

Microbiology
Unit 3 Test Review

Name: KEY Date: _____ Hour: _____ Test #: _____

1. Define the following terms:

- a. Morphology: the study of form and structure
- b. Motility: the ability of an organism to move by itself
- c. Flagella: long, slender, thread like appendages used as propulsive mechanism in bacteria
- d. Pili: short small appendages involved in DNA transfer during conjugation
- e. Capsule: external layer of thickened adhesive material that allows bacteria to stick to surfaces
- f. Cell Wall: layer of peptidoglycan that supports the bacterial cell and gives it its shape
- g. Gram positive cell walls: thick (20-80nm), 60 to 80% peptidoglycan, do not contain protein
- h. Gram negative cell walls: thinner than Gram +, 10 to 20% peptidoglycan, contain endotoxins
- i. Cytoplasmic Membrane: membrane located inside the cell wall that regulates the passage of materials between the
- j. Mesosome: invagination of the cytoplasmic membrane
- k. Endotoxin: sugar secreted by bacterial cell wall that is highly toxic to animals and gives ↑ fevers
- l. Bacterial chromosome: single circular molecule of DNA, attached to the mesosome
- m. Conjugation: exchange of genetic material
- n. Ribosomes: RNA-protein particles that are the site of protein synthesis
- o. Endospore: small-thick walled highly resistant bacterial cell capable of producing a vegetative cell

bacteria and the environment

2. Describe the four different styles of flagella.

- a. Monotrichous - one flagellum on one end
- b. Lophotrichous - cluster of flagella on one end
- c. Peritrichous - surrounded by flagella on all sides
- d. Amphitrichous - flagella on both ends of the cell, either cluster or single

3. How are the three main shapes classified in terms of motility? Spirilla - ALL motile, Bacilli - Motile AND non-motile, cocci - ALL non-motile
4. What important functions does the capsule have? protects bacteria against desiccation and ingestion by host's phagocytes
5. What are three main functions of the mesosome?
- Hold the naked DNA in place
 - Important to cell wall synthesis
 - Aids in division of nuclear material during cell division
6. What are the three main shapes of bacteria and their various arrangements?
- Cocci - spherical or ellipsoidal bacterial cells
 - Diplococci - pairs of spheres
 - Tetrads - groups of 4 spheres
 - Streptococci - chains of spheres
 - Staphylococci - clusters of spheres
 - Sarcinae - spheres in a cubical arrangement
 - Bacilli - cylindrical or rod shaped bacterial cells
 - Diplobacilli - pairs of rods
 - Streptobacilli - chains of rods
 - Spirilla - spiral bacterial cells
 - Spirochetes - spiral cells responsible for serious human diseases
 - Vibrios - short incomplete spiral or comma bacteria
7. What is the shape that combines both bacillus and cocci? Coccobacillus
8. What are the steps to forming an endospore?
- Forespore forms → DNA aligns at one end of cell, cell membrane invaginates
 - Spore cortex and spore coat develop → layers cover forespore
 - cell undergoes lysis → breaks open to release endospore
9. What are two examples of genera that form endospores? Bacillus, Clostridium
10. Be familiar with the structure of a bacterium. (Study your colored handout.)