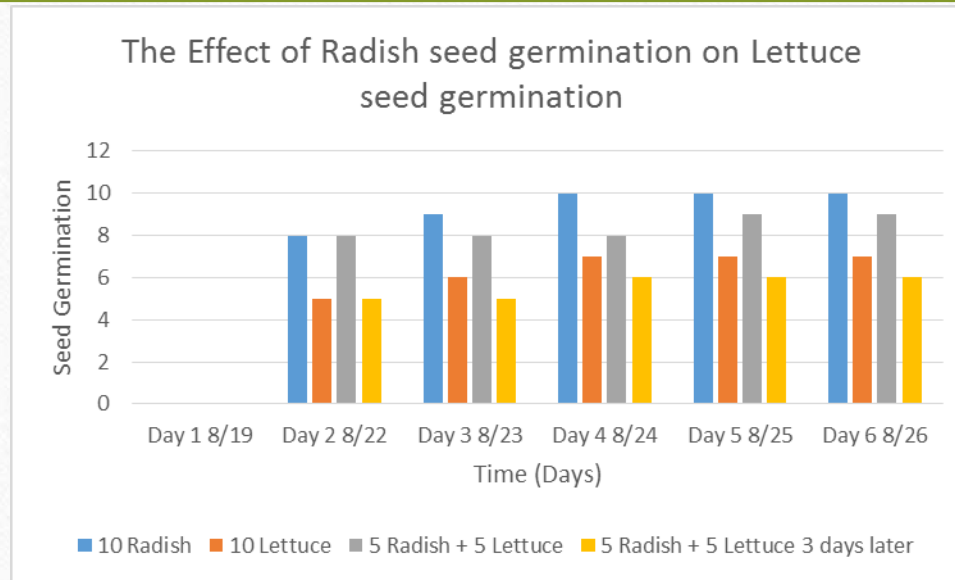
- **Table 1:** The table below shows the different germination rates of radish and lettuce seeds when grown together and separately. (10 font)

	10 Radish	10 Lettuce	5 Radish + 5 Lettuce	5 Radish + 5 Lettuce 3 days later
Day 1 8/19				
Day 2 8/22				
Day 3 8/23				
Day 4 8/24				
Day 5 8/25				
Day 6 8/26				

# Allelopathy Lab

- **Data: (Qualitative & Quantitative-numbers, values)**

- Graph 1:



- The radish seeds over 6 days showed increased germination compared to the lettuce seeds. (10 Font)



# Allelopathy Lab

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- **Data: (Qualitative – descriptive words & Pictures)**
  - The radish seeds looked ..... they smelled....
  - The lettuce seeds roots were longer and had more root hairs.

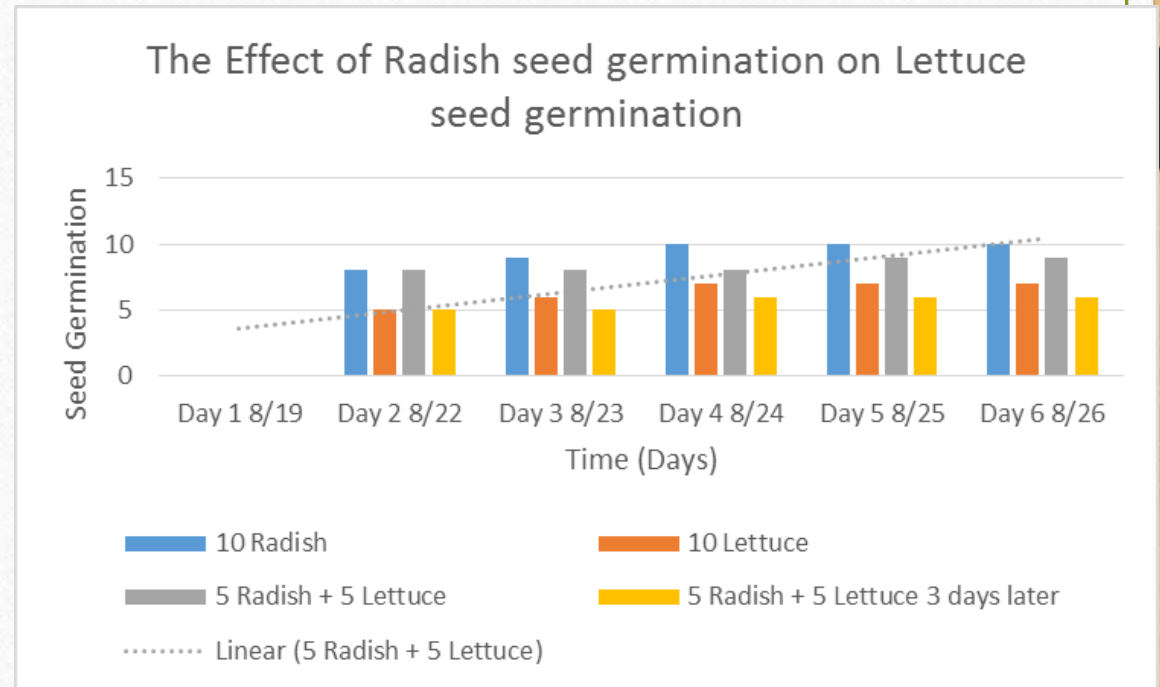


# Allelopathy Lab

## Data Analysis: (Paragraph)

Explain your data - results. Why did we see the results in the graph? Discuss any trends.

Cite Sources: [Allelopathy: How Plants Suppress Other Plants](#) (Ferguson, Rathinasabapathi, Chase, 2013)





# Allelopathy Lab

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- **Conclusion:** (Paragraph)
  - Restate hypothesis and explain if it was supported or not. Tie your Data Analysis to your Background and hypothesis. Did your data support what you thought would happen? How? Explain why allelopathy is important. At the very least, write an AXES paragraph about Allelopathy between radish and lettuce seeds and how it applies to Agriculture.
  - Cite Sources: [Allelopathy: How Plants Suppress Other Plants](#) (Ferguson, Rathinasabapathi, Chase, 2013)

# Works Cited

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1. James J. Ferguson, emeritus professor; Bala Rathinasabapathi, professor; and Carlene A. Chase, associate professor, Horticultural Sciences Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.
2. Yes – one more
3. Yes – still one more 😊
4. Done!



# Quiz Today – Biology Only

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- Notebook Check
- Pages 8 – 23 (80 Points)
- Study Warm ups

# FFA Officer Responsibility Activity

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- Use FFA.org
- FFA Manual
- Page 48 in online Manual
- Write down 3 key responsibilities for each of the offices on 3x 5 cards
- We will use flashcards and travel around to say the responsibilities and see if another person can name that officer position.
- Tape your card to page P. 19 NB



# Characteristics of Living Things

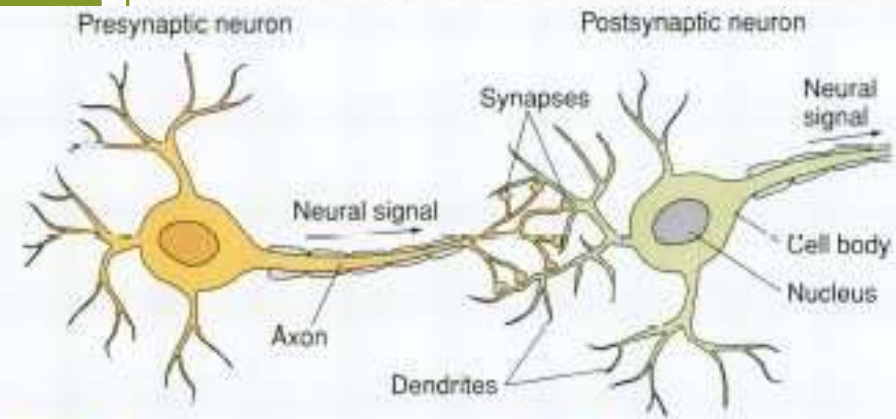
All living things:

