Quiz #3 Key – 7:45 lab

1. Define:

Glycocalyx – The glycocalyx is a layer of material found outside the cell wall of some types of bacteria. If dense and well organized, it is called a capsule, but if loose and poorly organized it is called a slime layer. In either case, the glycocalyx serves as a reservoir of stored food, aids attachment to slick surfaces and provides protection against desiccation, toxic chemicals and predators (including phagocytic WBCs). Populations of bacteria capable of glycocalyx formation often form biofilms on moist surfaces, e.g., teeth and inside containers and tubing.

Carboxysomes – Carboxysomes are inclusions found within autotrophic bacteria and contain enzymes involved in fixing carbon dioxide. These inclusions have polyhedral protein shells and contain RuBisCO (an enzyme required for carbon fixation). They occur within all Cyanobacteria, in members of the genus *Thiobacillus,* and within other prokaryotic autotrophs.

Binomial nomenclature – Binomial nomenclature is a naming system developed by Carolus Linnaeus and applied to all types of living organisms (as well as some no longer living). The first part, or genus name is capitalized, while the second part, or species name (specific epithet) is lower case. Both names are Latinized and italicized when in print or underlined if written by hand. The technical name assigned to each organism type is recognized world-wide, regardless of spoken language, so allows for consistency in organism identification.

2. Chromatin/ nucleolus

3. Microtubules/ centrioles

4. Kinesin and dynein

5. Cell wall

6. Prokaryotic flagella are composed of flagellin proteins (not microtubules), and are attached to the cell membrane by protein rings (not surrounded by it). Bacterial flagellar motion is rotary (spinning) and is driven by a membrane protein complex that is usually powered by a proton motive force (proton flow across the membrane). Bacterial flagella are longer relative to cell length than are eukaryotic flagella.

7. Peritrichous

8. Fimbriae

9. Thylakoids

10. Nucleoid/ plasmids

11. Endospores/ Endospores contain more DNA, less RNA, more calcium and dipicolinic acid, and far less water than do vegetative cells. They are metabolically inactive, can remain dormant for millions of years (at least), and are much more resistant to damage from both physical factors (heat, radiation, desiccation, etc.), and toxic chemicals than are vegetative cells. Endospores are much smaller than the vegetative cells that form them, even though each one is surrounded by two layers of wall-like material, and two layers of membrane.

12. Heterocysts

13. Taxonomy

The etiological agents of tuberculosis are identified as *Mycobacterium tuberculosis*.