

Learn your Germs – Part 2: Bacteria

INTRODUCTION: Think Bacteria and Viruses are the same?

Website #1: http://archives.microbeworld.org/microbes/virus_bacterium.aspx

1. Complete the following table comparing viruses and bacteria

Characteristic	Bacteria	Virus
Larger or smaller?		
More or less complex?		
Cell membrane and/or cell wall?		
DNA?		
Reproduce independently?		
Cause disease?		

Website 2: <http://micro.magnet.fsu.edu/cells/index.html> (use the *Relative Size and Detection Chart* at the top of the page.)

2. Can bacteria or viruses be seen with the naked eye?
3. Can bacteria be viewed with a light microscope?
4. Which kind of microscope is needed to view virus? Why?

Bacteria Basics

Website 3: <http://www.beyondbooks.com/lif72/2a.asp>

5. Where can we find bacteria living?
6. How many bacteria can fit the period at the end of a sentence
7. Are bacteria unicellular or multicellular?
8. How are they different from eukaryotes?
9. How old is the earliest bacteria fossil?
10. What are Eubacteria?

11. Bacteria Shapes: sketch and describe these bacteria shapes

- a. Cocci
- b. Bacilli
- c. Spirilla

Archae (aka Archabacteria)

Website 4: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/A/Archaea.html>

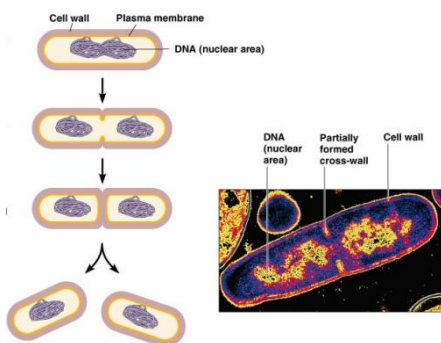
- 12. When did scientists realize that archae are different from bacteria?
- 13. Why did people think they were the same?
- 14. How are they different?
- 15. Types of Archae: read this section and complete the chart below. Place check marks in the appropriate boxes.

	Thermophile	Halophile	Acidophile
Prefers high salt conditions			
Prefers high temperatures			
Prefers acidic environments			
lives in swamps, marshes, cattle rumen and OUR intestines			
lives in the Great Salt Lake and The Dead Sea			
live in the hot springs of Yellowstone National Park and in the undersea vents			

Cell Division

Website 5: <http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookmito.html> click on Prokaryotic Cell Division at the top of the page.

- 16. What do we call the process of cell division in bacteria?
- 17. Why is this process less complex than mitosis in eukaryotic cells?



18. Watch the animated gif, briefly describe the events that occur during binary fission.

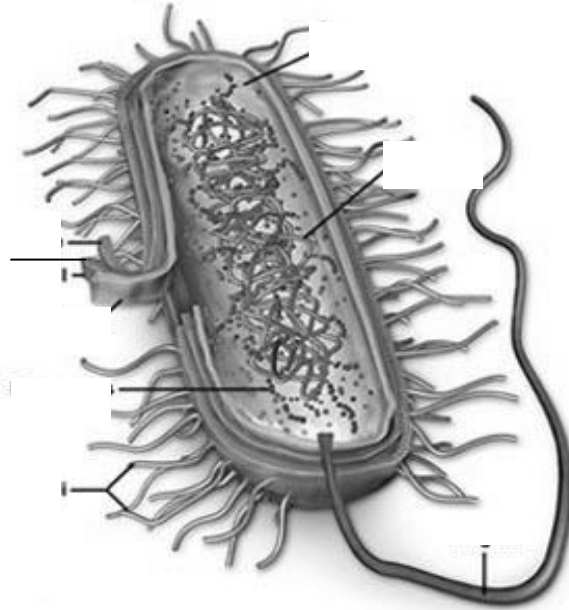
19. Is this sexual or asexual reproduction?

20. How do the two daughter cells compare to the parent cell?

Bacteria Structure

Website 6: <http://www.cellsalive.com/cells/bactcell.htm>

Label the parts of the bacterium: flagella, pilli, nucleoid(DNA), ribosomes, cell membrane, cell wall, capsule



Genetic Recombination Genetic:

Website 7: http://glencoe.mcgraw-hill.com/sites/9834092339/student_view0/chapter28/bacterial_conjugation_-_transfer_of_a_plasmid.html

21. During conjugation, what is transferred from one bacteria to the next?

22. What is the role of the pilus in this process?

23. What is the purpose of conjugation?

Website 8: <http://academic.pgcc.edu/~kroberts/Lecture/Chapter%207/horizontal.html>

24. How is **transduction** different from conjugation? (I.e. what is involved with the genetic exchange?)

25. Using the chart at the top of the page, what is the source of the DNA in the process of transformation?

Bacteria Metabolism:

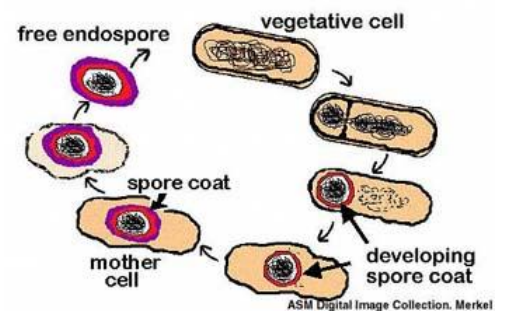
Website 9: <http://www.ucmp.berkeley.edu/bacteria/bacterialh.html>

26. What are **pathogenic** bacteria?
27. What do **aerobic** bacteria require?
28. Where do **anaerobic** bacteria live and what can they cause?
29. How do **facultative anaerobic** bacteria differ from the other two?
30. What is **decomposition** and how do bacteria play a role in the environment?
31. What is **nitrogen fixation** and why are bacteria crucial to this cycle of life?

Website 10: <http://www.micro.cornell.edu/cals/micro/research/labs/angert-lab/bacterialendo.cfm>

32. Why do certain bacteria become **endospores**?

33. What kinds of conditions can they survive?



Helpful/Harmful Bacteria – Complete this section with your teacher

34. How can bacteria be helpful?
35. How can bacteria be harmful?