

HOW ARE BACTERIA CLASSIFIED?

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I. Kingdom Monerans. Bacteria are in the Kingdom Monerans. They are not animals, plants, fungi or viruses. What makes them different? Let's find out—fill in the chart below using yes/no.

	<u>Animals</u>	<u>Plants</u>	<u>Monerans</u>	<u>Viruses</u>
Cytoplasm				
Nucleus				
Nucleic Material				
Wall				
Carries on Life processes				
Reproduces Without host				
Chlorophyll				
Protein coat				
Made of or is a cell				
Endospore or capsule				
Cell membrane				

II. Bacterial Shapes and Groupings

The three main shapes of bacteria are spherical (cocci), rod-shaped (bacillus) and spiral (spirillum). Even though bacteria are unicellular, they may not always appear as single cells. Often, they are found in clumps, groups or chains. Bacteria are identified and named by their shapes and the way that they appear in groups.

Using the prefixes, draw what these bacteria would look like if they were cocci.

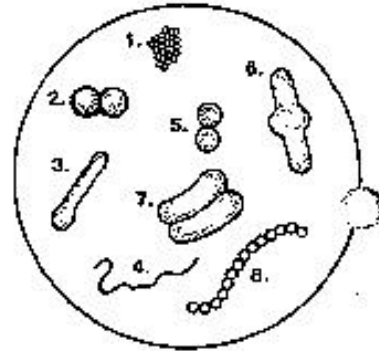
Pair	diplo-	group of four	tetra-
Chain	strepto	clump	staphylo-

III. Viewing bacteria in the microscope. Imagine you are looking through your microscope you find all the bacteria below in your field of vision. Your job is to identify all these bacteria and separate the helpful ones from the harmful ones. You can do this by using the bacteria key given below. Using a dichotomous key to identify bacteria. Pick the bacterium you want to identify. Observe its shape and characteristics. Start at 1a and 1b in the key. Read each statement and choose the true statement concerning the bacterium. Continue choosing statements from the key until you arrive at the bacterium's species name. The key also lists the disease caused by the bacterium (harmful) or in what food the bacterium can be found (helpful). Identify all the bacteria and tell if each is helpful or harmful on the lines below

NAME OF BACTERIUM

HELPFUL OR HARMFUL?

1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____



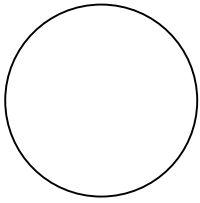
BACTERIA KEY

- | | |
|--|---|
| <p>1a. IF THE BACTERIUM IS ROUND, GO TO 2.</p> <p>1b. IF THE BACTERIUM IS NOT ROUND, GO TO 5.</p> <p>2a. IF THE BACTERIUM IS IN PAIRS, GO TO 3.</p> <p>2b. IF THE BACTERIUM IS NOT IN PAIRS, GO TO 4.</p> <p>3a. IF THE BACTERIUM IS WITHOUT A HEAVY COVERING, it is <i>Diplococcus meningitidis</i> which causes spinal meningitis.</p> <p>3b. IF THE BACTERIUM HAS A HEAVY COVERING, it is <i>Diplococcus pneumoniae</i> which causes pneumonia.</p> <p>4a. IF THE BACTERIUM IS IN A CHAIN, it is <i>Streptococcus lactis</i> which forms buttermilk.</p> | <p>4b. IF THE BACTERIUM IS NOT IN A CHAIN BUT IN CLUMPS, it is <i>Staphylococcus aureus</i> which causes boils and TSS (Toxic Shock Syndrome).</p> <p>5a. IF THE BACTERIUM IS ROD-SHAPED, GO TO 6.</p> <p>5b. IF THE BACTERIUM IS SPIRAL-SHAPED, it is <i>Treponema pallidum</i> which causes syphilis.</p> <p>6a. IF THE BACTERIUM IS IN PAIRS, it is <i>Bacillus lactis</i> which forms sauerkraut.</p> <p>6b. IF THE BACTERIUM IS NOT IN PAIRS, GO TO 7.</p> <p>7a. IF THE BACTERIUM HAS A BULGE IN THE MIDDLE, it is <i>Bacillus botulinum</i> which causes botulism (food poisoning).</p> <p>7b. IF THE BACTERIUM HAS A BULGE THE END, it is <i>Bacillus tetani</i> which causes tetanus.</p> |
|--|---|

In the blanks below, classify the bacteria in the picture according to the three basic shapes. Write the number of all of the coccus bacteria _____, all of the bacillus bacteria _____ and all the spirillum _____.

IV. Using a microscope look at the following slides under low and then high power: bacillus subtilis, proteus vulgaris, streptococcus pneumonia, staphylococcus aureus, salmonella typhi, bacillus anthracis, clostridium tetani, clostridium botulinum.

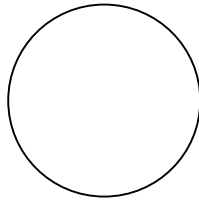
Draw a sketch in the circles below of the way each slide looks. Decide what shape you have, how they are grouped and whether they appear to be red-pink or blue-purple. Write the name of the slide under each picture.- the name will help you determine the shape to draw in your picture.



Name _____

Shape _____

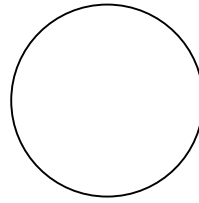
Color _____



Name _____

Shape _____

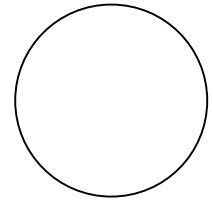
Color _____



Name _____

Shape _____

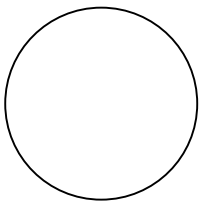
Color _____



Name _____

Shape _____

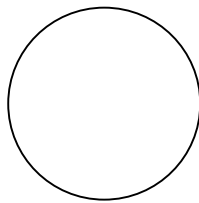
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Name _____

Shape _____

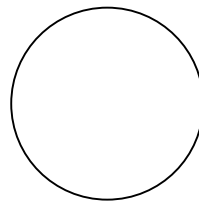
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Name _____

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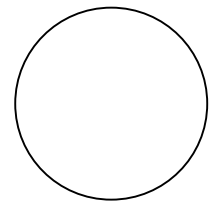
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Name _____

Shape _____

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Name _____

Shape _____

Color _____

