Homework Assignment 2 (25 points) Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

MCB 2010C- Gessner Due date: October 1, 2016

Read about the epidemiologic terms we discussed in lecture by going into Chapter 13 in your textbook and answer the following questions (1 point each):

1. Flies, which passively transfer pathogens from one place to another and which do not actively participate in a pathogen’s life cycle, are called what type of vector?
2. What do we call the stage in the course of an infection and disease when a patient is infected with a pathogen but does not have any signs or symptoms of disease?
3. Would a positive antibody test for HIV be a sign or a symptom (choose one) of HIV infection?
4. What does it mean when a disease is described as “*zoonotic*?”

Use Chapter 3 in your textbook to answer the following questions (1 point each):

1. Media that contains one or more chemical agents that inhibit the growth of some microbes but not others are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ media.
2. Stains that use two differently colored dyes to distinguish between cell types or cell parts are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stains.
3. Stains that do not stain cells but which settle around the outer boundary of a cell, like a silhouette, are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stains.

Read Chapter 4 in your textbook to answer the following questions:

1. Below each of these scientific names, **draw** what the following bacteria would look like when seen under a bright-field compound light microscope. (use their scientific names as your guide): (1 point each)

*Bacillus anthracis Streptococcus mutans*

*Staphylococcus epidermidis Vibrio parahemolyticus*

1. A. **Explain** the function of fimbria (1 point):

B. **Explain** the function of pili (1 point):

1. **Explain** why encapsulated bacteria that mutate to lose their capsule typically also lose their ability to cause disease? (1 point)
2. The cell wall structures of Gram positive and Gram negative bacteria are important to understand, when we Gram stain bacteria as well as when we select antibiotics to treat bacterial infections. **Next to each word or words below, write** a **(+)** if the structure or molecule is found in Gram positive cells only, write a **(-)** if the structure is found in Gram negative cells only or write **BOTH** if the structure or molecule is found in both Gram positive and Gram negative cells (1/2 point each):
3. Peptidoglycan \_\_\_\_\_\_\_\_\_\_\_\_\_
4. Teichoic acid \_\_\_\_\_\_\_\_\_\_\_\_\_
5. Porin proteins \_\_\_\_\_\_\_\_\_\_\_\_\_
6. Periplasmic space \_\_\_\_\_\_\_\_\_\_\_\_\_
7. Which type of bacteria has a thicker layer of peptidoglycan in its cell wall, a Gram + bacterium, a Gram – bacterium or a mycoplasma (choose one)? (1 point)
8. **What molecule**, found in bacterial cell walls, has its growth disrupted by penicillin? (1 point)
9. **Why** are Gram – cells more sensitive to lysis in a hypotonic solution than are Gram + cells? (1 point)
10. **Explain** what is the purpose of the bacterial endospore. (1 point)

Read Chapter 5 in your textbook to answer the following questions:

1. **Explain** what the *endosymbiotic theory* suggests happened over 2 billion years ago. (1 point)
2. Give **four pieces of evidence** Dr. Margulis has found to suggest that mitochondria may have had their origins as bacterial cells. (2 points)
3. What does the word “*helminth*” mean in Greek? (1/2 point)
4. List **three** methods of locomotion used by protozoa. (1/2 point each)

a.

b.

c.

1. You have been suffering from diarrhea and abdominal bloating for several weeks. Analysis of your stool sample in the laboratory reveals single-celled parasites. **Explain** whether this evidence indicates your infection is caused by a fungus, a protozoan or a helminth. (1 point)

\_\_\_\_\_\_\_\_/25 points = \_\_\_\_\_\_\_\_\_\_%