Biology

Jane Lecky - 3rd period

Semester II 23-24|

Week of April May 20th-23rd

Wednesday, May 29th

- Return textbooks.
- Computer Study Guide: Lecky Bio 24 Spring Study Guide
- Thursday: Paper Study Guide
- Review

Tuesday, May 28th

- **Absent/sick**
- **Evolution: Lecky Evidence of Evolution**
- **Comparative Anatomy Minilab: Embyrology Timing is everything.docx**

Monday, May 27th

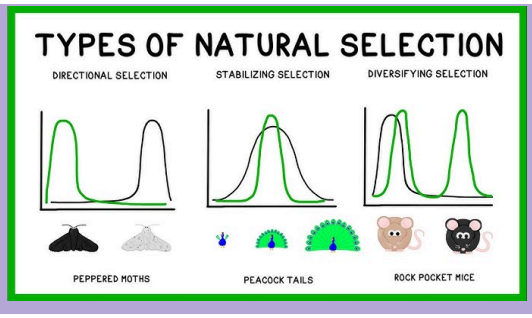
- Memorial Day

Week of April May 20th-23rd

Thursday, May 23rd

- Please fill out the Rubric for Ecology poster with specific justification for full credit: https://docs.google.com/document/u/0/d/14IOHKk-2UL5InUgcVr76vdK0w7H5sIMO1CeCAhC8YFI/edit
- Artificial Selection (not natural). Please watch the following video:
  A brief history of dogs - David Ian Howe
- Bird Beak Lab.

Tuesday, May 21st

- Short week Monday-even, Tuesday-odd, Wednesday-even, and Thursday-odd schedule. No school on Friday.
- Evolution Vocabulary.
- Turn in the Evolution and Natural Selection Slides Assignment.
- Read, watch, and take notes for CK-12 Evolution of Life: CK12 Evolution of Life
- Work on Evolution Doodle Notes (distribute a hard copy to each student). Use the following slides to answer the doodle notes:
  Lecky Evolution and Natural Selection - Student Slides
- 

Week of April May 13th-17th

Friday, May 17th

- Finish Poster and work on google slide assignment.
- Last day for late work.

Thursday, May 16th

- Watch the "Thank you video from National Geographic Slingshot video Director."
- PBS a Evolution Ep 4 The Evolutionary Arms Race
- PBS a Evolution Ep 4 The Evolutionary Arms Race
- Students' Evolution Slides (in Schoology as a Google Doc).
- The final test is 2 hours, 100 points, Multiple Choice, Open Notebook.

Tuesday, May 14th

- Finish the Ecology poster.

Week of April May 6th-10th

Thursday, May 9th

- Tree of Life video by Sir David Attenborough:
  Charles Darwin And The Tree Of Life - Sir David Attenborough
- Ecology Summary Organism Poster planning:
  1. Sketch out and do research in your notebook.
  2. Have teachers's approval to start drawing in your 8x14 paper poster.
  3. Start working on your poster.

Ecology Summary - Organism Poster

Must have these requirements:

- ½" border, preferably patterned for visual enhancement
- Your full name and class period on the FRONT
- Name: common and latin of your organism
- Must be a precise species. You cannot just say, Bee, it has to be an exact species of Bee; there are 20,000 different species of Bees
- Visual and labeled representation of habitat
- Habitat includes biotic and abiotic
- Visual and labeled representation of at least one niche
- Description or visual/labeled representation of all 3 types of symbiotic relationships that organism encounters
- Neat, creative. No visible pencil lines
- No white space, must be very colorful
- Shows deep understanding of Ecology vocabulary and concepts
- May not be a top google search oft used organism: sea star, lion, leopard, shark, beaver, otter, dolphin
- They need not be a keystone species but they must have an important niche in their ecosystem
- Your organism needs to have personal interest to you, and have an interesting niche that helps you to show your understanding of ecology

➤IF YOU WISH TO GET FULL POINTS IN EACH CATEGORY, YOU MUST GO ABOVE AND BEYOND.

➤AN "A" MEANS YOU SHOW EXTRAORDINARY KNOWLEDGE, SKILLS AND UNDERSTANDING AND CRITICAL THINKING IN REGARDS TO THE STUDY OF THE RELATIONSHIPS BETWEEN LIVING ORGANISMS AND THEIR ECOSYSTEM, INCLUDING BIOTIC AND ABIOTIC.

Tuesday, May 7th

- Stamp the tolerance levels for Trout with a 1. complete, level, and colored graph. 2. Leveled Oxygen graph. 3. Answered questions on the back (all).
- After reading the keystone species definition Role of Keystone Species in an Ecosystem, draw a keystone species other than the ones already mentioned, such as starfish, wolf, elephant, sea otter, lion, beaver, and leopard.
- Take notes on the Trophic Levels slide, including the videos.
  Lecky Trophic Levels ppt.pptx
- Trophic Levels Slide assignment: Trophic Energy Levels Slides Assignment

Monday, May 6th

- Turn in the Habitat vs Niche Assignment worksheet.
- Trout Range of Tolerance Worksheet:
  1. Optimal Range: highest possible population relating to abiotic factors (green).
  2. Zone of Physiological Stress: abiotic, too high, too low (yellow).
  3. Zone of Intolerance: zero population (red).

Week of April 29th- May 3rd

Thursday, May 2nd

- Absent /Sick

Tuesday, April 30th

- Hand out paper copy of Fantastic 4 Biomes, fill as needed and put in the notebook
- Check notebook; late work reminder (due May 17, no exceptions)
- Review: Anthroposphere (area) Anthropocene (time period) and why it was created (human impact)
- Watch this video: These Are 10 Highest Flying Birds Ever atmosphere is at 6 miles up.
- Movie: 2040

Monday, April 29th

- Stamp day: Annotations for Interactions Vocab Sheet, Venn Diagram, charts.
- Turn in "My Ecosystem in Schoology and Class.
- Complete the fantastic four biomes and turn into Schoology.
  1 Fantastic four spheres.docx
- Watch the video and take notes in your notebook: biological-levels-of-organization.gif . Species and organisms are the same.

Week of April 22nd-26th

Thursday, April 25th

- Continue to work on the "Ecosystem Doodle Drawing".
- For the following worksheet about Ecology do the following:

1. Read and annotate front page.
2. In your own words, answer the questions on page 2 and 3.
3. Make a list of all the vocabulary words on the back.

- Ecology VocabularyInteractionsinEnvironment.pdf

Tuesday, April 23rd

- DNA Quiz. OK, to use the notecard students worked on in class yesterday.
- Stamp: DNA doodle notes, DNA Notes Worksheet for presentation, DNA Ed puzzle notes.
- Start Ecosystem Unit: on blank paper, draw your ecosystem, for example: the air you breathe and everything you need to survive. Turn in at the end of the period.

Monday, April 22nd

- Work on the Study Guide and make your notecards. Topics are:

1. DNA CK12.
2. Intro to DNA worksheet and DNA structure presentation.
3. HIV case study.
4. DNA Origami Model.

Week of April 15th-19th

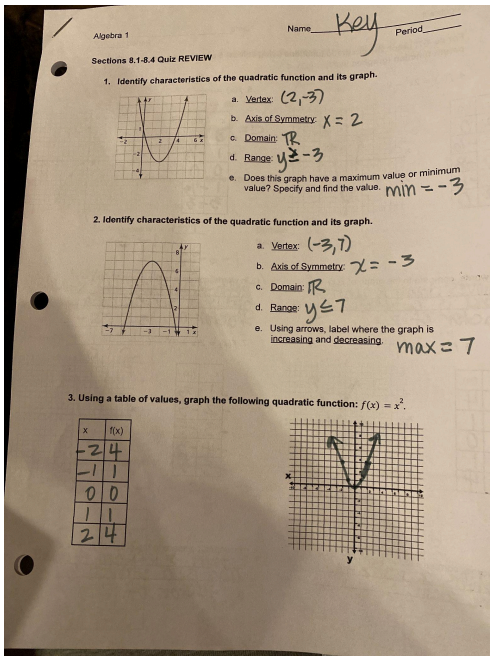
Thursday, April 18th

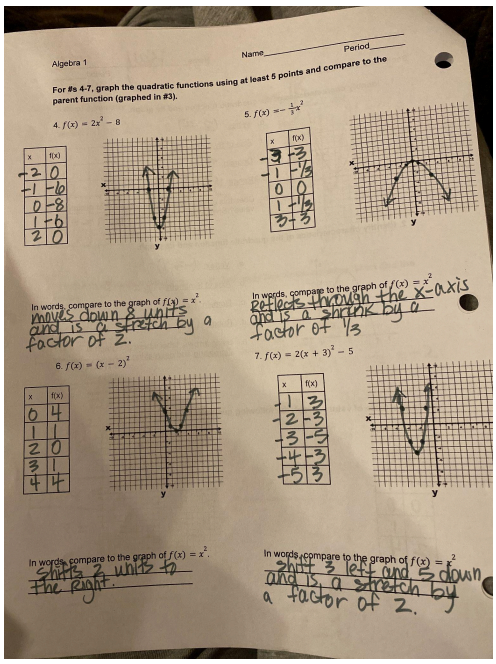
- DNA quiz April 23-24
- Use the handout to take notes from the presentation and Nucleotides. Make sure notes are completed. Lecky DNA Structure
- Complete and color the DNA doodle notes. DNA side only, the Nucleotide side is extra work to explore more and challenge yourself. Nucleic Acid Doodle Notes Student.pdf
- Ensure that the drawing of phosphate from the DNA lecture is complete and labeled.
- Study Guide for DNA Quiz: Study Guide DNA Quiz 2024