- have “Cells”
- produce offspring “Reproduction”
- Grow and Develop
- Stimulus & Response
- Homeostasis
- Energy to maintain Metabolism

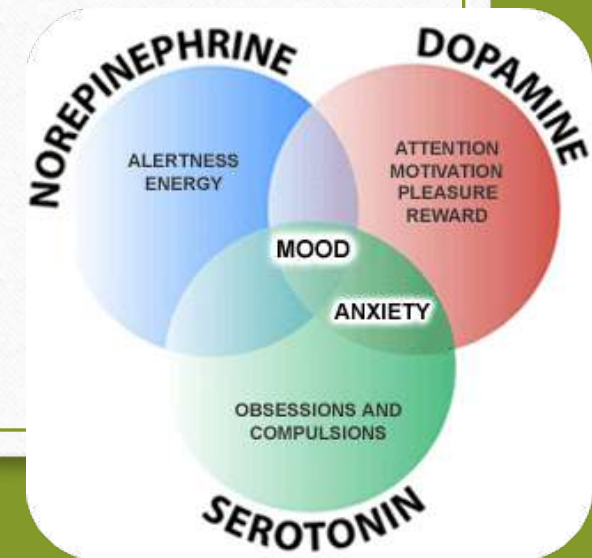
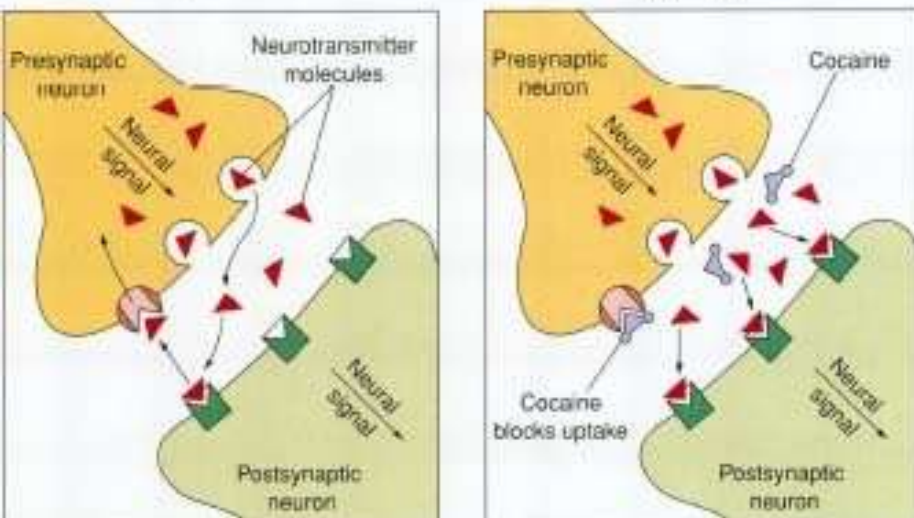


## 8/31 Neurotransmitters & Addiction CH 36.1 & 36.3

Obj. TSW learn about neurotransmitters and how drugs impact how the neurotransmitters work. P. 28 NB



1. What is a neurotransmitter?
2. Why is it important in communication of neurons?
3. How do drugs affect the function of neurotransmitters?





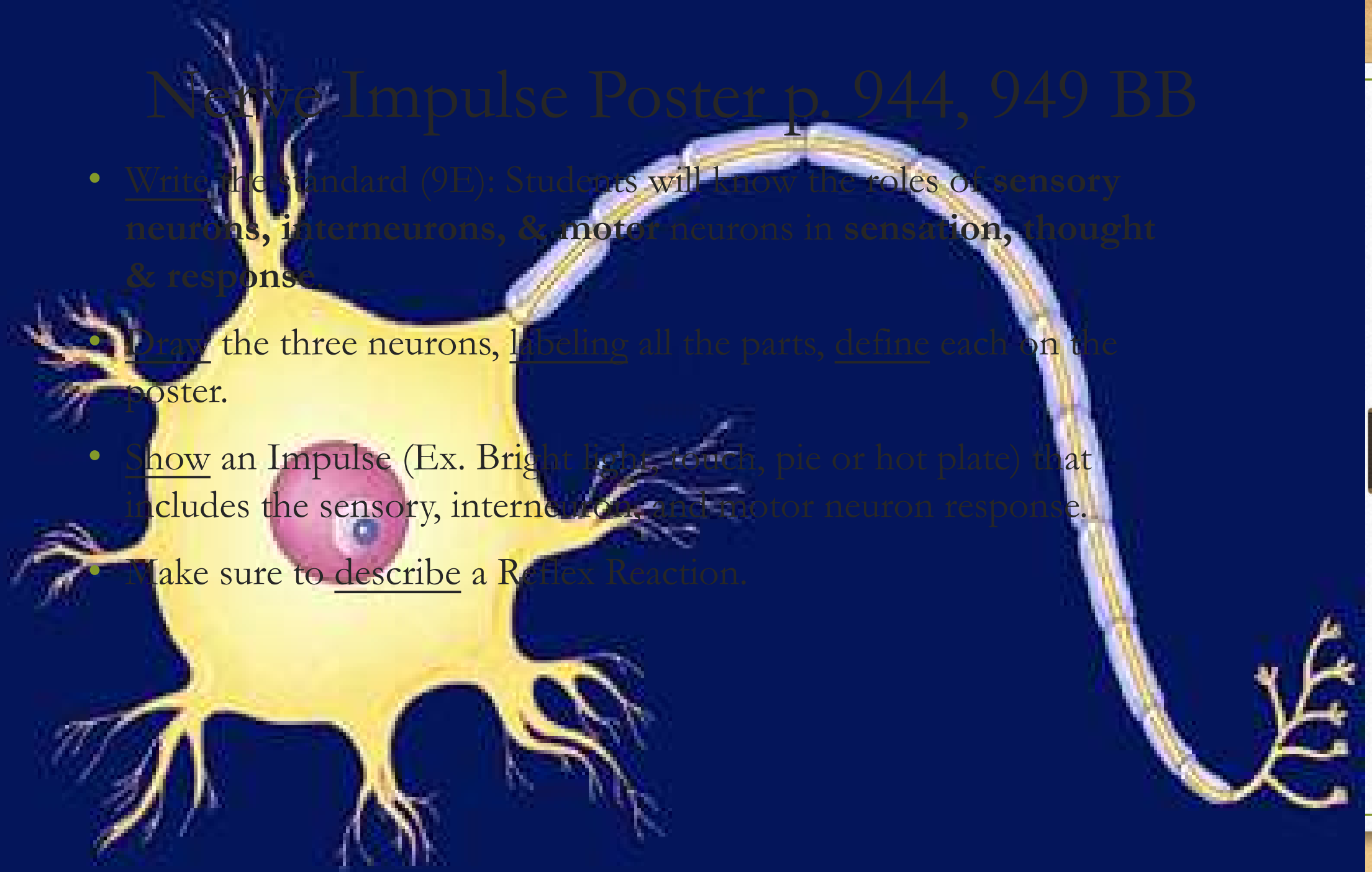
# Mouse Party Activity

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- With a partner go to a computer and log onto it using your new User name and password.
- Once you are logged onto the computer go to:  
<http://learn.genetics.utah.edu/content/addiction/>
- Click on Mouse Party
- Take a few notes about how addiction happens on page 17 NB.
- Worksheets:
- <http://teach.genetics.utah.edu/content/addiction/>

# Nerve Impulse Poster p. 944, 949 BB

- Write the standard (9E): Students will know the roles of **sensory neurons, interneurons, & motor neurons** in **sensation, thought & response**.
- Draw the three neurons, labeling all the parts, define each on the poster.
- Show an Impulse (Ex. Bright light, touch, pie or hot plate) that includes the sensory, interneuron, and motor neuron response.
- Make sure to describe a Reflex Reaction.





