Biology Test 3 Study Guide – Cell Theory, Microscopes, and Movement through the Cell Membrane

1. Who invented the term *cells* and when did he do it?
2. Who first observed microscopic organisms and when?
3. What scientific tool needed to be discovered before cells could be observed?
4. Know the three principles of the cell theory.
5. What are the two basic types of cells? Know the differences between them.
6. What are the two basic types of microscopes? Know the basics of how each one works.
7. Know how to calculate the total magnification of a compound light microscope.
8. What does selectively permeable mean? What part of the cell does it refer to?
9. Know the structure of the cell membrane and understand why this particular structure makes it suitable for use as the cell membrane.
10. Know what the terms hydrophilic and hydrophobic mean and understand how they relate to the different parts of the cell membrane.
11. What is diffusion? Understand how diffusion works.
12. What kind of molecules can pass through the cell membrane by diffusion?
13. What is a concentration gradient? Understand what it means to move with or against the concentration gradient.
14. What do we mean by *equilibrium* when talking about diffusion?
15. Know the difference between hypertonic, hypotonic, and isotonic solutions. Be able to tell which areas of a cell are hypertonic or hypotonic with respect to each other.
16. What is osmosis?
17. What is facilitated diffusion? Understand how it works.
18. Know the difference between channel proteins and carrier proteins.
19. What is passive transport? Know which forms of transport are passive and which forms are active.
20. What is active transport? Where does the energy needed for active transport come from?
21. What are endocytosis and exocytosis? Understand how the cell membrane changes in order to allow endocytosis and exocytosis happen.
22. What are phagocytosis and pinocytosis?
23. Understand when a cell would need to use endocytosis and exocytosis.