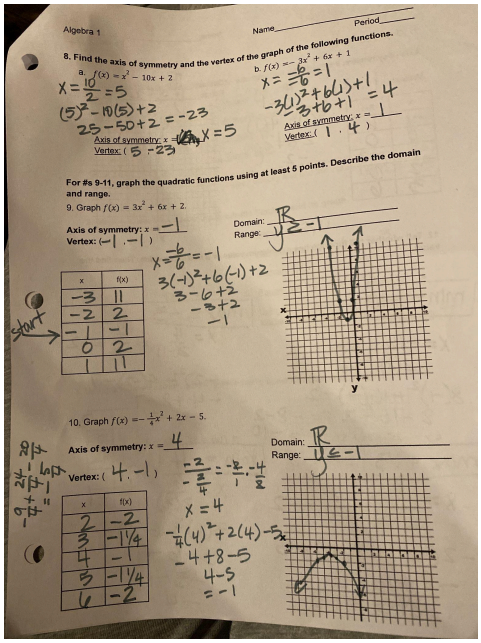
Tuesday, April 16th

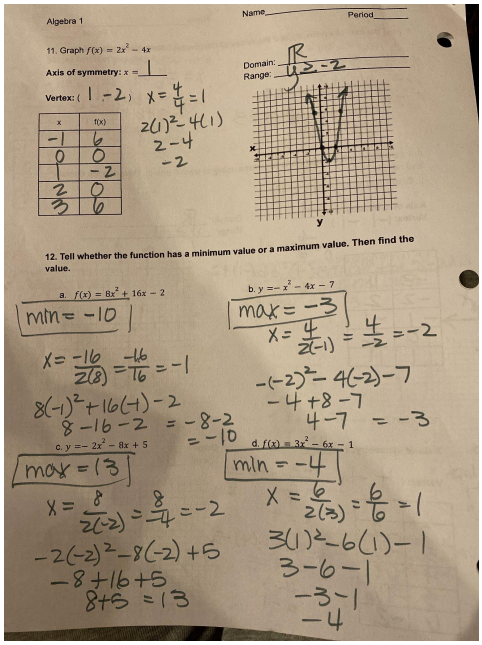
- Complete Edpuzzle Protein Synthesis and DNA.
- DNA presentation and notes. Lecky DNA Structure
- Review the CK-12 questions 1-7

"Stop thriving for perfection; instead, thrive for engagement and the learning experience." Jane Lecky.









Monday, April 15th

- Finish DNA Origami Model.
- Announce National Geographic's $100 grant winner (See Schoology and copies in class).
- CK12 DNA 1-7 questions (See Schoology).

Week of April 8th-12th

Thursday, April 11th

- CK-12 DNA Vocabulary and Literacy. DNA | CK-12 Foundation. Read, take notes, and study this vocabulary; it is a must-know.
- DNA-Origami-Activity-Guide-1.pdf
- origamidna-colourtemplate.pdf
- DNA origami: how to fold a double helix
-

Tuesday, April 9th

- Stamp three boxes of types of inheritance: co-dominance, Incomplete, and Polygenic.
- Ensure you have completed slides 1-16 of Case Study Murder by HIV.
  Lecky Case Study Murder by HIV
- Watch the Phylogenetic Tress video and answer question #17.

Monday, April 8th

- Stamp Alien Baby, Vocabulary, and answers to the questions from the Alien Baby handout.
- Watch Solar Eclipse.
- Take notes from slides 1-16 Lecky Case Study Murder by HIV

- Murder by HIV handout. Find a copy of the handout on Mrs. Lecky's Agenda.
- Forensic Files template Sheet. Find a copy of the handout on Mrs. Lecky's Agenda.

Week of March 25th-28th

Thursday, March 28th

- Watch Tuesday's Amoeba sister video and What is an Allele video and take notes.
  Alleles and Genes , What is an allele? | Animation | Minute to Understanding
- Read and draw from the worksheet Types of Genetic Inheritance
  Types of Inheritance Read Write Draw WS . Instructions:
  1. Draw four equal boxes for the five types of inheritance (it will be 5 pages in the notebook).
  2. In box one, define the inheritance.
  3. In box two, explain how it works.
  4. In box three, give an example.
  5. In box four, draw the example.
  6. Here is an example of how it should look like: Text Boxes

Tuesday, March 26th

- Return graded stamp sheet
- Read 10.3 297-300 and answer questions 1-5 in Bee Book or questions 1-5 in Dragonfly Book 11.3 pages 270-274.
- In Schoology google doc genetic study guide complete and turn in.
- Amoeba sisters alleles and genes. Alleles and Genes
- Minute to understanding alleles video.
  What is an allele? | Animation | Minute to Understanding

Applying Mendel Principles (10.3/1-5 Bee Book questions)

1. What is Probability? Is the likelihood that a particular event will occur.

2. **How does the principle of independent assortment help explain Mendel's results?** By observing two different alleles as they pass from one generation to the next sorted into gametes independently of one another (segregation) the alleles receive for each gamete do not influence one another. Therefore explain his theory of inheritance of distinct genes, one from each parent.
3. **Describe Gregor Mendel's contribution to our understanding of inherited traits?** Gregor's contribution helped understand the basis of modern genetics by knowing that inheritance of biological characteristics is determined by individual units called genes, which are passed from parents to offspring. Also, where two or more form of alleles of the gene for a single trait exist, and some of them may be dominant and some recessive. Each adult has two copies of of each gene (one from each parent), these genes segregate from each other when gametes are produced. Lastly, alleles for different genes usually segregate independently of each other.

Week of March 18th-22nd

Thursday, March 21st

- Warm Up
- Aliens Babies Lab 🟨 Lecky Alien Babies 2024
- Review vocab and key concepts 11.1-11.3 (Dragonfly book) and 10.1 - 10.3 Bee book.
- Return stamp sheet.
- End of Q

Tuesday, March 19th

- Lecture Genetics
- Spongebob Genetics: Bikini Bottoms Genetics and Bikini Bottoms Genetics 2
- Review 10.1-10.2 notes
- Study Vocab, concepts, and questions

" Intro to Genetics Lecture"

Background Information:

- Chromosomes contain all the necessary genetic information
- Each trait or characteristic an individual has can be found in a gene located on the chromosome.
- Remember, chromosomes are DNA. A gene is a section of DNA.
- Humans have 23 pairs of chromosomes. The last pair determines the sex of a child. Y chromosomes are for men, and X is for women.

Genes are:

- Sequence of base pairs on DNA
- Located on specific areas of a chromosome
- It contains hereditary information
- The factors that control the traits

Traits:

- Are characteristics of a species
- What are some human traits?
- What are some plant traits?

Alleles:

- Different forms of the same trait.
- Example: allele for eye colors, hair color, etc. It can be a dominant or recessive trait.

Gregor Mendel:

- 1822-1884
- Father of genetics
- The F1 generation is the first set of babies, and F2 is the next generation.

What are Punnet Squares:

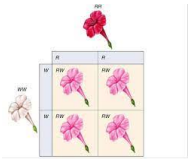
- Are a tool to predict the possible offspring.
- They only show the probability, not exactly what will happen.

Why is genetic diversity so important?

- Maintaining high genetic diversity allows species to adapt to future environmental changes and avoid inbreeding. Inbreeding happens when small, isolated populations can reduce a species' ability to survive and reproduce.

Incomplete Dominance (blending):

It is when the heterozygote (offspring) is between the dominant and recessive conditions BLENDED/NEW PHENOTYPE. For example, 4 o'clock flowers:



Co-Dominance (a bit of both):

It is when both alleles are expressed in the offspring, not blended, but "side by side."

Monday, March 18th

- Share Science Jokes.
- Probability 100x
- Video on genetics Genetics by Bozeman.
- Review, know, and learn 10.1, 10.2. ALL VOCAB AND CONCEPTS.

Week of March 11th

Thursday, March 14th

- Stamp the Table of Contents, Title, and label for the graph on the class activity on heritable traits.
- Review Dominant and observable traits.
- Read Bee book pages 286-296 in class (pages 262-269 in the Dragon Fly textbook).
- Cornell Notes and label your table of contents.
- Answer the questions in complete sentences on pages 290/ 1-5 and 296/1-6.

Definitions:

Genetics: the scientific study of biological inheritance.
Trait: a specific characteristic, like seed color or plant height.
Hybrid: the offspring of crosses between parents with different contrasting characteristics.
Genes: are the factors determining an individual's characteristics passed from one parental generation to the next.
Alleles: the different forms of a single gene.
Segregation: the separation of alleles
Gametes: the reproductive cells of a plant or animal.

Page 290 questions Bee Book/ 262-269 Dragon Fly Book

1. What did Mendel conclude determines biological inheritance?

Mendel assumed that a dominant allele had masked the corresponding recessive allele in the F1 generation, but this recessive allele did not appear in the F2 generation. For this reason, he suggested that the alleles for the green and yellow pods in the F1 plants must have segregated during the formation of the reproductive cells.

2. What is Segregation?

Segregation is the separation of alleles.

3. Compare and contrast how self-pollination is similar to cross-pollination. How is it different?

4. Infer what evidence did Mendel use to explain how segregation occurs.

Mendel demonstrated that through the separation of alleles(segregation), organisms can receive the genes of one parent.

5. Use reasoning- In pea plants, the allele for tallness (T) dominates over the allele for shortness (t). Can you predict the offspring's height if two tall pea plants are crossed? Use logical reasoning to support your answer.

Page 296 questions Bee Book/ 262-269 Dragon Fly Book

Tuesday, March 12th

- Watch the video of Heredity: Crash Course Biology. Heredity: Crash Course Biology #9
- Observe our own and the class's heritable traits. Heritable Traits
- Color Blindness video " The Origins of Human Color Vision.
  The Origins of Human Color Vision – HHMI BioInteractive Video
- Color blindness test. Color Blindness Test
- More on color blindness. Are you color blind?

Week of March 4th-8th

Thursday, March 7th

- Review the Macromolecules exit ticket.

