

Pre-post test

Your name _____

Please answer these questions to the best of your ability. The results will not in any way be used to determine your grade, but provide us with background information so that we may present material at the most appropriate level for the class.

- _____ 1) In a nonisotonic solution, if the **cell wall** of a bacterium is removed, the cell will
- A. be unaffected.
 - B. burst due to an influx of water into the cell.
 - C. lose motility, but otherwise be unaffected.
 - D. stop growing due to an efflux of solutes from the cell.

- _____ 2) Which cellular process below is most often associated with the release of **acidic waste products**?
- A. aerobic respiration
 - B. amino acid biosynthesis
 - C. fermentation
 - D. oxygenic photosynthesis

- _____ 3) The electrons in an **electron transport chain** move from
- A. negatively to positively charged molecules.
 - B. smaller to larger sized electron carriers.
 - C. molecules with lower to higher reduction potentials.
 - D. molecules that can pump protons to those that cannot.

4) In a respiring bacterium, if **proton pumping** across the cell membrane is stopped, ATP synthesis by the ATP synthase will:

_____ Stop _____ Increase _____ Remain the same

Pick one answer and explain why.

_____ 5) **Antibiotics**

- A. affect either gram-negative or gram-positive bacteria, but not both.
- B. always bind to the outside of a cell.
- C. must be transported inside the cell to inhibit cell growth.
- D. work by inhibiting a specific molecular target.

6) Compared to planktonic or free-floating cells, **bacterial cells in biofilms** are typically

_____ less susceptible to antimicrobial agents.

_____ equally susceptible to antimicrobial agents.

_____ more susceptible to antimicrobial agents.

Pick one answer and explain why:

_____7) In the **negative regulation of protein synthesis** in bacteria,

- A. there is no inducer.
- B. the regulatory protein binds the operator region of an operon.
- C. the regulatory protein and RNA polymerase must both bind together.
- D. a repressor prevents the ribosome from attaching to rRNA.

8) Match each mode of **horizontal gene transfer** with the statement that best describes it:

_____Conjugation

_____Transformation

- A. A genetic element that can move from one place in the DNA to another
- B. Movement and incorporation of free DNA into a bacterial cell
- C. The process by which two separate DNA molecules become incorporated into one
- D. Transfer of genes from one bacterium to another by a virus
- E. Transfer of genes requiring cell-to-cell contact

_____9) Which method would be best to identify a **new emerging viral pathogen**?

- A. Gram stain
- B. Phase-contrast microscopy
- C. The fluorescent in situ hybridization assay
- D. Transmission electron microscopy

_____10) **Fluorescently-labeled antibodies** can be used to identify a specific type of bacterial cell in a mixed population because

- A. antibodies kill off specific groups of bacteria.
- B. only that type of bacterial cell produces a fluorescently labeled antibody.
- C. that antibody binds only to a specific antigen on a bacterial cell envelope.
- D. that antibody gets taken into the bacterial cell through special transporters.

11) Match each bacterium with its typical characteristic.

_____ *Bacillus*

_____cyanobacteria

_____ *Pseudomonas*

_____ *Staphylococcus*

- A. Salt resistant bacteria commonly found on skin
- B. Gram-negative rods that respire and are often resistant to antibiotics
- C. Gram-positive rods that develop extremely resistant spore structures
- D. Photosynthetic bacteria that are very similar to chloroplasts