Chapter 15A; Bacteria and other prokaryotes

- _____
  - Are found wherever there is _____
  - Outnumber all _____ combined
  - Can cause _____
  - Can be _____

The Two Main Branches of Prokaryotic Evolution: Bacteria and Archaea

- The majority of _____ are _____
- _____ are an extremely old group of _____ (Archa- means old)
- They often live in very _____ environments:

Extremophiles

- Some archaea are "_____"
  - Extreme halophiles thrive in _____ environments
  - This picture shows bacteria growing in_____
- Extreme _____
  - Bacteria that inhabit very _____ water, like these hot _____
- _____
  - Inhabit the bottoms of lakes and _____
  - Produce the gas (_____) that rises to the surface as _____

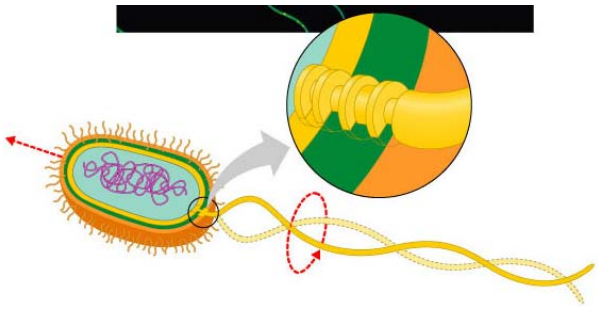
The Structure, Function, and Reproduction of Prokaryotes

- _____ cells (pro- means before, karyo- means envelope or membrane)
  - Lack a _____
  - Lack other membrane-enclosed _____
  - Have _____ walls on the outside of their _____ membranes

Prokaryotes	**Eukaryotes**
• One circular _____, not in a _____	Paired _____, in nuclear _____
• No _____ (organize DNA)	_____
• No _____	_____
• Peptidoglycan _____ walls	_____ cell walls (none in _____
• _____	Mitotis and _____

- Prokaryotes come in several _____
  - _____ (round, example; streptococcus)
  - _____ (rod-shaped, example; Bacillus subtilis)
  - _____ (_____, example; syphillis)
- Most prokaryotes are _____-cellular and very _____

- Some prokaryotes
  - Form true _____
  - Show _____ of cells
  - Are very _____
- About half of all prokaryotes are _____, using _____
- The flagella _____ in a whip-like fashion pushing the bacterium like a _____
- Some prokaryotes
  - Can survive extended _____ of very harsh _____
  - Form _____ (similar to cocoons) that help them _____



Binary Fission (fill in figure at right)

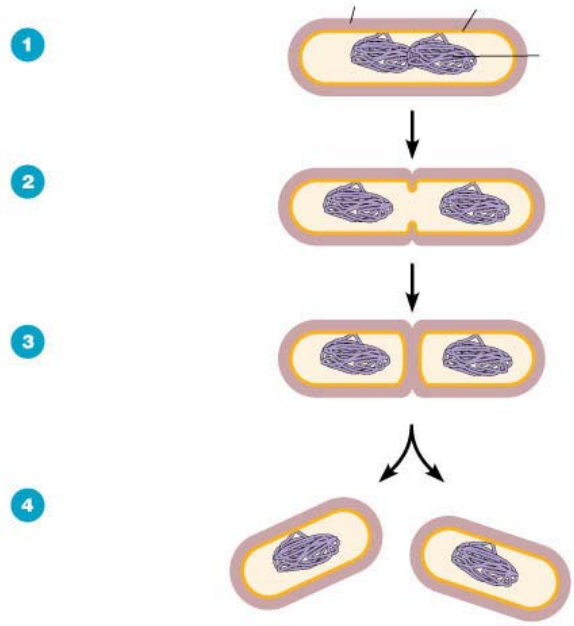
- Most prokaryotes can reproduce by _____ at very high rates if conditions are favorable
- Binary fission is not the same as _____
- What steps and structures are missing from these cells that you would find in your own during mitosis?