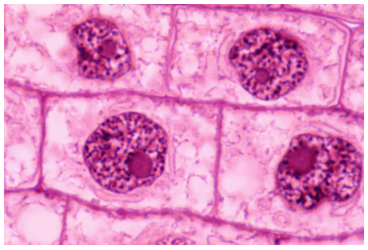
- Complete the Eukaryotic Cell Cycle and Cancer Assignment in Schoology.
  Lecky Eukaryotic Cell Cycle and Cancer Worksheet
- Complete the Organizing the Cell Cycle Assignment.
  Lecky Organizing the Cell Cycle drag and drop
- Watch the video "See Cell Division Live Never Before" bacteria replication video from Harvard Medical School Seeing Cell Division Like Never Before
- Actual footage of frog cell division Actual Footage of Cell Division
- Actual footage of Kidney cell division Actual Footage of Cell Division (Kidney Cells)
- Mitosis video Mitosis

Tuesday, March 5th

- Stamp CK12 notes and Edpuzzle.
- Lecture Cell Cycle: Interphase and Mitosis. LECKY Cell Cycle presentation.pptx .
- Make a science illustration of a Cell Cycle.
- Mitosis Vampire Style Twilight

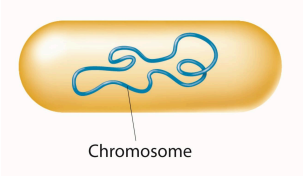
Cell cycle - Before Mitosis, Interphase

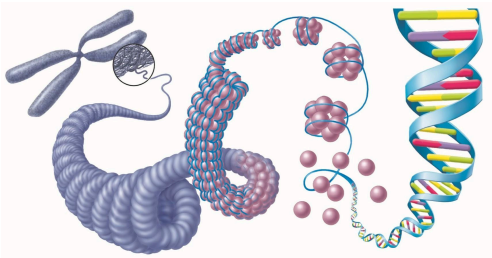
Before a dividing cell enters mitosis, it undergoes a period of growth called interphase. About 90 % of a cell's time in the normal cell cycle may be spent in interphase.
Growth
DNA Synthesis
Mitosis



Chromosomes

DNA is packaged into a single, circular chromosome in prokaryotic cells(which lack a nucleus and other distinct organelles). In eukaryotic cells, DNA is packaged into multiple chromosomes.





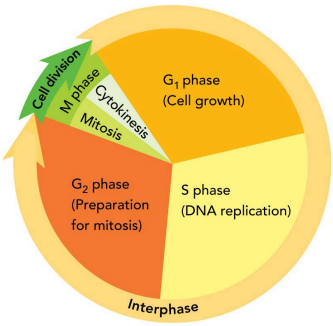
Prokaryotic Cell Cycle:

Prokaryotic undergo binary fission. They copy and divide.

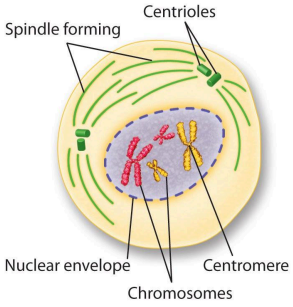
Eukaryotic Cells:

Eukaryotic cells have a more complex cell cycle than prokaryotic cells.

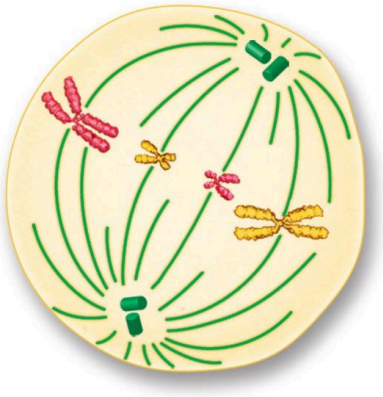
- **Interphase includes G1, S phase, and G2: G1 Cell Growth, S Phase DNA synthesis (replication), G2, preparing for cell division.**
- **M phase includes Mitosis and Cytokinesis: cell division occurs during the M phase.**



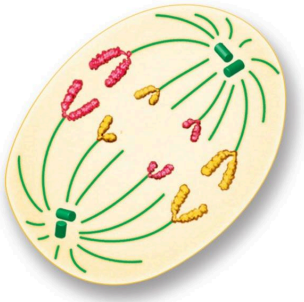
- **Prophase (first part of Mitosis): the nucleus condenses, and chromosomes become visible. The spindle begins to form.**



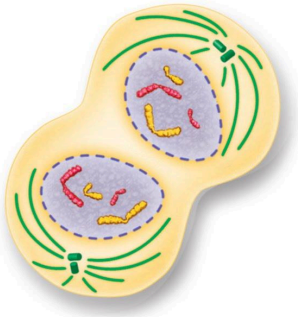
- **Metaphase (2nd phase, the shortest): chromosomes line up in the center of the cell.**



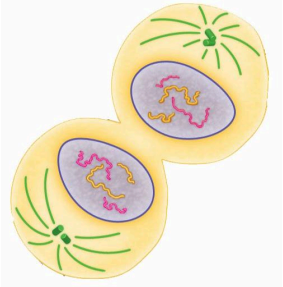
- **Anaphase (3rd phase, separation): Chromosomes move toward opposite poles. Each sister chromatid is now an individual chromosome.**



- **Telophase (final phase of mitosis): The cell begins to divide into daughter cells.**

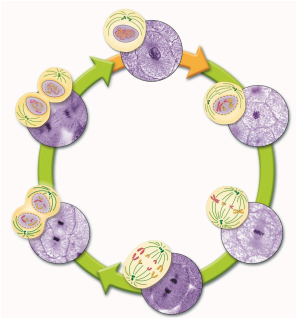


- **Cytokinesis (then there were 2): In animal cells, the cell membrane pinches in the center to form two daughter cells.**



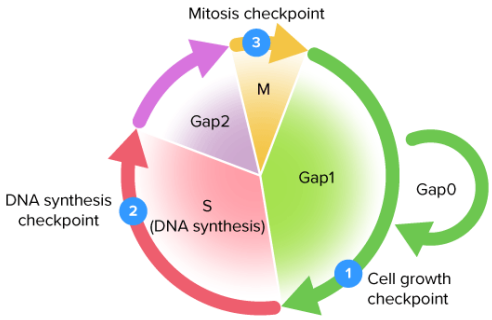
Mitosis Overview

Phases of Mitosis:



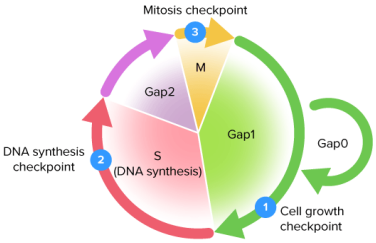
Cell Regulation:

Controlled by regulatory proteins for when to grow, synthesize proteins, and divide.



Cell Checkpoint:

1. **Cell growth checkpoint (G1 checkpoint):** The G1 checkpoint, just before entry into S phase, makes the key decision of whether the cell should divide.
2. **DNA synthesis checkpoint (S checkpoint):** The S checkpoint determines if the DNA has been replicated properly.
3. **Mitosis checkpoint (Mitotic spindle checkpoint):** The mitotic spindle checkpoint occurs at the point in metaphase where all the chromosomes should have aligned at the mitotic plate.



Monday, March 4th

- Stamp food lab.
- Read the CK12 and take notes. Due tomorrow 3/5/24
- Watch Edpuzzle and take notes. Due tomorrow 3/5/24

Week of February 26th-March 1st

Thursday, February 29th

- Macromolecules quiz on Schoology (about 20 min).
- Food Lab

Tuesday, February 27th

- Stamp today: 10 nova facts, macromolecules study guide, and CK 12 notes.
- Thursday/Friday macromolecules quick quiz (no notecards, retakes, or corrections)
- Food lab on Thursday and Friday.
- Play a macromolecule game.
- Recreating macromolecules chart from Monday.
- Review Keys of Life ppt

Monday, February 26th

- Substitute teacher today
- In the notebook, copy the micromolecule chart Macromolecule Chart and memorize it.

Week of February 21st-23rd

Thursday, February 22nd

- Warm Up in notebook (leave some space to fill in notes).

You should know:

- 4 MMs
- Examples of each.
- Sources in "nature."
- A monomer of each MM
- How they function/work.
- How theiy are made up/structure
- Read the CK12 Organic compounds and take cornell notes. Pay special attention to the chart/table for "proteins, carbohydrates, Lipids, and Nucleic acids." CK12 Organic Compounds
- https://www.biologycorner.com/wp-content/uploads/biomolecules-gif-v2_orig.gif
- Exit Ticket (Proteins, Carbohydrates, Nucleic acids , Lipids).

Wednesday, February 21st

Monday, February 19th (Presidents Day, No school) and Tuesday, February 20th (Staff Development Day, No school)

Week of February 12th-16th

Thursday, February 15th

- Stamp: Foldable Acid Bases, Macromolecules and Biomolecules (Ed Puzzle).
- Lecture Molecules Key to Life: Lecky Macromolecules- The Key to Life
- Macromolecules close reading assignments.
- What do these prefixes mean:

- Mono: one, single.
- Di: two, twice, double.
- Poly: many.
- Macro: large, long, excessive.

- Macromolecules are classified in four ways:
- **Carbohydrates:** is composed of three elements: carbon, hydrogen, and oxygen. They store energy and provide structural support. Sugars and starches are carbohydrates. The cell wall of plants is composed of the carbohydrate cellulose.
- **Nucleic Acids:** are long chains of nucleotides. They are important because they contain genetic information with instructions for cell growth, reproduction, and processes.
- **Lipids:** are macromolecules composed of carbon, hydrogen, and oxygen. Some of them contain nitrogen and phosphorus. Examples of lipids are fats, steroids, waxes, and phospholipids. Lipids help make cell membranes and energy storage.
- **Proteins:** are large chains of amino acids. There are 20 amino acids used in your body. Proteins carry out many jobs in the cell. Your body has hundreds of proteins. Some help with communications, and others with transportation. The amylase protein is found in saliva, which helps break down food. Collagen is a protein that helps bind skin cells together
- DNA is made of adenine, cytosine, thymine, and guanine.
- Dehydration Synthesis" brings" monomers together "and releases" a water molecule.
- Hydrolysis is the opposite of dehydration synthesis; it "breaks" polymers apart and "USES" a water molecule.