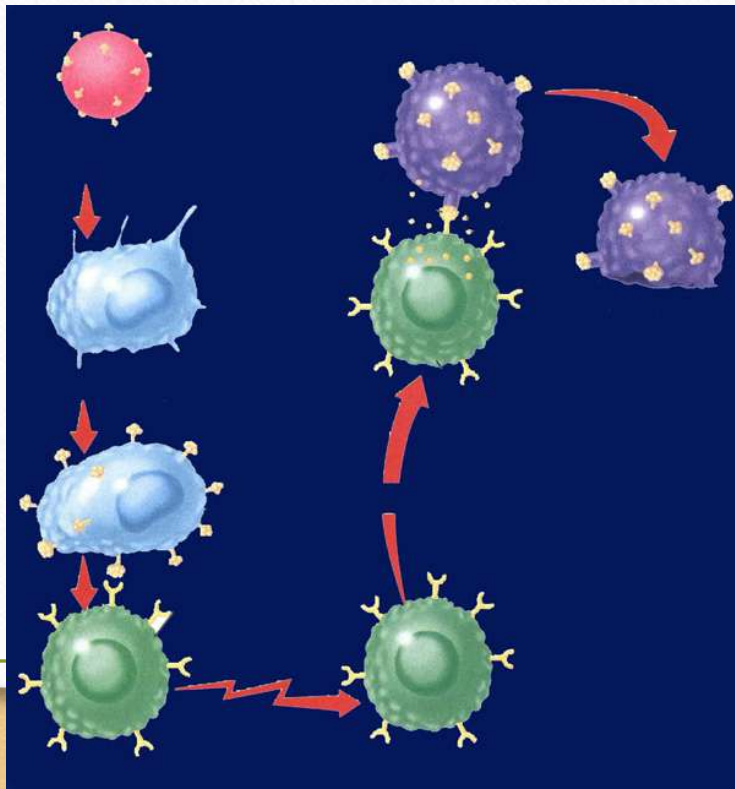
# Distraction Reaction Lab

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- Create your title page today
  - Start your Background information by doing online research and cite your sources.
  - Copy and Paste Excel Data Table 1 and Graph 1 into word document.
  - Bar graphs are used not line.
- 
- Page 23NB
  - Notes CH 39

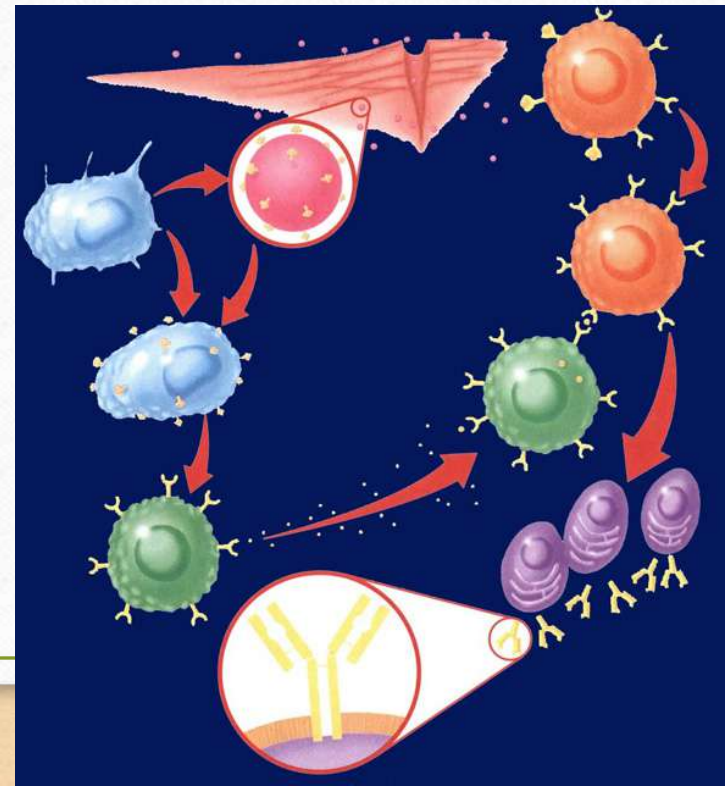
# Notebook – Specific Immunity

- P. 25 NB Antibody Immunity P. 1037BB
  - P. 27 NB Cellular Immunity P. 1038 BB
  - Write a 4 – 5 sentence summary using specific vocabulary to explain the process.
- 



Cellular Immunity

Antibody Immunity





# 39.2

## Defense Against Infectious Diseases

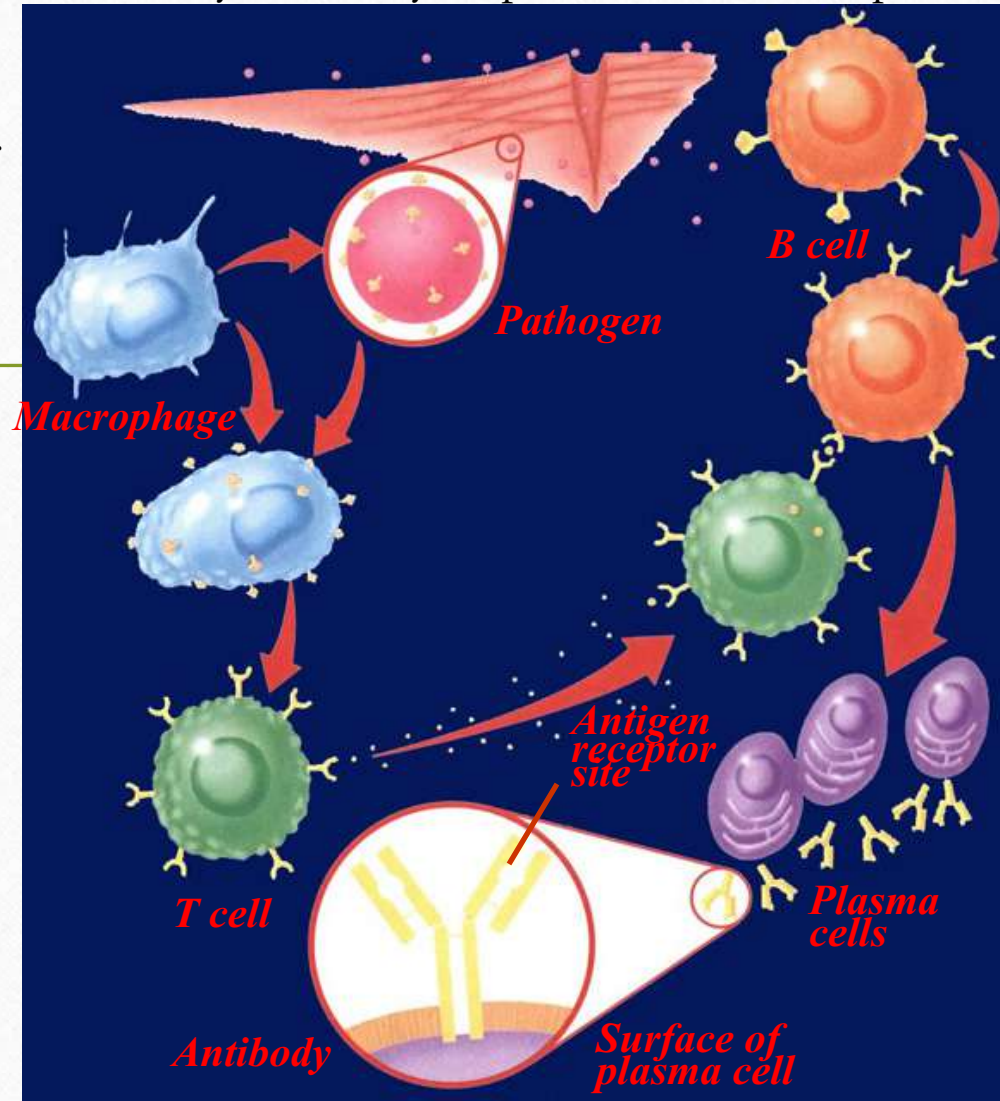
Antibody Immunity – Specific Immune Response, Builds Antibodies

