Biology Study Guide: Cells

1) Who first observed cells? How did they get their name?

2) An optical microscope with a 10x ocular lens and a 25x objective lens magnifies the specimen how many times?

3) Cells are mostly transparent, since they are largely made of water. What can be done to make structures more visible in a microscope?

4) Prions, such as the one that causes mad cow disease, are infectious proteins (large molecules) that cause damage to cells and can be passed from one organism to another much like a virus or bacteria. According to cell theory, are prions living? Why or why not?

5) Cells vary in size, but few are large enough to be seen by the naked eye. Explain why cells are unable to grow too large.

6) A certain bacterial cell (*E. coli*) is a prokaryote with a flagellum on one end. What would *E. coli* look like? (You can draw it if you like)

7) Protein “gates” allow the cell membrane to let some substances through, while keeping the rest from passing. What property of the membrane does this describe?

8) Draw the phospholipid bilayer, labeling hydrophobic and hydrophilic regions.

9) What is the most visible organelle in a eukaryotic cell? What long, stringy substance made of DNA does it store?

10) Where in the cell are ribosomes made? Once made, where do they go? What is their function?

11) Why is the smooth ER called what it is? What is made in the smooth ER?

12) Where in the cell is food, water, or even poison stored?

13) What is the nickname and function of the Golgi apparatus?

14) What energy molecule is made in the mitochondria? What molecule is it made from?

15) True or False: All plastids (mitochondria and chloroplasts) have their own DNA and reproduce separately from their cells.

16) What process takes place partly in the thylakoid membranes? What green pigment in the membrane helps with this process?

17) Which method of cellular movement is involved in the swimming of sperm cells?

18) Which thin component of the cytoskeleton is a large part of your muscles? What protein is it made of?

19) An organ such as the liver is made of several kinds of \_\_\_\_\_\_, groups of cells with a similar function.

20) What is the difference between cytoplasm and cytosol?