

Name: _____ Date: _____ Period: _____

Honors Biology: Prokaryotes (16.1-16.8) Guided Reading
How are the various types of prokaryotes described and classified?

1. On your own...Read Sections 16.1-16.8

2. Define the following terms:

- Pathogen: a disease-causing agent such as a bacteria, virus or fungi
- Bacteria: $\left. \begin{array}{l} \text{one of the two prokaryotic domains of life} \end{array} \right\}$
- Archea: $\left. \begin{array}{l} \text{one of the two prokaryotic domains of life} \end{array} \right\}$
- Peptidoglycan: a polymer of complex sugars and polypeptides unique to bacterial cell walls
- Cocci: a spherical prokaryotic cell
- Bacilli: a rod-shaped prokaryotic cell
- Gram stain: used to identify bacterial cell wall composition (can be gram+ or gram-)
- Pilli: a short projection of prokaryotic cell used for attachment to surfaces or conjugation.
- Endospore: a thick-coated protective cell produced within a bacteria cell which can survive harsh conditions
- Autotrophs: an organism which makes its own food
- Heterotrophs: an organism which must obtain food by consuming other organisms or their organic products
- Chlamydias: a group of bacteria which live inside eukaryotic host cells
- Spirochetes: a group of helical bacteria which move by spiraling through their environment
- Gram-Positive bacteria: a group of bacteria with a less complex wall than gram-neg. Usually less harmful than gram-neg.
- Cyanobacteria: photoautotrophic prokaryotes that perform photosynthesis
- Endotoxins: a poisonous component of gram-neg bacterial outer membranes that is released when cell dies.
- Exotoxins: a poisonous protein secreted by certain bacteria

3. Are all bacteria harmful? Explain...

No... only pathogenic bacteria
many bacteria perform roles vital to the
survival of all life (eukaryotic) on Earth

4. Compare/contrast Bacteria and Archea:

See table 16.2 p. 321

- ↓
- decomposition of waste
 - "fixing" of Nitrogen
 - can provide essential nutrients

5. Describe the structural features that contribute to the widespread success of prokaryotes:

- External - cell walls... protection / barriers
 - Motility - flagella
 - Fast reproductive ability under favorable conditions
can produce endospores... which can survive harsh environments
 - Some can perform more complex metabolism (photosynth. / aerobic resp.)
6. Describe the various ways in which prokaryotes obtain nutrients and energy:

Autotrophs

- Can be chemo-
or photo-
- both use CO_2 as carbon source... get energy from sunlight or inorganic chemicals

Heterotrophs

- Chemo-
photo-
- both get carbon from organic molecules
 - energy from sun or organic molecules

7. Compare/contrast endo- and exotoxins:

- ↓
from gram-neg
bacteria cell
membranes
- meningitis
 - food poisoning

- ↓ proteins secreted by
bacteria
- ex: - tetanus
- T.S.S.