Tuesday, February 13th

- CK 12 fold and follow the instructions. You will illustrate, label, color, and glue into the notebook. pH Foldable
- Read the following slide and take notes: Lecky Macromolecules- The Key to Life

Monday, February 12th

- Ph review
- Ph game: https://phet.colorado.edu/sims/html/ph-scale-basics/latest/ph-scale-basics_all.html

- Ed Puzzle Amoeba sisters.
- Macromolecules:

Week of February 6th-9th

Friday, February 9th

- Watch National Geographic Sling Shot videos.

Thursday, February 8th

- Stamp organic compound description, carbon cycle analysis ws, and index notecard.
- Carbon Cycle Unit assessment.
-

Tuesday, February 6th

- Stamp organic Compound description, carbon cycle analysis worksheet, and antonym card.
- Review the carbon cycle analysis worksheet.
- Hand back work: carbon cycle ticket, game.
- Lecture: Cycles of Matter.
- Review for assessment:

Study Guide:

1. Vocabulary table (in the notebook: word, definition, picture, and sentence).
2. Carbon Cycle/Carbon
3. Carbon Reservoirs -Give examples: fast(photosynthesis) and slow(fossil fuels).
4. Carbon Cycle Processes - give examples like greenhouse gasses.
5. Human impacts include deforestation, fossil fuels, and phytoplankton.
6. Nutrients (essential for life).
7. 4 earth systems - Bio…, Geo.., Hydro…, and Atmos…
8. Carbon capture/release.

9. Organic compounds
10. States of matter and how carbon forms in compounds.

Week of January 29th-February 2nd

Thursday, February 1st

- Submission day for the National Geographic Slingshot video. Take a screenshot of the confirmation and download it on Schoology. Also, submit the original video to Schoology.
- Stamp organic compound description, carbon cycle WS, and antonym card.
- Analyze carbon data on page 84 of Bee book

Tuesday, January 30th

- From the bee book, page 84, analyze and take notes on carbon data (how, where, what form, and how much).
- Watch the video https://ca.pbslearningmedia.org/resource/eclips-sci-realworld-essentialcarboncycle/real-world-the-carbon-cycle-essential-for-life-on-earth/
- Antonym game: find the antonym of the given word and answer the three main questions on the carbon cycle.
- Finish and edit the slingshot video.

Monday, January 29th

- Turn in the Carbon Cycle game
- Rubric for National Geographic Slingshot video handout.
- Carbon Cycle quiz next week Wed/Thur.
- In your notebook: Science Starter "What is an Organic Compound?"
- Review here: Crask Course Organic Compound
  What Is Organic Chemistry?: Crash Course Organic Chemistry #1 . Be specific with the notes you take in your notebook.

-

Week of January 22nd-26th

Thursday, January 25th

- Stamp Carbon Cycle Illustration and notes.
- Rewatch: The carbon cycle - Nathaniel Manning
- Carbon Cycle game: complete all ten rows and assignment on the back. Turn into Schoology and in the box.

Tuesday, January 23rd

- Substitute Teacher today. Continue to work on Slingshot video.

Monday, January 22nd

- Substitute teacher today
- Students will continue to work on a slingshot video.

Week of January 16th-19th

Thursday, January 18th

- Notes on Carbon Cycle (Ed puzzle, Textbook, CK 12…)
- Color the illustration from page 83. Due Monday.
- Storyboard your NatGeo video and start filming. Use imovie.

Tuesday, January 16th

- Take Cornell notes from pages 82-84 of the Biology textbook in your notebook.
- Draw the label picture of the carbon cycle from page 83.
- Complete the CK-12 carbon cycle 6.6 on schoology. Due tonight.
- Carbon cycle exit ticket.
- Review the carbon cycle video from last week
  The Carbon Cycle + more videos | #aumsum #kids #science #education #children

Week of January 9th-12th

Thursday, January 11th

- Stamp Cornell Notes Assignment (3 stamps for Essential questions, Summary and Table of Content)
- Introduction to National Geographic Slingshot Video Project.
  NatGeo Slingshot Video Project
-

Tuesday, January 9th

- Start fresh with the notebook for the second semester.
- Handout HW/Classwork stamp sheet. DO NOT LOSE IT; IT WILL BE YOUR PROOF YOU DID THE WORK.
- Carbon Cycle EDPUZZLE (1 take only).
- Homework: read the carbon cycle.

Semester I 23-24

Week of December 18th-20th

- Finals

Week of December 11th-15th

Tuesday, December 12th

- Review for Final
- Create a study guide with the notebook, textbook, agenda, worksheets, etc.

Week of December 4th-8th

Wednesday, December 7th

- Elodea Lab: Read the procedures and take notes in your notebook.
- 1. Hypothesis regarding osmosis.
- 2. Drawing of freshwater cell.
- 3. Drawing of salt water cell.
- 4. Your conclusion of what happened, using vocabulary from your notes.
- Take a photo of your answers and turn on Schoology.
- Check your notebook to ensure it is complete and organized.
- Start your own informal study guide for the final.

Tuesday, December 5th

- Big Cell Membrane Foldable Activity. Color and l label it, including descriptions. Take notes on the reviewed definitions.
- You must know the following vocabulary: 1-5 and 9, 6-8 for informational purposes, and 10-12 you need to know the concepts.
- 1. Phospholipids: the main component of the cell membrane that contains a polar head made of phosphate and choline. Also, two nonpolar fatty acid tails.
- 2. Phospholipid Bilayer: has the fatty acid tails of the phospholipid facing each other to create a hydrophobic core. It only allows small uncharged nonpolar such as O2 and water substances to diffuse.
- 3. Integral Protein
- 4. Peripheral Protein
- 5. Cholesterol
- 6. Glicolipid
- 7. Sugar Chain/Oligosaccaride
- 8. Glicoprotein
- 9. Transport
- 10. Attachment and Recognition
- 11. Receptor for Signaling
- 12. Enzymatic Activities

Monday, December 4th

- Warm Up: " Write the four concepts from the Bubble Lab"
- Finish lecture cell membranes (slides 26-33). Please watch the video and do the interactive at the end of the slide show. P Lecky Cell Membrane (1).pptx
- Read the slide show Osmosis vs Diffusion vs Active Transport. Read the Venn diagram and copy it in your notebook. Osmosis Vs. Diffusion Vs. Active Transport

Week of November 27th-December 1st

Thursday, November 30th

- Read the article from Harvard Health (https://www.hsph.harvard.edu/nutritionsource/sports-drinks/), and in your notebook, answer the question " Are Sports Drink Necessary? ". Be ready to discuss the pros or cons. Make sure when you read you are looking for claims and evidence to back up your claim and reasoning. Your evidence must have a solid connection to the claim.
- Read for review and add to notebook as needed https://www.wisc-online.com/learn/natural-science/life-science/ap1101/construction-of-the-cell-membrane
- Finish the Cell Membrane Lecture https://docs.google.com/presentation/u/0/d/1AbSrMXdbQmkb_s2GFhYCYGwQYZ2qiR9-/edit
- For the Bubble Lab, read the front page, take notes, and write on the 4 concepts lab sheet. https://drive.google.com/open?id=1rCxKGhIvgamRp5y-QFEsGMwHrK5YSIlA

Tuesday, November 28th

- Build a membrane activity: complete the animal cell coloring sheet. Cut and color the tape (one per lab, group of three).
- Lecture: " Construction of the cell membrane. https://www.wisc-online.com/learn/natural-science/life-science/ap1101/construction-of-the-cell-membrane
- Cell membranes, structure, function, active and passive transport.

Monday, November 27th

- Ed Puzzle: Cell Membranes Amoeba Sisters and Bozeman .
- How does a membrane work?

Week of November 13th-17th

Tuesday, November 14th

- Turn in Cell Boundaries notes. 7.3 and questions.
- ½ sheet cell size review. Turn in today.
- Cell size comparison Lab. Turn in today.
- Cell Membrane lecture.
- Cell membrane and Fluid Transport in cells.

Learning Objectives:

1. I can identify the components of the cell membrane.
2. I can describe the functions of a cell's membrane and how it relates to what the cell can do.
3. I can explain the fluid mosaic model theory of cell membranes and create a model demonstrating how its structure relates to its functions.
4. I can explain and interpret models of different forms of transport across the cell membrane.
5. Given their chemical and physical properties, I can predict how different types of simple molecules move through the membrane.

Components of the Plasma Membrane

1. Phospholipids
2. Cholesterol
3. Integral Proteins
4. Peripheral Proteins
5. Carbohydrates

Cell Membrane

- Also known as the plasma membrane.
- It regulates what enters and leaves the cell and also provides protection and support.

- The lipid bilayer structure gives the cell membrane its flexible structures.
- Proteins and carbohydrates are embedded in a membrane.

Fluid Mosaic Model

What makes the membrane structure fluid?
Why is it termed a mosaic?

Semi-Permeability

The membrane is selectively permeable. It allows specific molecules to pass through freely, others to selectively pass through into or out of the cell, and ultimately stops the movement of some molecules.
The transport of materials depends on their size, charge, polarity, and whether or not they may need additional support to move through the membrane.

Monday, November 13th

- Read 7.3, pages 182-189, and answer questions 1-6 from page 189.
- Review the note-taking system. Refer to how to take Cornell notes or find a system for taking notes that works for you. Cornell Lecky HOW TO DO CORNELL NOTES.doc

Week of November 6th-10th

Thursday, November 9th

- Check in cell size worksheet
- Check work sheet " Why are Cells so Small"
- Cell Size and Ed Puzzle.