A. Pathogens enter tissues through a wound.

B. They are attacked by macrophages at the infection site.

C. Antigens of the pathogen are displayed on the surface of the macrophage.

D. Helper T cells have receptor sites that recognize and bind to the antigens on the macrophage.



E. B cells can bind to antigens directly.

F. Helper T cells bind to antigens on B cells.

G. T cells release chemicals that cause B cells to produce clones of plasma cells.

H. Each plasma cell secretes more than 2000 antibodies per second in the blood. Memory B cells and antibodies remain in the blood and respond to future invasions by the same pathogen.

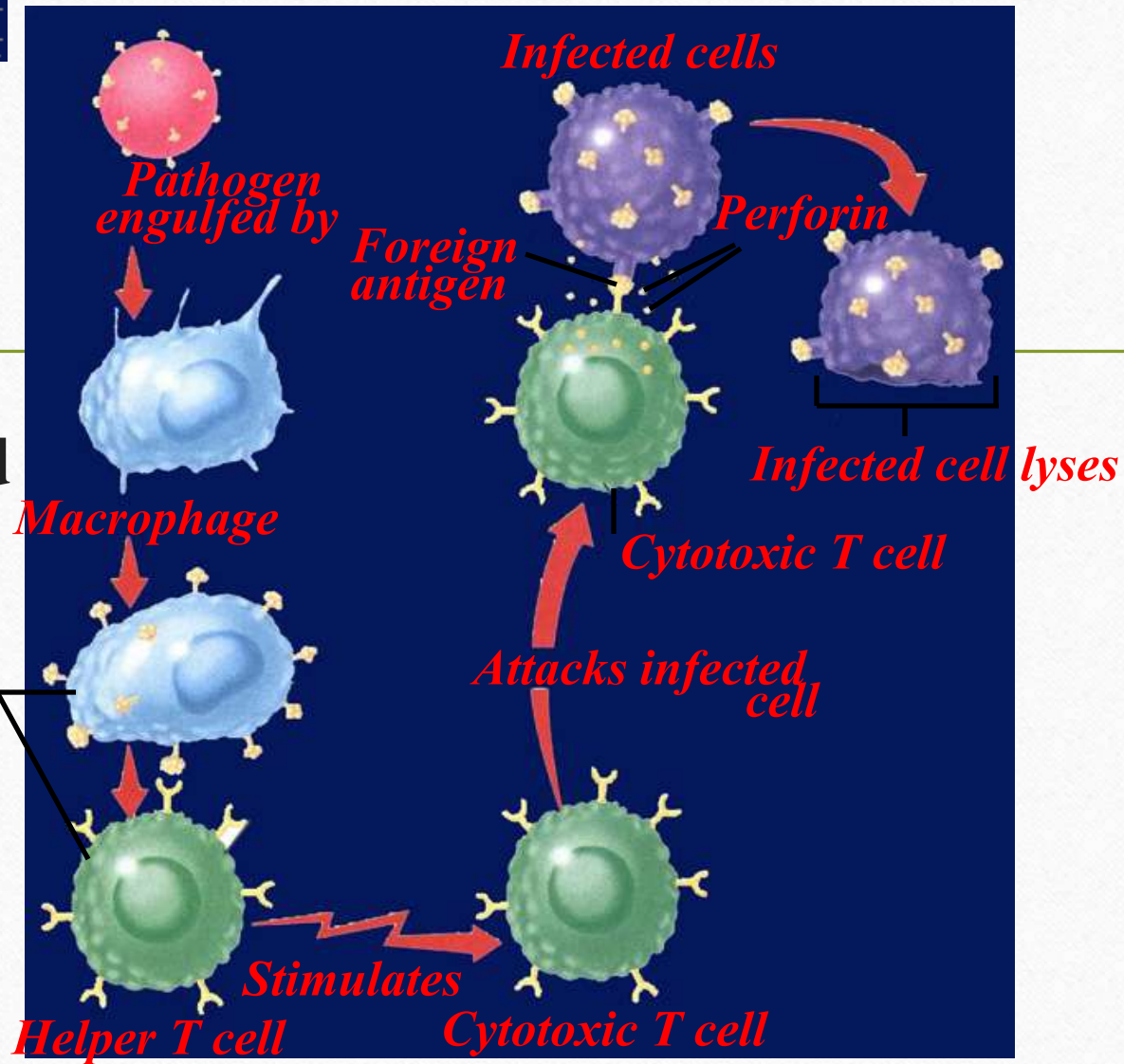




# #3. Cellular Immunity

Specific Immune Response that blows up infected body cells.

*Displays antigens on surface and stimulates T cell*



# Immune System Poster

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- Make a cartoon with **captions**, showing the body's Immune Response to an infection.
- Make 4 Stages:
  - Stage 1: How the **Pathogen** gets into the body.
  - Stage 2: Show the **Nonspecific Immune Response**.
  - Stage 3: Show the **Specific Immune Response**.
  - Stage 4: Show the **Memory Cells** Warding off a previous infection.



# Foldable (29 NB) P. 1037BB

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- **Macrophage** – Definition & Picture inside
  - A white Blood cell that is nonspecific against pathogens.
- **T – Cell**
- **B – Cell**
- **Plasma Cell**
- **Antibodies**
- **Antigens**

# 9/6 Specific and Nonspecific Immune Responses CH 39.2

Obj. TSW differentiate between nonspecific & specific immune responses. P. 30 NB

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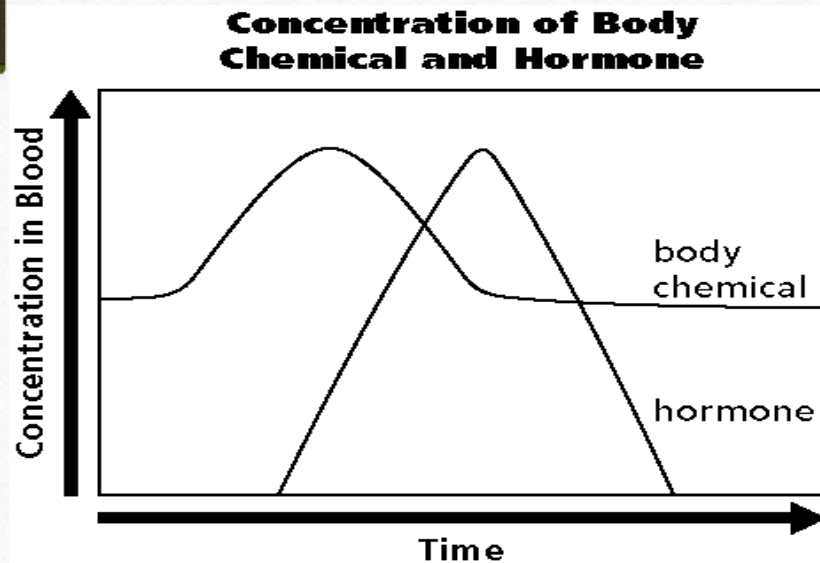
1. What is a vaccine?
2. Why do people who have AIDS have complications with normal colds and flu diseases?
3. What pathogen does antibiotics kill?





