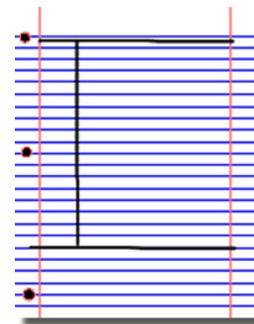


AP Biology Homework Guidelines:

ALL Homework should be saved in a notebook that can be used later as a resource to study for the AP Biology Exam

Possible Homework Strategies and Descriptions:

1. **Cornell Notes:** Divide paper as shown in diagram to the right. Notes go in the top right box (Don't use complete sentences – diagrams and concept maps are welcome), key points go in the top left, a summary of information goes on the bottom (this should be done in complete sentences).
2. **Guided Readings:** Each student will answer a set of questions based on information from the textbook.
3. **Concept Mapping:** Each student will create a concept map about main themes of each chapter. Making connections and relationships from the information given.
4. **Traditional Outlines:** Each student will read the chapter and generate an outline based on information in the chapter
5. **MasteringBiology.com:** Each student will log on using their student accounts and answer questions regarding the chapter we are discussing in class.



For ALL Strategies: Please read each through the chapter once. Consider taking notes and drawing diagrams or concept maps. Think about what you have read and follow that up by answering the following questions completely, in detail and in your own words.

GRADING: Please note the due date for each assignment. You are to submit your work on the day it is due. You will receive zero credit for any late work (refer to syllabus for policies.) All work submitted must be your own. You may not collaborate with others on homework or use words that are not your own. If you need to quote the text, include the proper citations. If you choose not to follow the Academic Honor Code proper action will be taken.

Chapter 6 - Cells**Due: Sept 11**

Guide Reading:

1. Distinguish between prokaryotic and eukaryotic cells and explain why compartmentalization is important in eukaryotic cells.
2. Describe the structure and function of the nucleus and briefly explain how the nucleus controls protein synthesis in the cytoplasm.
3. Describe the structure and function of a eukaryotic ribosome.
4. The endomembrane system is made up of the smooth endoplasmic reticulum, rough endoplasmic reticulum, and golgi apparatus. Describe each of their structures and functions, and summarize the relationships among them.
5. Explain how impaired lysosomal function can cause the symptoms of storage diseases.
6. Describe the different structures and functions of vacuoles.
7. Explain the roles of mitochondria and chloroplasts.
8. Describe the structure of a mitochondrion and explain the importance of compartmentalization in mitochondrial function.
9. Identify the three functional compartments of a chloroplast. Explain the importance of compartmentalization in chloroplast function.
10. Explain the role of peroxisomes in eukaryotic cells
11. Describe the functions of the cytoskeleton.
12. Describe the structure, monomers, and functions of microtubules, microfilaments, and intermediate filaments.

13. Describe the structure and function of the cell wall in plants and the extracellular matrix in animal cells.
14. Describe the structures of intercellular junctions found in plant and animal cells and relate those structures to their functions.

Chapter 7 Membrane Structure and Function:

Due: Sept 15

Guided reading:

1. Describe the properties of phospholipids and their arrangement in cellular membranes. Include a description of the fluid properties of the cell membrane and how this membrane fluidity is influenced by membrane composition.
2. Describe the different types of cell membrane proteins and carbohydrates, how these proteins and carbohydrates are spatially arranged in cell membranes, and how they contribute to membrane function.
3. Describe factors that affect the selective permeability of membranes.
4. Describe the locations and functions of transport proteins.
5. Define diffusion. Explain what causes diffusion, why it is a spontaneous process, and what regulates the rate of diffusion.
6. Define osmosis and predict the direction of water movement based on differences in solute concentrations. Distinguish between hypertonic, hypotonic, and isotonic solutions.
7. Describe how living cells with and without walls regulate the balance of water content.
8. Explain how transport proteins facilitate diffusion.
9. Explain how the Sodium Potassium pump works and how it is an example of active transport.
10. Explain what mechanism can generate a membrane potential or electrochemical gradient.
11. Describe the process of co-transport.
12. Explain how large molecules are transported across the cell membrane.
13. Describe receptor-mediated endocytosis and how it is used in the cell.

Chapter 8 Metabolism:

Due: A Day: Sept 23, B Day: Sept 24

1. Explain the role of catabolic and anabolic pathways in the energy exchanges of cellular metabolism. Give an example of the different reactions that occur in the cell.
2. Distinguish between exergonic and endergonic reactions. Explain what happens to free energy in each reaction. Give examples of the types of reactions that would occur in the cell.
3. Explain the induced-fit model of enzyme function and describe the catalytic cycle of an enzyme.
4. Explain how substrate concentration, pH, and temperature affect the rate of an enzyme-controlled reaction.
5. Explain how enzyme activity can be regulated or controlled by environmental factors, co-factors, and enzyme inhibitors. Give examples of each.
6. Explain how metabolic pathways are regulated through allosteric regulation, feedback inhibition, and cooperativity.

Chapter 11 Cell Communication:

Due: Sept 29

Guided Reading:

1. Describe the basic signal-transduction pathway of yeast. Explain why we believe these pathways in yeast, mammals, and plants evolved before the first multicellular organisms appeared on Earth.
2. Categorize chemical signals in terms of the proximity of the communicating cells. Include specific examples and functions of each type.
3. Describe the three main stages of cell signaling.
4. Compare and contrast G-protein-linked receptors, tyrosine-kinase receptors, and ligand-gated ion channels.:

5. Describe several advantages of using a multistep pathway in the transduction stage of cell signaling and explain what is usually passed along in a signal-transduction pathway.
6. Describe how phosphorylation propagates signal information.
7. Describe how cyclic AMP is formed and how it propagates signal information.
8. Describe how the cytoplasmic concentration of Ca^{2+} can be altered and how this increased pool of Ca^{2+} is involved with signal transduction.
9. Describe how target cells discriminate among signals and how the same signal can elicit multiple cellular responses.

Chapter 12 Cell Cycle:**Due: Oct 1**

Guided Reading:

1. Explain how cell division functions in reproduction, growth, and repair.
2. Describe the major events of cell division that enable the genome of one cell to be passed on to two daughter cells.
3. List the phases of the cell cycle and describe the sequence of events that occurs during each phase.
4. List the phases of mitosis and describe the events characteristic of each phase. Include diagrams of each stage and label the spindle apparatus, including centrosomes, kinetochore microtubules, nonkinetochore microtubules, asters, and centrioles (in animal cells).
5. Compare cytokinesis in animals and plants.
6. Describe the process of binary fission in bacteria and how this process may have evolved in eukaryotic mitosis. Regulation of the Cell Cycle.
7. Describe the roles of checkpoints, cyclin, Cdk, and MPF in the cell cycle control system.
8. Describe the internal and external factors that influence the cell cycle control system.
9. Explain how the abnormal cell division of cancerous cells differs from normal cell division.

***Artificial Selection Lab** – Start Sept 8

***Diffusion and Osmosis Lab** – Start Sept 16

***Enzyme Lab** – Start Sept 22

***Mitosis Lab** – Start Oct 6

***Unit Test – Cells** – Oct 10

**Dates subject to change*