Tuesday, November 7th

- Prokaryotic vs Eukaryotic. Prokaryotic Vs. Eukaryotic
- Take notes on the presentation for Cell Size and review for ATP prokaryotic and Eukaryotic.
- Finish cell size worksheet " Why are Cells so Small". Watch this video https://video.link/w/xgmz to help you understand cell size and to help you complete the worksheet. Also, take notes as you watch.
- Surface area video: https://video.link/w/xgmz
- 2.1.6 Explain the importance of the surface area to volume ratio as a factor limiting ce…

Monday, November 6th

- Wednesday Schedule

Week of October 30th- November 3rd

Thursday, November 2nd

- Work on the worksheet for Photosynthesis
  Lecky How Do Chloroplasts Capture Energy - Photosynthesis Coloring
- In your notebook, take notes and answer the questions 1-3 and 1-6 using the following website Pro vs. Eu CK12
- Concepts on cell size: answer questions 1-4 only Cell Size Work Sheet .
- Review ratio article: https://www.thoughtco.com/what-is-ratio-definition-examples-2312529

Wednesday, November 1st

- No school

Tuesday, October 31st

- Lab: look at the specimen, and each student picks the most interesting. Write down four from your table:
- We will do a specimen gallery walk.
- Fantastic fungi: watch and write five qualitative and five quantitative facts.

Monday, October 30th

- No Science Starter
- Watch the video " Aquascaping: Building Underwater Worlds." Do not need to take notes. https://www.sciencefriday.com/videos/aquascaping-alex-wenchel/
- https://www.calacademy.org/educators/how-did-plants-change-our-planet
- Fill in and color " How do Chloroplast Capture the Sun"? A copy of the worksheet in Student Agenda in Schoology.

Name: _____ Date:_____

How Do Chloroplasts Capture Energy from the Sun?

Plant cells and some algae contain an organelle called the **chloroplast**. Chloroplasts are concentrated in the leaves of plants and allow plants to harvest energy from sunlight, a process called **photosynthesis**. Pigments in the chloroplasts absorb sunlight and use this **energy** to combine carbon dioxide and water to make glucose and oxygen. The complete reaction is:

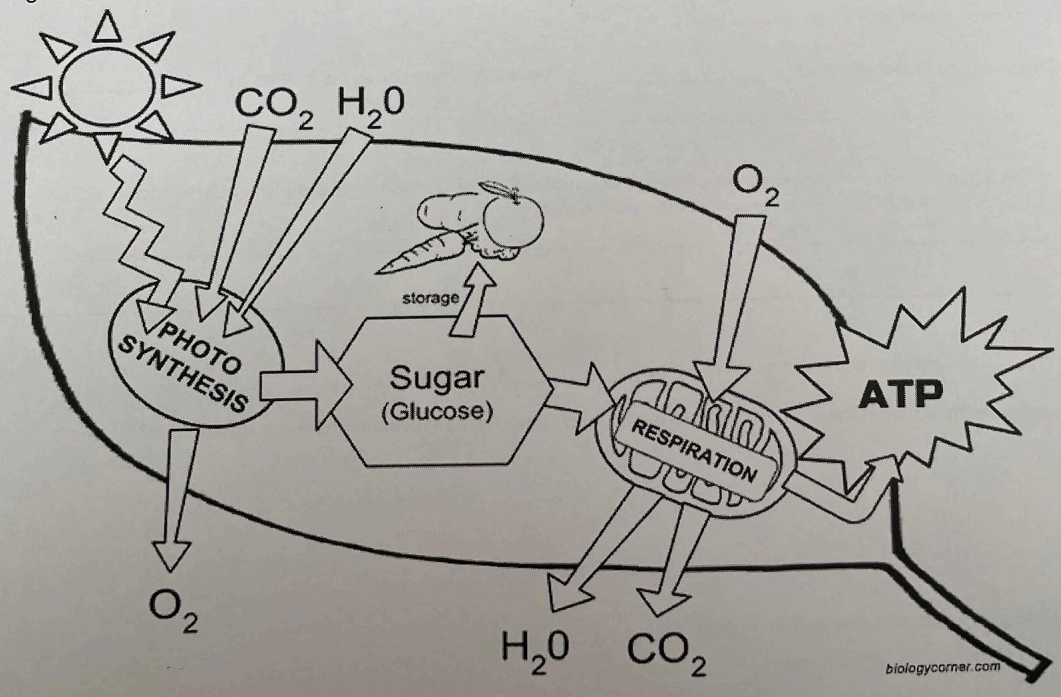
$$6CO_2 + 6H_2O + \text{energy} \Longrightarrow C_6H_{12}O_6 + 6O_2$$

Raw Materials (Reactants)
CO_2 = carbon dioxide
H_2O = water

Products
$C_6H_{12}O_6$ = glucose
O_2 = oxygen

Plant cells can use this process to manufacture **glucose**, a simple sugar. Some of the glucose is used immediately for cellular respiration, where it is converted to a high energy compound called **ATP**. You might recall from studies of the cell, that the process of creating ATP occurs in the **mitochondria**. Glucose that is not used right away can form long chains called **carbohydrates.** Carbohydrates are long term energy storage, like potatoes and beans. All **autotrophs** can make their own food in this way, unlike **heterotrophs**, which must consume food. When you eat a potato, you are eating the carbohydrates that the plant created from sunlight.

Sun & Energy = yellow ☐
Photosynthesis= green ☐
Storage Products= brown ☐
Carbon Dioxide = red ☐
Respiration = purple ☐
ATP = orange ☐
Water = light blue ☐
Glucose = dark blue ☐
Oxygen = pink ☐



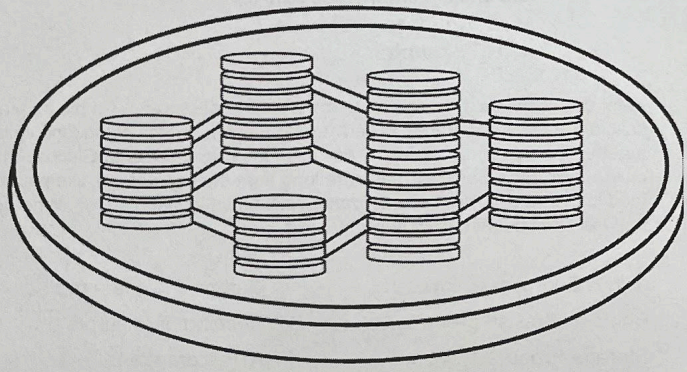
1. What two types of cells contain chloroplasts? _____
2. Autotrophs, like plants, make their own food using energy from _____
   This process is called _____
3. How do heterotrophs obtain their energy? _____
4. What are the reactants (raw materials) for photosynthesis? _____
5. What simple sugar is produced? _____
6. What gas is used in the process? _____ What gas is released? _____
7. Where are most photosynthetic cells in plants found? _____
8. What compound can be made from glucose and serves as long term energy storage? _____

The Structure of the Chloroplast

Chloroplasts are double membrane organelles found in plant cells. Color and the outer membrane light green ☐. Color the inner membrane brown ☐.

Thylakoids contain chlorophyll and other pigments (red, orange, yellow, brown) and are found in stacks called grana. Color the thylakoids dark green ☐, then highlight the stacks of grana with yellow ☐.

These stacks are connected to other stacks by channels called **lamellae**. Color the lamella orange ☐. Grana are surrounded by a gel-like material called stroma.Color the stroma blue. ☐



9. Thylakoids form stacks called _____. These are connected to each other by _____

Write the equation that shows how animals (heterotrophs) use glucose to create energy for the cell, a process called **CELLULAR RESPIRATION**, which occurs in the mitochondria.

10. Where does cellular respiration occur in the cell? _____

11. Compare the equation for photosynthesis to the equation for cellular respiration. How are they similar?

12. Chloroplasts convert energy from the sun into _____
    The mitochondria use glucose to produce energy in the form of _____.

Week of October 23rd-27th

Thursday, October 26th

- **Quiz**
- **Science Starter 1: Stamp Wednesday for Illustration**
- **Science Starter 2: The most challenging question in Cellular Respiration for you is…?**
- **Turn in Science Starter**
- **If time, the Photosynthesis review sheet**

Tuesday, October 24th

- **Science Starter: ATP & ADP Two Slider Models in your notebook (write "see notebook" on your science starter sheet).**
- **Review**
- **For 10 minutes, you will prepare to report the answer to your assigned question below. Each of your four lab partners will give a one-sentence report to help answer. Takes notes as students are presenting on your study guide notes.**
- Study guide Notes for Cellular Respiration Quiz
- Continue on study guide notes in notebook. review (reread, rewatch, annotate notes) the Agenda and all SS questions, all videos (Amoeba sisters, etc.,) all Worksheets, Labs, slide shows and assigned text book (9.1 & 9.2) (Krebs cycle simplified) Know your photosynthesis & Respiration equations. When you are finished reviewing:
- Take a 7x4 sheet (this you may take into quiz with you) and put your name on, you may write on both sides.