## 9/7 Homeostasis & Endocrine System CH 35.3

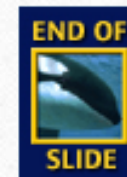
Obj. TSW draw and describe a Negative Feedback System involving the Endocrine System. P. 32 NB



1. What are the functions of the Endocrine system?
2. Draw the graph, explain how the body maintains homeostasis.
3. Why does the hormone production increase?

## Control of the Body

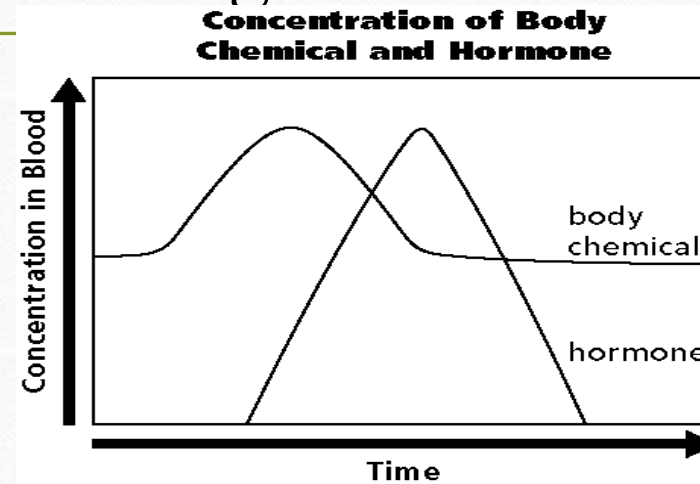
- Internal control of the body is directed by two systems: the nervous system and the endocrine system.
- #1. The endocrine system is made up of a series of glands, called **endocrine glands**, that release chemicals directly into the bloodstream and stimulates other glands to release theirs.





## #2. Control of blood glucose levels

- Another example of a negative feedback system involves the regulation of blood glucose levels.

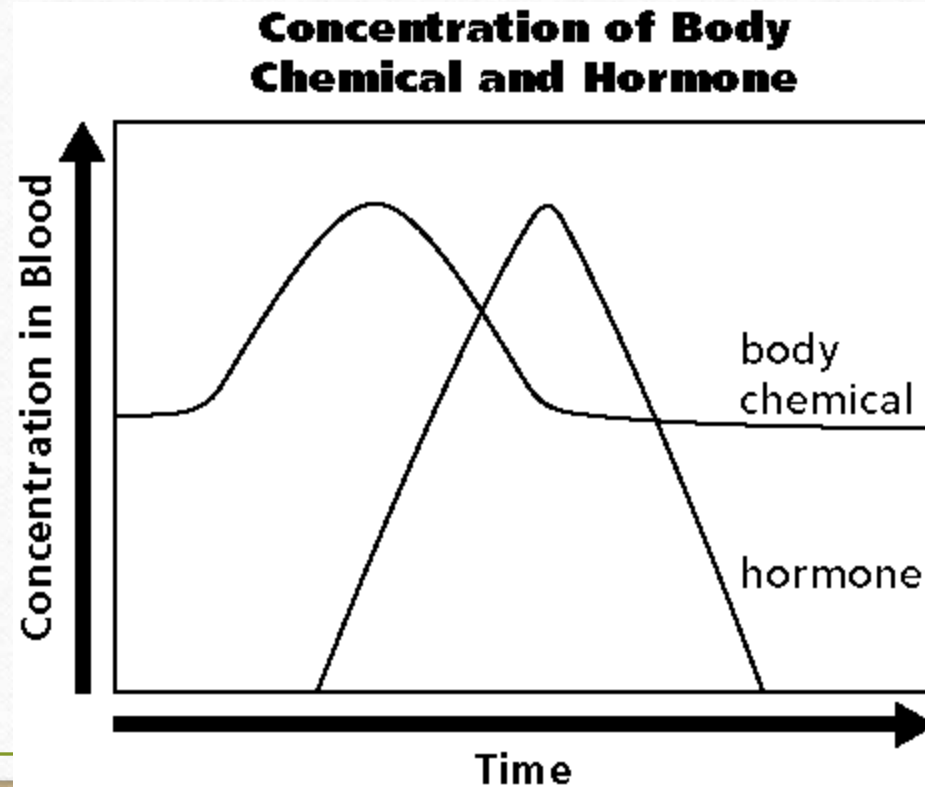


- When you have just eaten and your blood glucose levels are high, your pancreas releases the hormone insulin.



#3. The production of the hormone increases due to the level of the body chemical. When the body chemical is back to normal the Hormone is not released any more – Negative Feedback system.

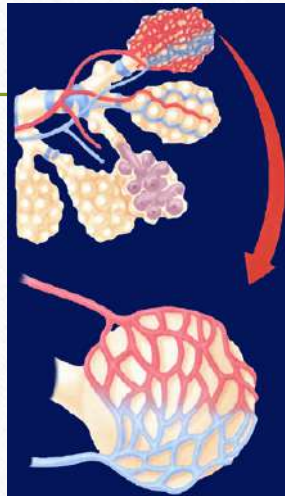
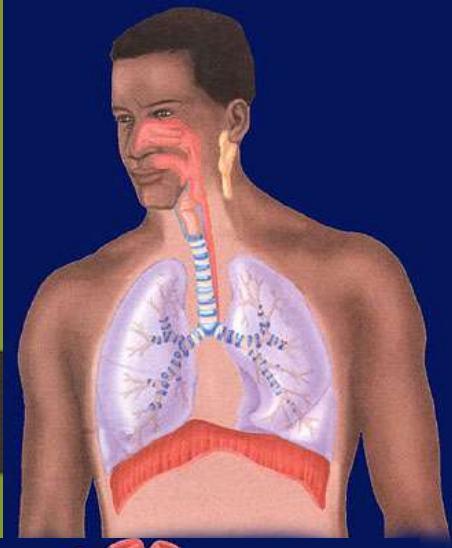
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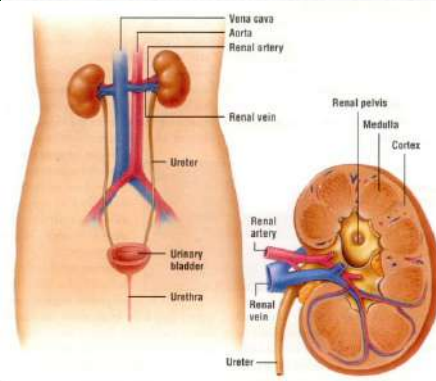
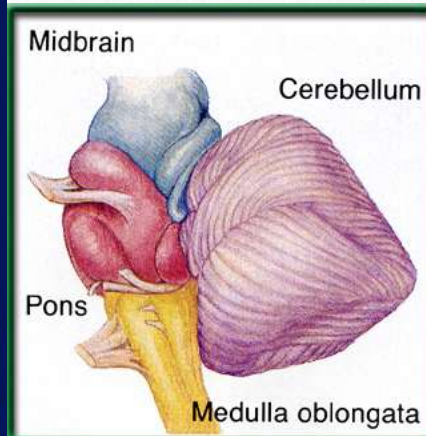
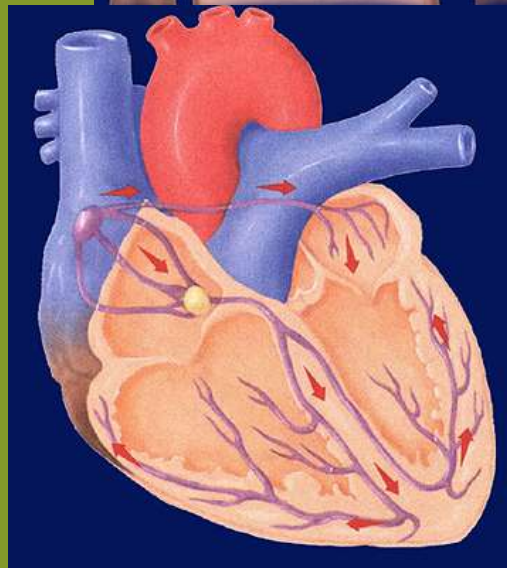


