Biology 112 **Exam Review 1 – Cell Theory & Microscopes**

Important Terms:

spontaneous generation abiogenesis **van Leeuwenhoek**

**Redi** **Needham Spallanzani**

**Pasteur** hypothesis Controlled experiments

Scientific Method Manipulated Variable Responding Variable

Microscope (light vs electron) **Hooke**  cell theory (3 statements!)

Eukaryote Prokaryote

**\*In bold are the names of the scientists whose work we studied. You should be familiar with the purpose of their experiments and how their work changed our understanding of biology.**

Review Questions:

1. Why is Redi’s experiment on spontaneous generation considered a controlled experiment?
2. How did the design of Pasteur’s flask help him successfully refute the hypothesis of spontaneous generation?
3. Why is it advantageous for scientists to test only one variable at a time during an experiment?
4. What are some advantages and disadvantages of light microscopes and electron microscopes?
5. Explain why you cannot draw a conclusion about the effect of one variable in an investigation when the other key variables are not controlled.
6. What three statements make up the modern cell theory state?
7. What are the differences between prokaryotic and eukaryotic cells?

**REVIEW TEST AND ALL NOTES FROM CLASS!!**

**Exam Review 2 – Cell Structure & Function**

Important Terms:

Cell cell membrane mitochondria

chloroplast lipid bilayer proteins

carbohydrate chains solvent solutes

concentration diffusion osmosis

hypertonic hypotonic isotonic

selectively permeable active transport endocytosis

exocytosis pinocytosis phagocytosis

facilitated diffusion cellular respiration photosynthesis

Review Questions :

1. Sketch and label a diagram of the cell membrane. Include the following:

lipid bilayer, protein, carbohydrate chain.

a) What is the purpose of the protein channels in a cell membrane?

b) What is the purpose of the carbohydrate chains in a cell membrane?

2. What kinds of molecules can diffuse through the cell membrane?

3. What is meant by the term “concentration?”

4. Describe the process of diffusion.

5. What is the relationship between osmosis and diffusion?

6. Distinguish between hypertonic, hypotonic and isotonic solutions.

7. Describe what happens to a cell when placed in each of the following solutions:

a) hypertonic b) hypotonic c) isotonic

8. How does facilitated diffusion differ from diffusion?

9. Explain the difference between facilitated diffusion and active transport. Be sure to indicate whether or not each process requires energy.

10. What kinds of molecules would enter the cell by facilitated diffusion?

11. Distinguish between endocytosis and exocytosis.

12. What is the mitochondrion’s job in the cell?

13. What is the chloroplast’s job in the cell?

14. What is cellular respiration? What is **needed** and **produced** by this reaction?

15. What is photosynthesis? What is **needed** and **produced** by this reaction?

**REVIEW TEST AND ALL NOTES FROM CLASS!!**

Biology 112 ***Exam Review 3 - Classification, Viruses, Bacteria & Protista***

Important Terms:

Classification Fungi Flagella / Zooflagellates Taxonomy Protista Cilia / Ciliates

Binomial Nomenclature Archaebacteria Pseudopods

**Carolus Linneaus** Eubacteria Sarcodines

Kingdom Peptydoglycan Sporozoans

Phylum Dichotomous Key Plankton

Class Virus Algae / seaweed

Order Capsid Slime Molds

Family Replication

Genus Dormant

Species Cocci

Animalia Spirilla

Plantae Binary Fission

Review Questions:

1. Why do biologists assign each organism a universally accepted name?
2. How is an organism’s name chosen?
3. What advantages does Carolus Linneaus’ classification system have over Aristotle’s old system?
4. What are the seven levels of classification (in the correct order!)
5. What characteristics do kingdoms Eubacteria and Archaebacteria have in common? What is the key difference between the two kingdoms?
6. What are the major features of each kingdom? (see p. 459)
7. What are the major differences between viruses and bacteria?
8. What are the main components of a virus’ structure?
9. How is a capsid important to the functioning of a virus?
10. How are viruses classified? Are they even alive?
11. How does a virus replicate (Make copies of itself)?
12. What does it mean for a virus to be dormant?
13. How are viruses different from bacteria? Why aren’t antibiotics used to treat viral conditions, such as the common cold, or the HIV virus?
14. Describe the three main shapes of prokaryotes.
15. How can the different methods of movement be used to classify animal-like protists?
16. What are the two main characteristics used to classify plant-like protists?
17. Describe the two stages of the life cycle of slime molds.

Biology 112***Exam Review 4 – Fungi, Plants & Animals***

Important Terms:

Molds Ferns Choanocytes

Sac Fungi Gymnosperms Archeaocytes

Club Fungi Angiosperms Spicules

Imperfect Fungi Vascular Tissue Platyhelminthes (flatworms)

Chitin Xylem Nematoda (roundworms)

Spores Phloem Annelida (segmented worms)

Hyphae Pollen Pharynx

Cellulose Seeds Crop

Chlorophyll Fruit Gizzard

Mosses Porifera Clitellum

Hermaphrodite

Review Questions:

1. Name at least one characteristic used to identify each of the following groups:
2. Molds b) Sac Fungi c) Club Fungi d) Imperfect Fungi
3. Describe the role of hyphae in the development of Fungi.
4. How do the endospores of bacteria compare to the spores of Fungi? Are they similar structures, or entirely different?
5. To live successfully on land, what substances must plants obtain from their environments?
6. Name the characteristics common to all plants.
7. All plants need water, but mosses can only survive by living close to a water source. Why does their environment need more moisture than that of other plants?
8. What are the 2 types of vascular tissue in plants, and what are their functions?
9. How do fruits aid in the dispersal of angiosperms?
10. Why is the movement of water key to a sponge’s survival? How does a sea sponge guarantee that the water will keep moving?
11. Why are sponges classified as animals?
12. Describe how a sponge feeds.
13. Why is the movement of water key to a sponge’s survival? How does a sea sponge guarantee that the water will keep moving?
14. Describe the development of features from one worm phylum to another. For example, how did the digestive change as worms became more complex?
15. What is a hermaphrodite? Why are some species of worms considered hermaphroditic, but not sea sponges?
16. What are ganglia? To what human organ could they be compared?

**REVIEW ALL TESTS AND NOTES FROM CLASS!**