

1. Sulfur-oxidizing bacteria use CO₂ as carbon source and inorganic chemicals as electron/energy source. What is their major nutritional type? **Chemolithoautotrophy**
2. What is the difference between phylogeny and simple classification in taxonomy?
whether or not the ancestry relationship is considered (e.g. phylogeny - including information about ancestral relationship)
3. What does make *Mycobacteria* acid-fast? **Because of mycolic acids presenting in the cell wall, acidic alcohol destaining is not working for *Mycobacteria* stained with dyes**
4. The photosynthetic membranes of the green sulfur bacteria are called (**Chlorosome**)
5. Large spherical cells of cyanobacteria that are able to fix atmospheric nitrogen are referred to as **heterocysts** .
6. A peptidoglycan-like polymer found in the cell walls of some *Archaea* is called **_pseudomurein_**.
7. The photosynthetic membrane of *Halobacterium salinarum* contains photoreceptors called **_bacteriorhodopsin (or proteorhodopsin)_**.

***Examples:** Purple sulfur bacteria, Purple non-sulfur bacteria, Green sulfur bacteria, Green non-sulfur bacteria, *Cyanobacteria*, *Aquifex pyrophilus*, *Myxococcus*, *Desulfovibrio*, *Methanococcus*, *Borrelia burgdoferi*, *Bacteroides*, *Sulfolobus solfataricus*, *Treponema palladium*, *Nisseria*, *Burkholderia mallai*, *Bacillus subtilis*, *Halobacterium*, *Methanopyrus kandleri*, *Camylobacter*, *Streptococcus pyogenes*, *Escherichia coli*, *Vibrio cholerae*, *Vibrio fisheri*, *Staphylococcus aureus*, *Nitrobacter*, *Methanopyrus*, *Rhizobium*, *Methylococcus*, *Hyphomicrobium*, *Corynebacterium glutamicum*, *Clostridium*, *Streptomyces*, *Salmonella typhimurium*, *Thermoplasma*, *Nanoarchaeum equitans*, *Mycobacterium tuberculosis*, *Mycoplasma pneumoniae*, *Cytophaga*, *Klebsiella*, *Agrobacterium*, *Helicobacter pylori*, *Picrophilus*, *Heliobacteria*, *Caulobacter*, *Rhizobium*, *Methylococcus*, *Rickettsia*, *Bacillus thuringiensis*, *Planctomycetes*

8. anammoxosome *Planctomycetes*
9. industrial production of amino acids *Corynebacterium glutamicum*
10. which is currently used as a biological insecticide? *Bacillus thuringiensis*
11. an endosymbiotic ancestor for mitochondria *Rickettsia*
12. which is accumulating sulfur granules inside the cell? **Purple sulfur bacteria**
13. which is accumulating sulfur granules outside the cell? **Green sulfur bacteria**
14. thought to represent the oldest branch of the bacteria *Aquifex pyrophilus*
15. has a pH optimum below 1 and can even grow at or near pH 0 *Picrophilus*
16. which of the Archaea do not have cell walls? *Thermoplasma*
17. as much as 30% of the bacteria isolated from human feces belong to the genus *Bacteroides*
18. which bacteria is both photosynthetic and Gram-positive? *Heliobacteria*
19. *Spirochetes* *Borrelia burgdoferi*, *Treponema palladium*
20. which genera include bacteria with stalks? *Caulobacter*, *Hyphomicrobium*
21. responsible for peptic ulcer *Helicobacter pylori*
22. grow symbiotically in root nodules of legumes where they fix nitrogen *Rhizobium*
23. contain complex arrays of intracellular membranes when using methane *Methylococcus*
24. methylotrophic bacteria *Methylococcus*
25. methanogenic bacteria *Methanococcus*, *Methanopyrus (kandleri)*