## 9/8 Respiratory, Circulatory & Excretory Systems CH 37.1 – 37.3

Obj. TSW explain in your warm up how the respiratory, circulatory and excretory systems complement each other to maintain Homeostasis. P. 34 NB



1. Explain the process of how gas is exchanged (Alveoli) in the lungs.
2. The level of  $\text{CO}_2$  in the blood affects breathing rate. How would you expect high levels of  $\text{CO}_2$  to affect heart rate?
3. How does the kidney maintain homeostasis in the body?



## Measuring your Pulse & Respiration P.31 NB

- Respiration – Breaths / minute

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- Pulse – Heart Beats/ minute
- Measure your pulse & respiration and write them down on page 29 NB.

# Exercise Lab p. 31 NB

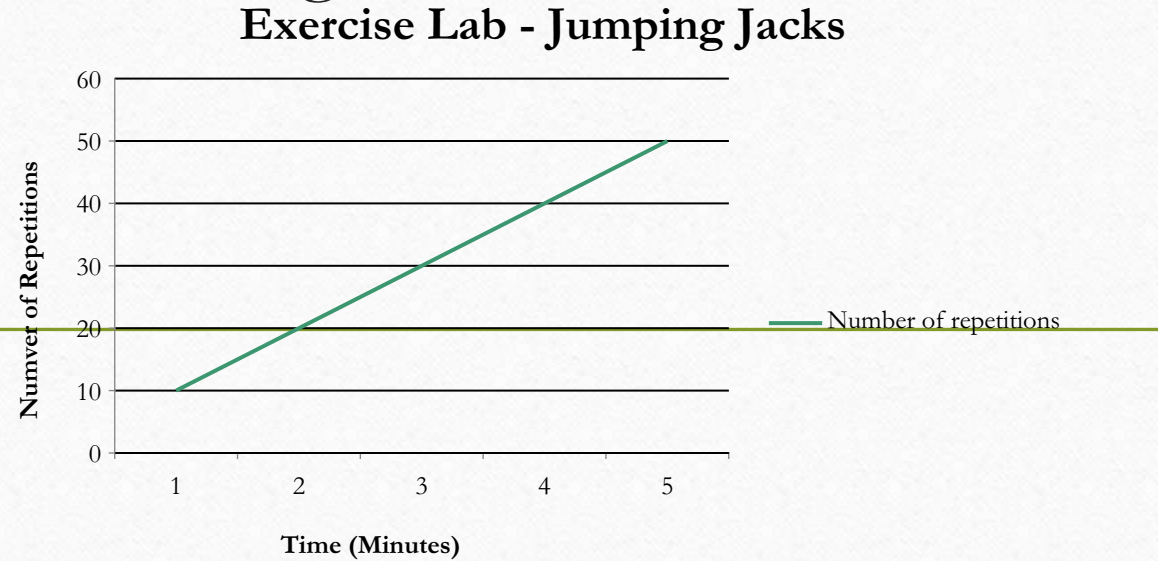
- Choose a partner
  - Choose an exercise
- 
- 1 minute in length (5 times)
    - Count strides, Jumping Jacks, Push ups
  - Duration (Time)- (5 repetitions) or (Time minutes)
    - Plank, Wall Sit
- Control?
  - What was constant?



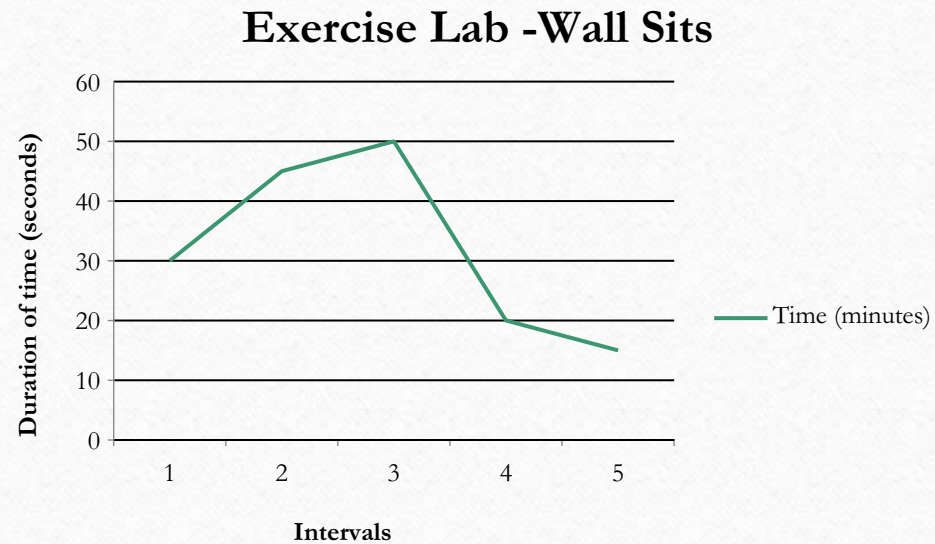
# Data Table & Graph

## When do muscles fatigue? P. 31 NB

Time (minutes)		Number of repetitions
		Sit ups, Push ups, Jumping Jacks Calf Raises Squats
1 <sup>st</sup> minute	1 minute	10
2 <sup>nd</sup> minute	1minute	20
3 <sup>rd</sup> minute	1minute	30
4 <sup>th</sup> minute	1minute	40
5 <sup>th</sup> minute	1minute	50