  _____

  _____

  _____

  ___



Bacteria That Cause Disease

- _____
  - Are _____ and other microorganisms that cause disease
  - Not all (or even _____) bacteria cause _____
- Most _____ bacteria
  - Cause disease by producing _____(toxins)
- _____
  - Are poisonous proteins _____ by bacterial cells_____
- _____
  - Are chemical components of the cell _____ of certain _____

Avoiding Disease

- The best defenses against bacterial _____ are
  - _____; hand washing and cleaning of _____
  - _____; chemicals which kill microbes inside of a living _____
  - Education; Why does this help?_____

    _____

Bacterial diseases

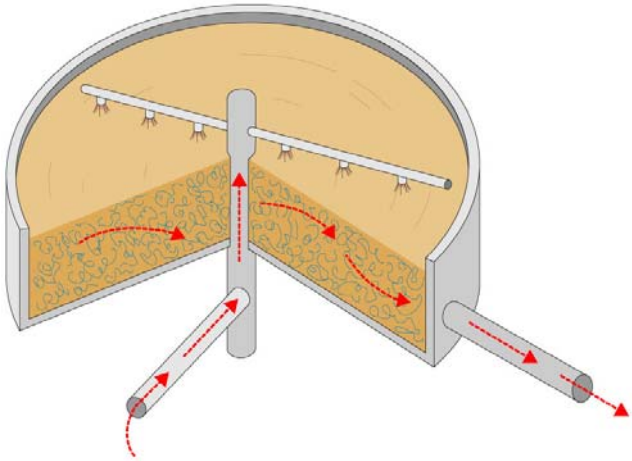
- _____ disease
  - Is caused by bacteria carried by deer _____
  - When the tick bites you, the _____ enter your _____

Prokaryotes and Chemical Recycling

- Prokaryotes play _____ roles
  - In chemical cycles in the _____
  - In the breakdown of _____ wastes and dead _____
  - Without _____, the materials inside dead organisms could not be _____ by other organisms

Prokaryotes and Bioremediation

- _____ is the use of organisms to remove _____ from water, air, and soil
  - A familiar example is use of prokaryotic _____ in _____ treatment (fill in figure →)



Review Questions;

1. True or False: All bacteria cause diseases in humans.
2. Name two ways in which humans benefit from bacteria;
3. True or False; if all of the bacteria on the Earth disappeared tomorrow, there would be no big problem
4. There are more bacteria in the world than animals T/F
5. The majority of prokaryotes are;
6. What are an extremely old group of prokaryotes?
7. When a prokaryote lives in an extreme environment, it is called an;
8. Bacteria that live in evaporative salt ponds are called extreme;
9. Bacteria that live in hot springs would be called;
10. Bacteria that live at the bottom of swamps and produce methane gas are called;
11. What structures are bacteria and other prokaryotes are missing that our cells have?
12. How is cell division in bacteria different from cell division in us?
13. Some animals have a cell wall T/F
14. How are the chromosomes of a bacterium different from ours?
15. What are the 3 basic bacterial cell shapes?
16. Most prokaryotes are very _____ and uni-_____
17. Prokaryotes are never large or group together to form colonies T/F
18. How do most bacteria move around?
19. How does a flagella work?
20. What internal cocoon do some bacteria produce that helps them survive harsh conditions?
21. Binary fission is basically the same as mitosis T/F
22. What are microorganisms called that cause disease?
23. Most bacteria in the world will make you sick if they get inside you T/F
24. Poisonous proteins secreted by living bacterial cells are called;
25. When a bacterium dies and part of its cell wall breaks off and goes into your blood, that would be an example of a;
26. What are the 3 best defenses against bacterial disease?
27. Hand washing and cleaning of surfaces are examples of increased;
28. What chemicals destroy bacteria inside of other living organisms?
29. How can you get Lyme disease?
30. Putting bacteria that digest oil on an oil slick to get rid of it is an example of;
31. How does sewage treatment work?