

Key to Lecture Quiz #3

1. Define:

Nucleolus – Nucleoli (singular nucleolus) are dark staining bodies sometimes visible inside the nuclei of eukaryotic cells (when viewed with light microscopes). They do not have their own membrane, but are internal to the nuclear envelope. Nucleoli are rich in ribosomal-RNA and protein, they are the site of r-RNA synthesis and the assembly of 60S and 40S ribosomal subunits.

Glycocalx – The glycocalyx is a layer outside the cell walls of prokaryotic cells and usually made of polysaccharide (though may contain protein). A dense, well-organized glycocalyx is called a capsule, while a loose, poorly-organized one is called a slime layer. These layers serve as reservoirs of stored food, they aid in attachment, they prevent desiccation and protect cells from predators and toxic chemicals. Pathogenic bacteria with capsules tend to resist WBC phagocytosis, so survive and are better able to cause disease.

Taxonomy – Taxonomy can be defined as the science or study of the classification of organisms (both living and extinct). It involves establishing criteria to be used in categorizing organisms into groups (taxa) based on their relatedness and phylogeny.

2. Chromatin/ nucleosomes

3. Cell walls and skeletons

4. Prokaryotic flagella are made of flagellin proteins and do not contain microtubules like eukaryotic flagella do, they are attached to the cell membrane, but are not surrounded by it as eukaryotic flagella are, they move by means of rotary motion (they spin) driven by membrane motors, while eukaryotic flagella display whip-like motion, and prokaryotic flagella are usually longer and thinner relative to cell size than are eukaryotic flagella.

5. Fimbriae

6. Peptidoglycan

7. Plasmids

8. Metachromatic granules

9. Endospores/ Endospores are highly resistant to damage caused by exposure to heat, radiation, pressure, desiccation, and toxic chemicals. They allow populations of bacteria to survive long periods of unfavorable conditions.

10. Heterocysts

11. Binomial nomenclature

12. The kingdom Monera is no longer valid because Bacteria and Archaea are too unrelated to belong within the same kingdom. Their cell walls are different, their cell membranes are

different, and their r-RNA nucleotide sequences are different. Also, Archaea typically have introns and histone proteins while bacteria don't.

13. Chemoheterotrophs/ fermentative

14. Facultative anaerobes/aerobes

15. Psychrophiles

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