Intervals	Time (seconds)
Wall Sit	
Plank	
Superman	
1	30
2	45
3	50
4	20
5	15

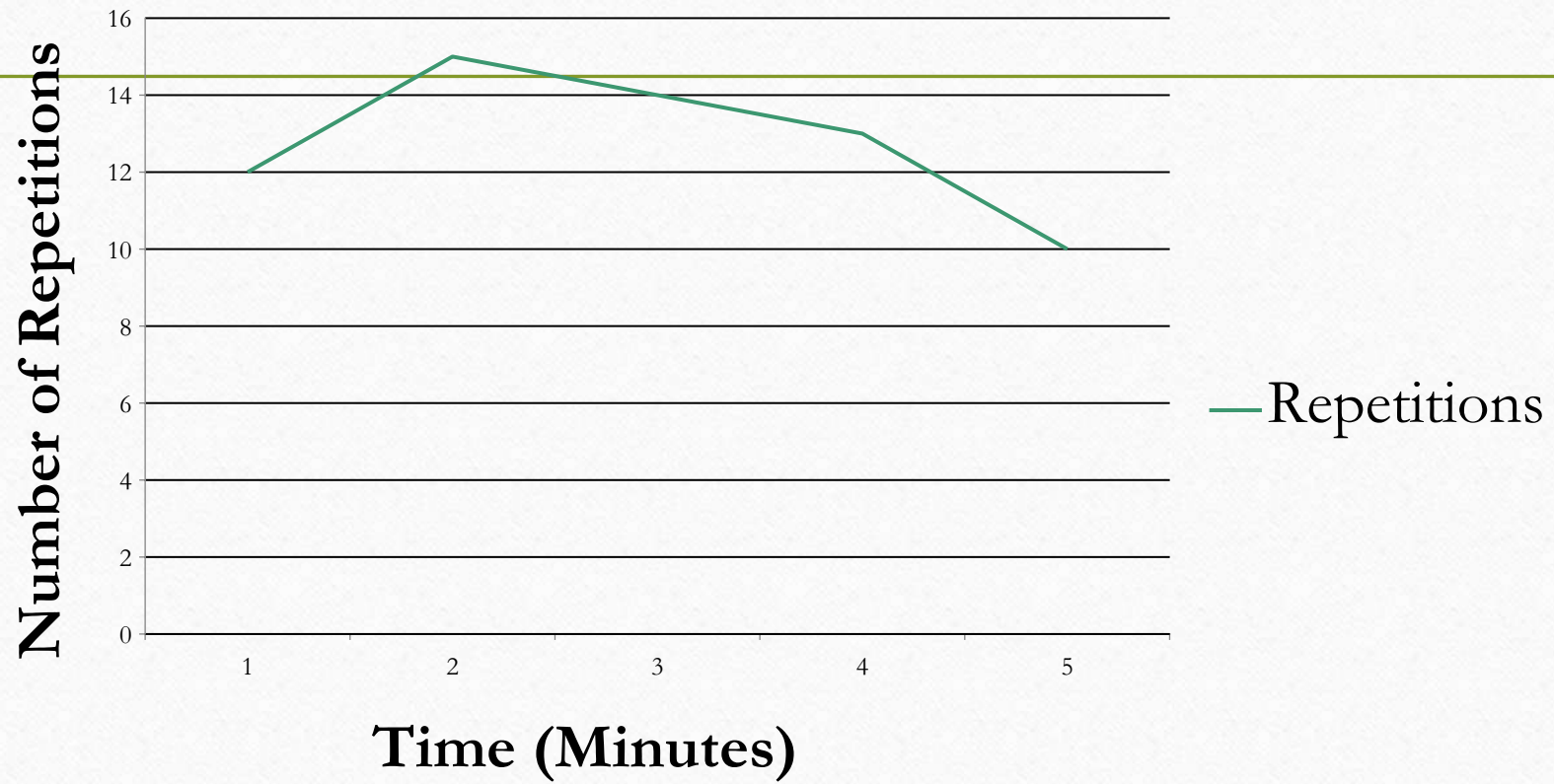


# Muscle Fatigue Lab p. 31 NB

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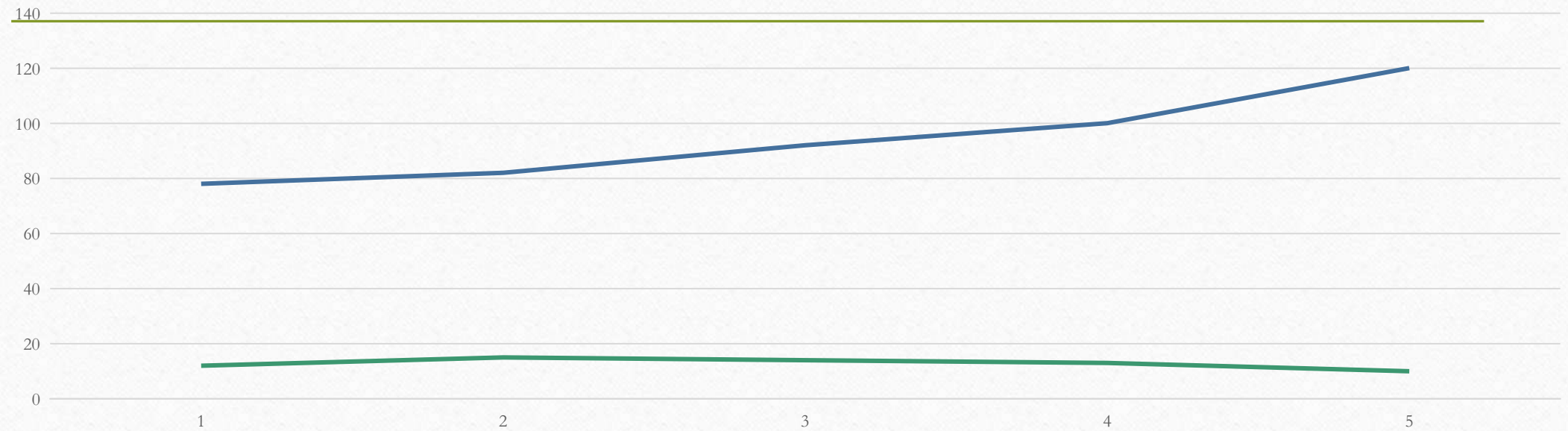
Trials	Number of Repetition	Pulse
1		
2		
3		
4		
5		