Monday, October 23rd

- **From the textbook, copy the table on page 232.**
- **Write down ten facts and a summary of what you learned from the video " Human: The World Within."**

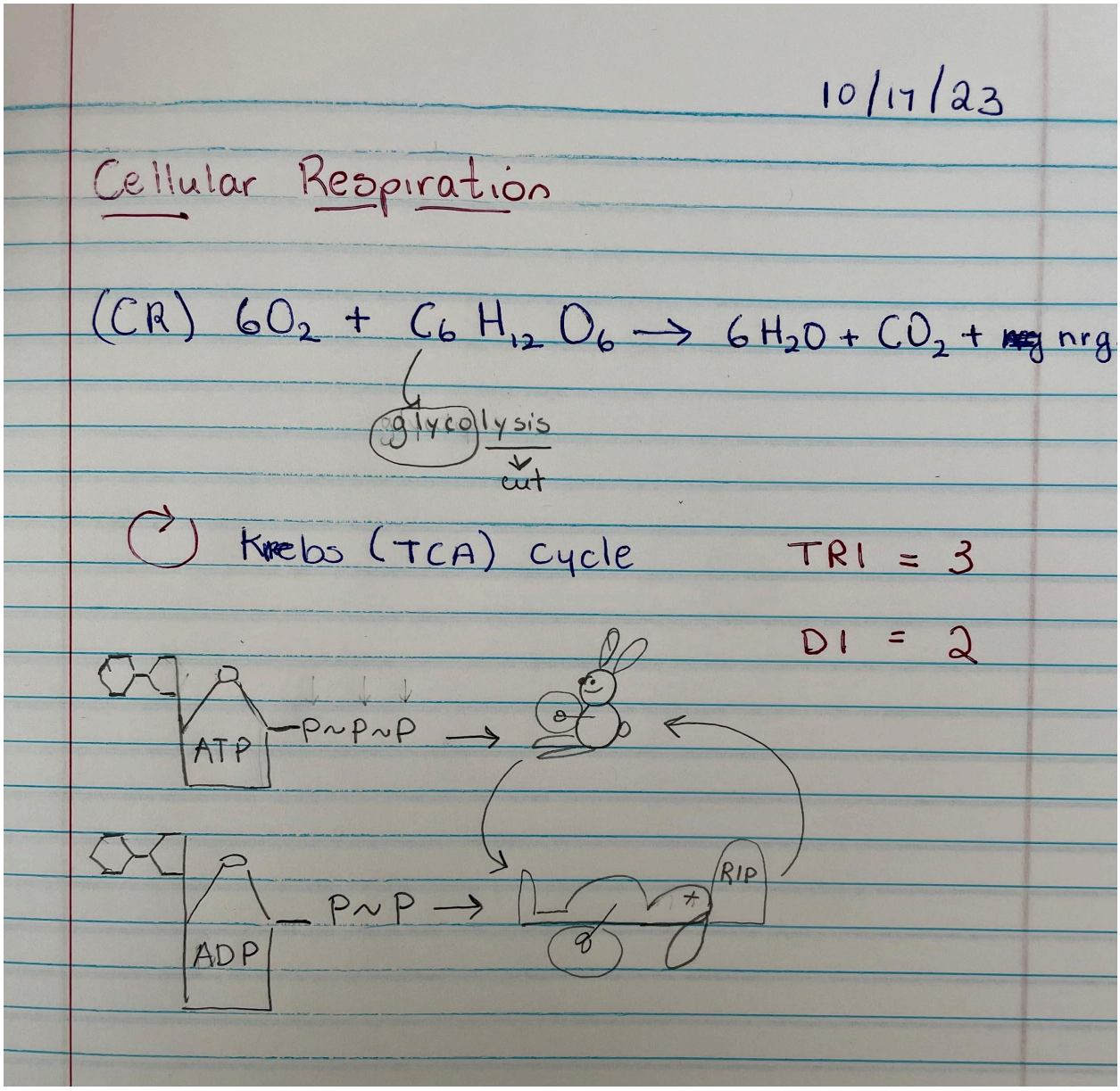
Week of October 16th-20th

Thursday, October 19th

- Science Starter: What are the products of Glycolysis?
- Bromothymol blue Lab and CO_2 rates.

Tuesday, October 17th

- Science Starter: a) formula for Cellular Respiration (CR), b) What are the names of the 3 main steps, c) How could an energizing bunny work as a model for a process in CR.
- Cornell notes: 9.1-9.2 and answer questions from 1-6 (9.1) and 1-5 (9.2) page 232. At the end of the section, "use" complete sentences.
- Check out the links on CR. Cell Respiration Worksheets Guides 2023
- If you have time, please work on the worksheet.
- HHMI ATP interactives. Go to this website https://www.biointeractive.org/taxonomy/term/198 and look for interactives that are interesting to you and help model CR.
- **Quiz on CR 10/26-27**

- 

Monday, October 16th

- **Stamp illustration from last week: must be complete, like p. 222 TB**
- **Lecture: Cell Resp & ATP/ADP**
- **Write in your Notebook:**

  _ ATP (Adenosine Triphosphate)
  - **ATP is an organic molecule used for short-term energy storage and transport in the cell.**
  - **ATP serves as the primary energy source for the cell's activities.**

- When energy is needed somewhere in the cell, the chemical energy stored in glucose is released and used to produce ATP molecules.
- ATP is composed of three parts: 1. A nitrogenous base (Adenine), 2. A sugar (Ribose), and 3. Three phosphate groups (Triphosphate).

_ Releasing Energy:

- Bonds between their phosphate groups are broken through hydrolysis to release the energy stored in ATP molecules.
- Hydrolysis is a chemical reaction in which a water molecule splits another molecule.
- As a result of hydrolysis, energy is released, and ATP loses phosphate to become ADP (adenosine diphosphate).

_ Storing Energy:

- Small amounts of energy can be stored in a cell by adding phosphate groups to ADP molecules, producing ATP.
- ADP is constantly recombined with phosphate groups to form new molecules of ATP to support the work of the cell.

- Watch the video "Chemical Energy and the ATP/ADP Cycle 101"
- What is Cellular Respiration?
- **Steps for Cellular Respiration:**
  1. Glycolysis (Sugar breaking, ATP making): Glycolysis is the process in which glucose is broken down to produce energy (ATP). It produces two molecules of pyruvate, ATP, NADH, and water. The process occurs in a cell's cytoplasm and does not require oxygen (anaerobic). It occurs in both aerobic and anaerobic organisms.
  2. Krebs Cycle (or TCA-tricarboxylic acid cycle): or citric acid cycle is a series of enzyme-catalyzed reactions occurring in the mitochondrial matrix, where acetyl-CoA is oxidized to form carbon dioxide and coenzymes are reduced, which generate ATP in the electron transport chain.
  3. Electron Transport Chain: The ETC uses the high-energy electrons from glycolysis and the Krebs cycle to synthesize ATP from ADP. The electron transport chain is a series of four protein complexes that couple redox reactions, creating an electrochemical gradient that leads to the creation of ATP in a complete system named oxidative phosphorylation. It occurs in mitochondria in both cellular respiration and photosynthesis.
     Explanation: Oxygen is the final electron acceptor in the electron transport chain, which allows for oxidative phosphorylation. Without oxygen, the electrons will be backed up, eventually causing the electron transport chain to halt.

Week of October 9th-13th

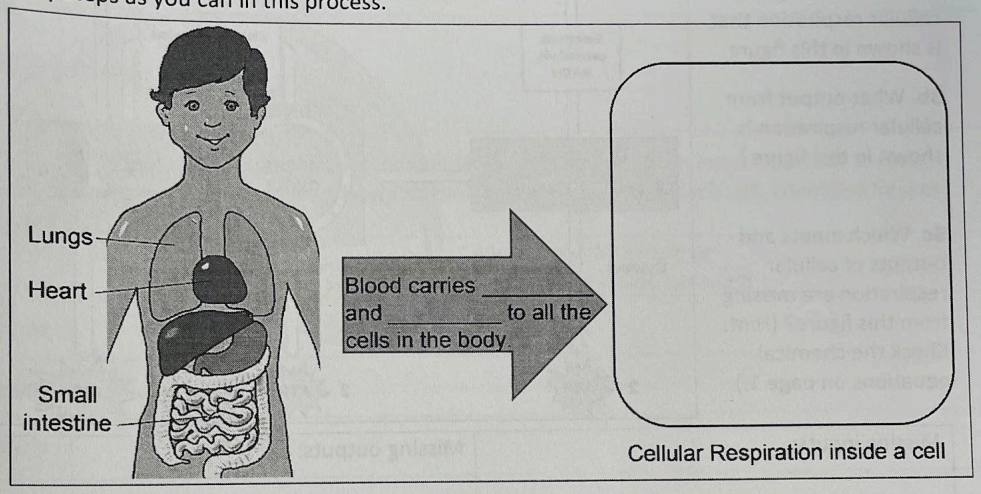
Thursday, October 12th

- **Science Starter: Peruse 67 fun facts about respiration worksheet with your table group. Pick 1 each and put it in your Science Starter.**
- **Turn in Final CER (on page 6/slide 14 student guide) " Could we live on Mars?".**
- **Solar Eclipse https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/ .**
- **In your table group, utilizing the textbook (p. 220-232) and yesterday's notes, make a great model of cellular respiration in your notebook.**
- **Now, see if you can answer the "Using Models to Understand Cellular Respiration" worksheet with your model/knowledge.**

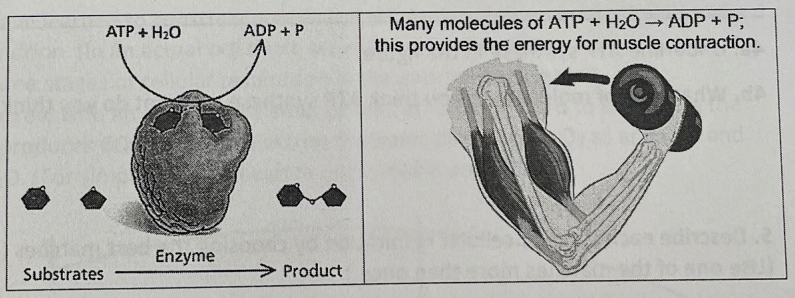
10/12/23

Using Models to Understand Cellular Respiration[1]

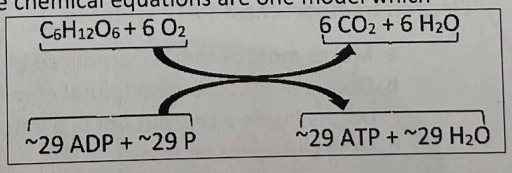
1. Many of the molecules in food serve as fuel for your body. Inside your cells, molecules derived from food interact with oxygen to provide the energy for cellular respiration to make ATP. ATP provides the energy for many cellular processes. Add to this figure to describe as many steps as you can in this process.