## Exercise Lab - Jumping Jacks





# Chart Title



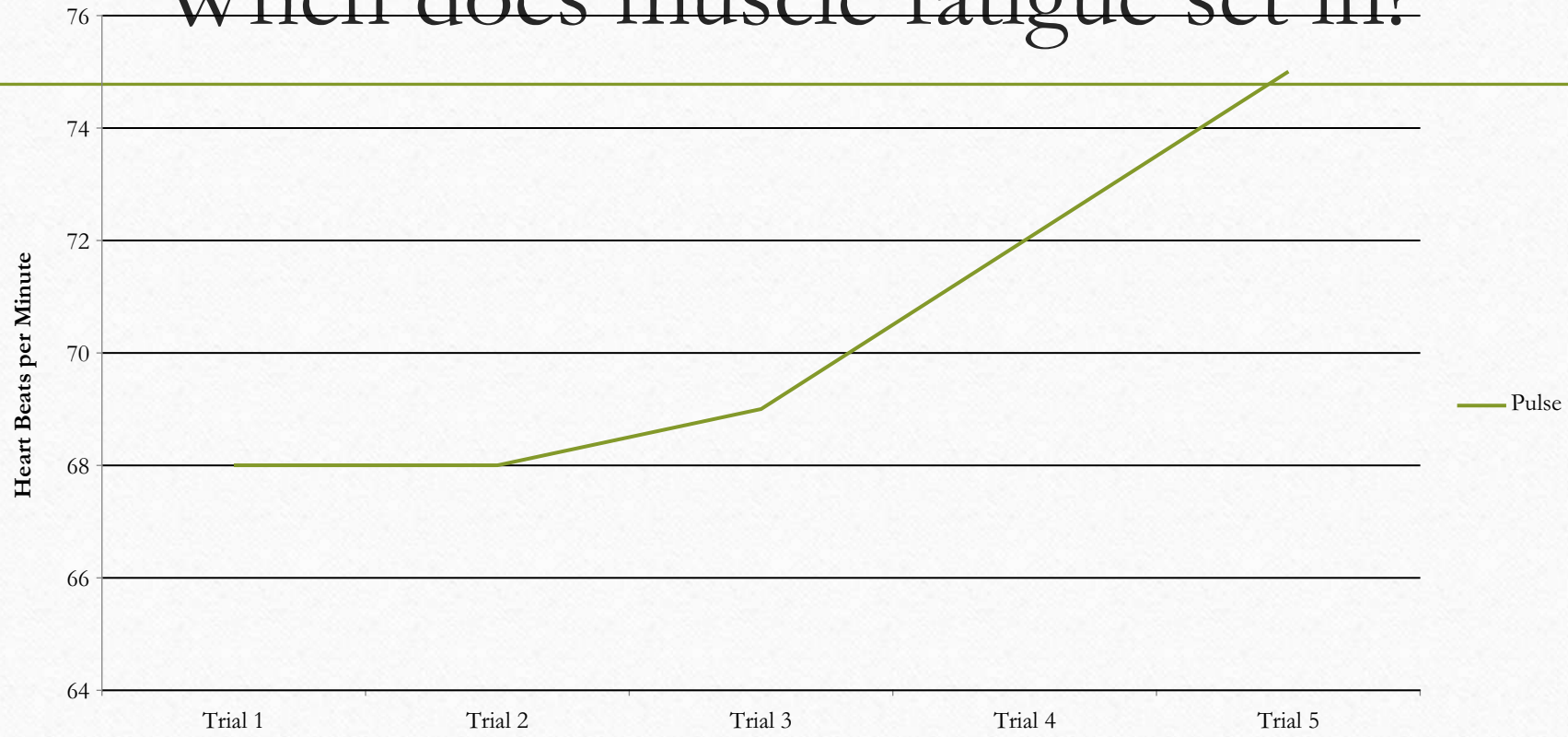
— Repetitions — Pulse

## Data Table for Pulse P. 31 NB

	Trial	Trial	Trial	Trial	Trial
	1	2	3	4	5
Pulse	68	68	69	72	75

# Graph your Pulse Rate P. 31NB

## When does muscle <sup>Pulse</sup> fatigue set in?



Trial with 1 minute rest in between.



# The Heart, Lungs & Components of the Blood

## P. 65 NB P. 982 BB

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- Draw & Label & Color the components of the Heart & Lungs.
- Copy the following Notes:
  - Red Blood Cells -transports O<sub>2</sub> & CO<sub>2</sub>
  - White Blood Cells- T & B cells Immune system
  - Platelets – cell fragments involved in blood clotting (Vitamin K)
  - Plasma – Most of the liquid of blood- proteins, nutrients, enzymes, hormones, salts

# Blood Cells

- Red Blood Cells

- Made in the Red Marrow
- Circulatory & Respiratory System
- Smaller
- More numerous
- No nucleus
- O<sub>2</sub> & CO<sub>2</sub>
- Contain Hemoglobin (Iron – Fe)

- White Blood Cells

- Made in the Yellow Marrow
- Circulatory & Immune System
- Larger
- Fewer cells
- Nucleus
- T & B & Macrophage Cells

- Title: Short – 5 words

# Exercise Lab

- Introduction: Exercise & Cardiovascular/ Respiratory system, O<sub>2</sub> & CO<sub>2</sub>, pH, pulse
- 

- Objective
- Hypothesis
- Materials: List
- Procedure: Specific. Step 1, Step 2, Step 3...
- Safety concerns: don't run with scissors.



# Exercise Lab

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- Constants
- Control: 1<sup>st</sup> data point
- Data table: Independent & Dependent Variable
- Graph:
- Data Analysis: What happened over time and why is it important?
- Error Analysis:
- Conclusion:

# Questions to answer in the conclusion

## Yes in addition to the one's in the lab report.

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- How did your steps change with the different activities you did?
- What effect did repeating the exercise over time have on the muscle group.
- How did your muscles feel?
- What physiological factors are responsible for fatigue?
- How does the amount of rest you have affect the recovery of the muscles?
- How did your results compare to others.

# 9/9 Metabolism & Homeostasis CH 35

Obj. TSW understand how the body regulates chemical reactions to maintain homeostasis. P. 36NB

1. Define metabolism.
2. The thyroid controls what process in the body?
3. How does the immune system respond to an infection in a nonspecific way?

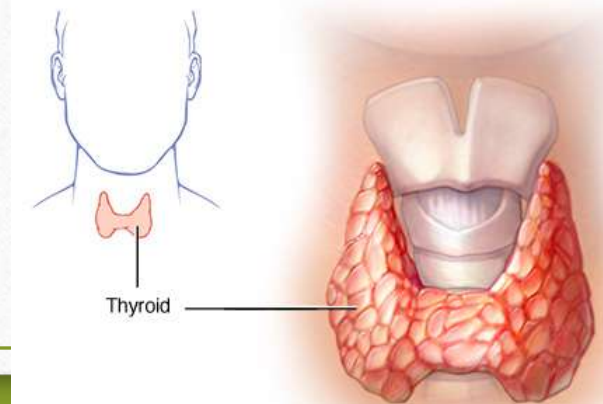
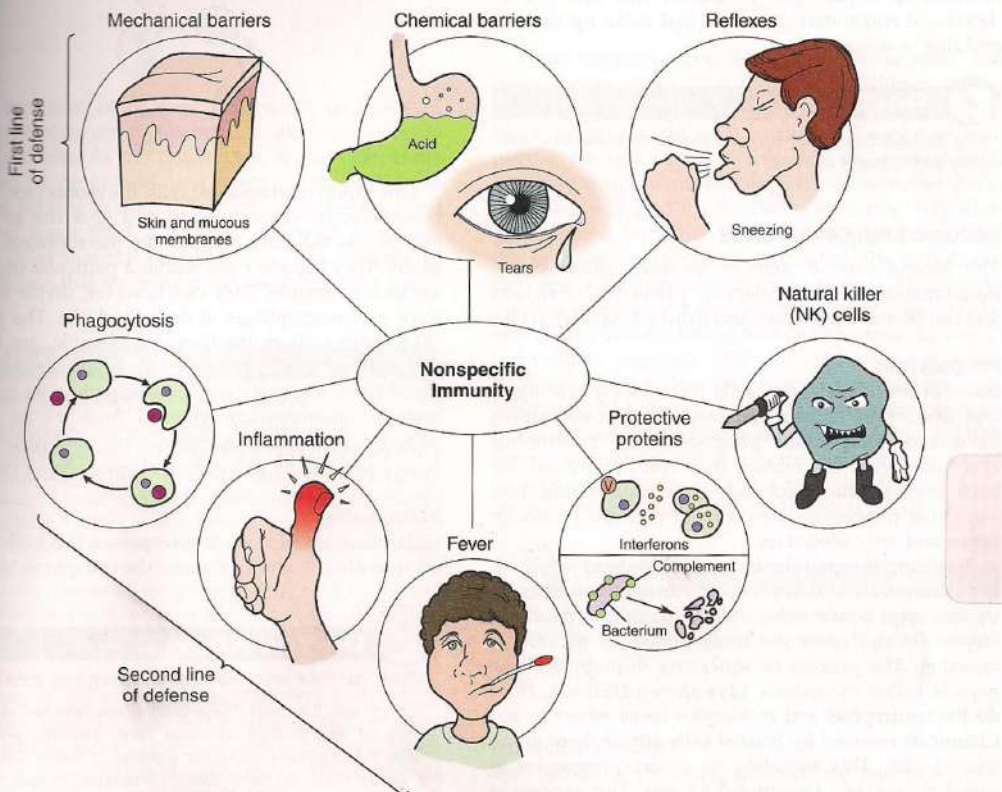


FIGURE 21-1 Nonspecific immunity. First line of defense—mechanical barriers, chemical barriers, and reflexes. Second line of defense—phagocytosis, inflammation, fever, protective proteins, and natural killer (NK) cells.