These drawings show that cells use ATP to provide the energy to synthesize a molecule or to contract a muscle.



A scientific model is a simplified representation of reality that highlights certain key features of a complex process like cellular respiration. These chemical equations are one model which provides an overview of cellular respiration. The curved arrows represent coupled chemical reactions; the top reaction provides the energy needed for the bottom reaction.



2. Describe in words what these chemical equations tell us about cellular respiration.

---

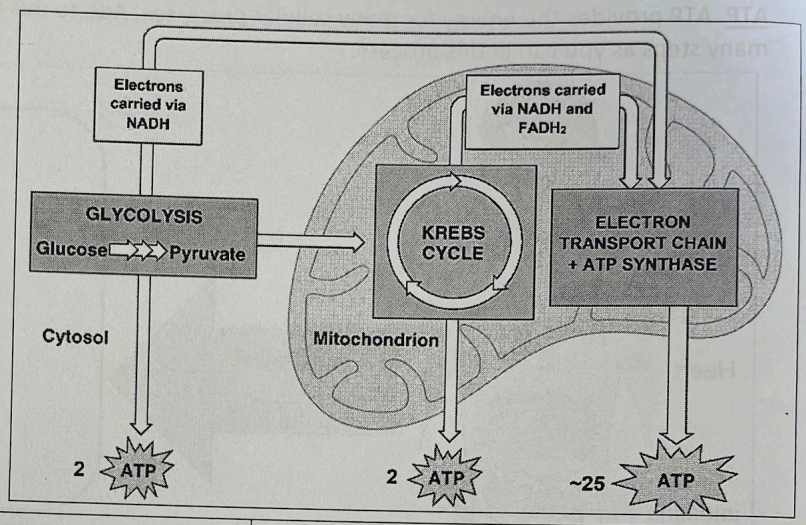
[1] By Dr. Ingrid Waldron, Dept Biology, Univ Pennsylvania, © 2023. This Student Handout (and an advanced version) and Teacher Notes (with background information and instructions [illegible] https://serendipstudio.org/exchange/bioactivities/modelCR. This

The figure below presents another model of how cellular respiration occurs inside a cell. It shows the three main stages of cellular respiration and suggests a little of the complexity of the multiple steps of cellular respiration.

3a. Circle the input for cellular respiration that is shown in this figure.

3b. What output from cellular respiration is shown in this figure?

3c. Which inputs and outputs of cellular respiration are missing from this figure? (Hint: Check the chemical equations on page 1.)



Missing inputs:	Missing outputs:

4a. Underline ATP synthase in the figure.

4b. What type of molecule do you think ATP synthase is? What do you think it does?

5. Describe each stage of cellular respiration by choosing the best matches (one per blank). (Use one of the matches more than once.)

Glycolysis ___ ___
Krebs cycle ___
Electron transport chain + ATP synthase ___ ___

a. Makes most of the ATP produced by cellular respiration
b. Occurs in mitochondria (plural of mitochondrion)
c. Occurs inside a cell, but not in a mitochondrion
d. Uses glucose as an input

6. Explain why mitochondria are often called the powerhouse of the cell.

7. What features of cellular respiration are shown in both the figure above and the chemical equations shown on page 1?

8. Different types of models have different advantages for understanding cellular respiration. Complete this table to describe an advantage of each type of model.

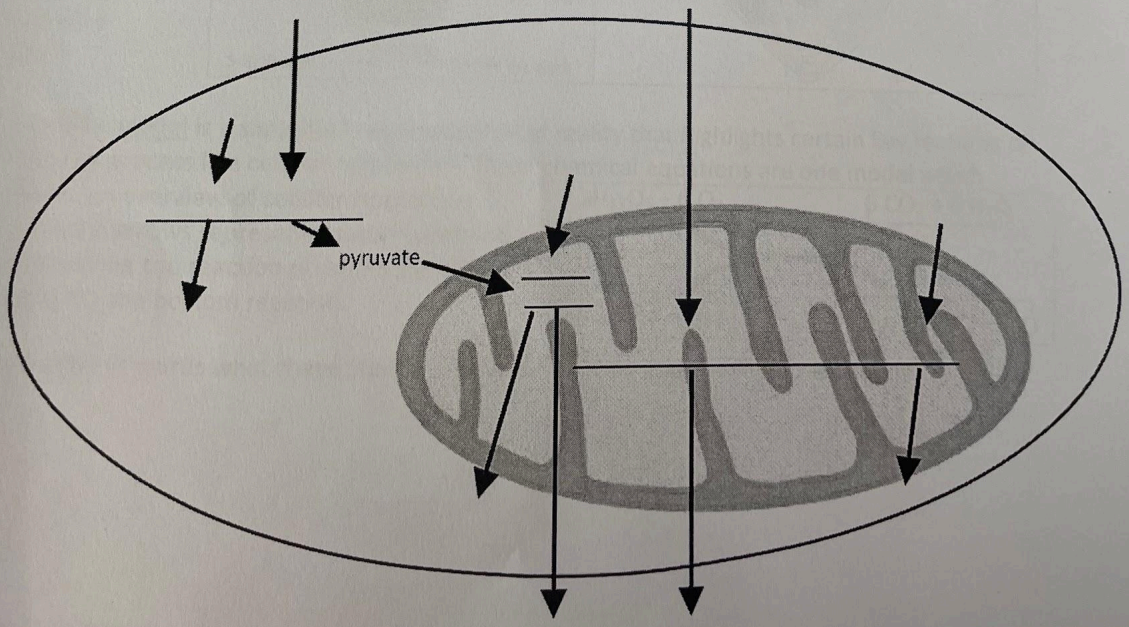
	What is an advantage of this model for understanding cellular respiration?
The chemical equations on page 1	
The figure on page 2	

9. This table lists the input molecules for cellular respiration. For each input molecule, explain how our cells get this molecule or how this molecule is made inside each cell. (Hint: See figures on page 1.)

Input Molecule	How Our Cells Get this Molecule or How this Molecule is Made Inside Each Cell
Glucose	
Oxygen	
ADP + P	

10. Use what you have learned to construct a model of cellular respiration in the drawing of a cell with a mitochondrion. (In an actual cell there are many mitochondria.)

- Write the three stages of cellular respiration in the appropriate blanks.
- Label each arrow with an appropriate input or output. You will need to know that the Krebs cycle produces CO_2. Also, the electron transport chain needs O_2 as an input and produces H_2O. (For simplicity, this diagram omits NADH and $FADH_2$.)



Tuesday, October 10th

- Science Starter: Why does the air from our mouth change from hot to cold? Depending on the size of the hole we make? Try it, and guess why. It is because of the Venturi effect:
- Edpuzzle on Schoology due end of class. Please take good notes.
- Finish Life on Mars in your notebook from yesterday.

Monday, October 9th

- Science Starter: What is Astrobiology?
- Student Guide Lecky Life on Mars?! Please watch, read, and write all answers in the Notebook.

Week of October 2nd-6th

Wednesday, October 5th

- Science Starter 1: Please write down the series/movie you choose and why it is real science.
- (1,3,5 please take a photo of front page of heart rate lab, turn it in to schoology, then turn lab into box).
- Science Starter 2: Please write one main takeaway from this video
  Oxygen's surprisingly complex journey through your body - Enda Butler
- Take notes from Marathon Man, lesson 2 , review putting it all together worksheet.
- Exit ticket.
- Leftover time, please review your notes and worksheets for this unit. Time to organize, review, ask questions and prepare for unit quiz.
-

Tuesday, October 3rd

- Please get out computers, notebook, pencil
- 1. Read and take notes on " Lesson 2: Marathon Man" (these are assigned on schoology) I wrote answers for you, make sure to be clear in your notes what are the questions and what are the answers
- 2. Read, highlight and complete "Marathon Putting it All Together" if you have troubles opening on computer, just copy into notebook
- 3. Find a movie, or TV series on youtube, netflix, etc. (no social media outlets) that has a science flavor to it. Please be ready to justify why it has good, real science with qualitative and quantitative science, reliable sources etc., (some ideas: Planet Earth, Nova, National Geographic Specials, etc.)

Monday, October 2nd

- Turn in Science Starter
- Science Starter: What are and how do feedback mechanisms in the body maintain homeostasis? 1. Receptors: Stimulus. 2. Control Center: interprets changes in the brain and nerves. 3. Effectors: muscles
- https://ca.pbslearningmedia.org/resource/tdc02.sci.life.reg.bodycontrol/body-control-center/ hit launch. Complete worksheet. Take a photo of the work (both sides) and turn in to schoology.
-

Week of September 27th-29th

Thursday, September 29th

- Absent

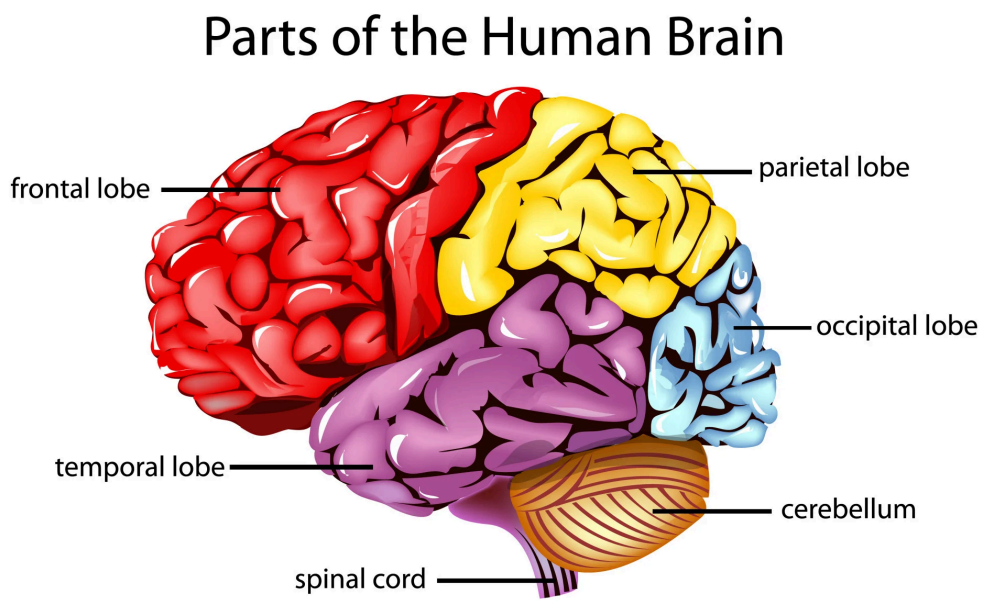
Wednesday, September 28th

- Science Starter: Watch: Homeostasis and Negative/Positive Feedback and answer: What is feedback system? Give one example of a feedback system in human body.
- Watch: GCSE Biology - Homeostasis #54 and answer 1-5 on worksheet.
- Watch this video GCSE Biology - How We Control Our Body Temperature #55 and complete model #6 on the worksheet.
- Watch this video GCSE Biology - Control of Blood Glucose Concentration #56 and complete model #7 on the worksheet.

Week of September 18th-22nd

Friday, September 22nd

- Parts of the Brain



The Brain's control center (the limbic system) is a four-level system within the brain that is responsible for regulating emotions and providing motivations for our actions. AKA voluntary. It comprises the hypothalamus, amygdala, hippocampus, and limbic cortex, although some definitions vary. The amygdala controls emotions.

Thursday, September 21st

- Watch the amoeba video Homeostasis and Negative/Positive Feedback and answer the following questions:

1. What is a feedback system? Give an example of a feedback system in the human body.

- Finish the marathon man from slides in your notebook. Watch all the videos and answer all the questions.
- Watch this video GCSE Biology - Homeostasis #54 and answer questions 1-5 from the worksheet.
- Watch this video GCSE Biology - How We Control Our Body Temperature #55 and complete model #6 on the worksheet.
- Watch this video GCSE Biology - Control of Blood Glucose Concentration #56 and complete model #7 on the worksheet.

Tuesday, September 19th

- Science Starter: Define function and structure. What it does and how it's built.
- Read chapter 35.1, pages 891-896, and take notes.
- Homework: review and annotations. Notes: key terms and concepts.
- Homeostasis Marathon/Man. Part 1 slides/pear deck. Lecky Lesson 1 Marathon Man

Homeo means Same
Stasis means Balance

Monday, September 18th

- Science Starter: What is the precise, specific message of your flyer? (can't be water is wonderful)
- Finish the flyer, fill out the rubric, and turn it in on Schoology and in the third-period box.

Week of September 11th-15th

Thursday, September 14th

- Absent

Tuesday, September 12th

- Science Starter: Atomic Structure Warm Up. What is the measurement unit of atomic and subatomic particles? How much does a proton weigh? How much does a neutron weigh? An electron?
- In your notebook, draw a model of this element with the correct number of protons (+), neutrons (0, have no charge, but they have mass), and electrons (-). Label with a key or, on your diagram, the correct charge of each particle (+, -, or 0).
- Properties of Wonderful Water Assignment:

1. Please watch the video and take notes as you watch it.
   Water - Liquid Awesome: Crash Course Biology #2
2. (In your textbook at home, you may review with Chapter 2.2, Properties of Water).
3. Then, define the following 12 terms and define them in a sentence (if you don't finish, then complete at home):
   Polar Molecule
   Cohesion
   Adhesion
   Mixture
   Solution
   Solvent
   Suspension
   pH scale
   acid
   base

buffer
Homeostasis

Monday, September 11th

- Science Starter: Write down and answer the question. " Intermolecular forces, AKA electromagnetic forces AKA Van der Waals forces, hold atoms/molecules together. What symbols help to simply show this attraction?
- Please watch these videos and take notes:
  Atomic Structure And Electrons - Structure Of An Atom - What Are Atoms - Neutron…
  History of the Atom , Atoms and the Periodic Table
- Atomic structure-these basics should be review from middle school.
- Complete parts of an Atom/Element worksheet:
  atoms and elements doodle notes (1).pdf
- Take photo of both and submit in schoology.

Week of September 5th-8th

Thursday, September 7th

- Science Starter: Of the 195 countries in the world, only 3 are still on the Imperial System: Myanmar, Liberia, and the US. What metric system measurements do you see/use in your daily life? If you don't, what metric measurement do you know of? (think sports, food, travel, etc.) Do not use your lab partner's answer. Discuss/review: Each table will give one example of a metric in everyday life.
- Rainbow Lab: Lab Supplies and procedures, measuring, etc.
  What's the difference between accuracy and precision? - Matt Anticole
- Rainbow Pre Lab Student Instructions
- Atomic bonding biochemistry

Tuesday, September 5th

- Science Starter: " Why do Biologists debate whether viruses are alive or not?
- Webquest Viruses https://historyofvaccines.org/activities/how-vaccines-work fill out the worksheet in detail.
- On the back of your Webquest, draw a diagram of the immune system (with at least 10 parts of the system), explaining underneath the diagram, how each part works and its purpose. You may use color.
- Makeup quiz in access if you were absent.

Week of August 28th-September 1st

Thursday, August 31st

- Quiz.
- Turn in Doodle Work Sheet and Science Starter.
- Basic Graphing Work Sheet.

Tuesday, August 29th

- Science Starter: Write one question you have about the material so far.
- Finish the Safety Brochure and turn it in.
- First-weeks quiz review. Follow the following steps:
    1. Fold printer paper in 8ths.
    2. Take notes in each section for review.
    3. Use back if you'd like
    4. 1. Living vs NonLiving.

5. 2. Lab/Safety.
6. 3. Classroom Rules.
7. 4. Direct Observation vs Non.
8. 5. Independent vs Dependent & Controlled Variables
9. 6. Qual/Quan.
10. 7. Collecting Data 8 Biology Syllabus - fold paper, write topics, expound from notes and worksheets, and presentations.

- Start graphing & measurement: watch: (please use headphones or closed captions).
- Watch the following videos and take notes on each video to show you watched the video and understand the basic info being presented:
- A Beginner's Guide to Graphing Data
- Graphing Data by Hand
- Charts Are Like Pasta - Data Visualization Part 1: Crash Course Statistics #5
- Graph doodle worksheet due on Block 2

Monday, August 28th

- Quiz Tuesday/Wednesday.
- Science Starter.
- Ob-Scertainer
- **Direct Observation:** Direct Observation, also known as observational study, is collecting information (data) by not altering the information and collecting by using the senses.
- **Indirect Observation:** You can't directly observe using the senses. Using tools such as X-rays to gather information. Using other information such as data, graphs, reports, etc.
- Worksheet " Scientific Method-Controls and Variables".

Week of August 21st

Thursday, August 24th

- Turn in the agenda, only the signature sheet only.
- Review the Safety Practice test and take notes for NEXT WEEK QUIZ.
- Direct vs Indirect Observation
- Inference vs Observation.
- Quality vs Quantity.
- Dependent variable vs Independent Variable.
- WS " Observation or Inference Worksheet." Work individually.
- Quiz next Thursday/Friday
- Safety Lab Brochure can be turn in Tuesday or Wednesday

The Nature of Science

Core NOS Ideas

1. Science is Empirical: Science can only work with phenomena (facts or occurrences) that are natural, physical, testable, and observable. Example: The emperor from Star Wars is not empirical.
2. There is a crucial difference between observation and inference.
3. Observation is a descriptive statement about natural phenomena.
    - That is accessible to the senses (or extensions of). Example: An object released from above the ground tends to fall and hit the ground.
4. Inference is a statement about phenomena that are not directly related to the senses. Example: gravity.
5. The difference between scientific laws and theories. A law needs to be proven to become a law. Theories can be tested repeatedly, but a theory is not proven.
6. Laws are statements or descriptions of the relationship among observable phenomena. Example: The Law of Gravity.

7. Theory inferred explanations for observable phenomena. Example: Theory of Evolution by Natural Selection.
8. Scientific knowledge involves human imagination and creativity.

Qualitative vs Quantitative

- Quantitative : are numbers; irrefutable (imposible to disprove)
- Qualitative: everything else that isn't numbers, the nature of something. It can also be an opinion; it can also be an inference.

Independent Variable vs Dependent Variable

The **Independent Variable** (**IV**) is the cause. Or the variable that you change. Its value (the worth, the result) is independent of other variables in your study.
The **Dependent Variable** (**DV**) is the effect. Its value depends on changes in the independent variable. The control or Controlled variable does not change.

9. Scientific knowledge is at least partially subjective (opinion).

Tuesday, August 22nd

- Science Lab Safety Practice Test: (I time 15 minutes, we time 10 minutes, Google time 10 minutes).
- Safety Lecture. Lecky MinionLabSafety
- Safety Lab Brochure (8.5 x 14 inches gatefold) Topics by Table.

Monday, August 21st

- How to organize your notebook.
- Pick up textbooks.

Week of August 14th

Thursday, August 17th

- Watch the video " Martin Hanczyc: The line between life and not life"
- Complete the assignment in Schoology, " Amazingly Alive or Not."
  Is it alive.pdf

Tuesday, August 14th

- Is Sammy Alive? Slides
- Is it Alive Video. Take notes and turn them in.

Monday, August 14th

- Go over the What Makes Something Alive review lab from last week.
- Berkeley's Definition of Science: Science is both a body of knowledge and a process; science is exciting, useful, and ongoing. Science is a global human endeavor.
- Video of "What is Science?"

Week of August 10th

Friday, August 11th

- **Classroom procedures and rules.**
- **“ Is it Alive Worksheet”? Make sure to answer all three questions. Do not turn in today. Due Monday, 8/14/23.**