Biology 11 J. Harwood Howe Sound Secondary School

Bacteria Lab

Purpose: To identify, draw and classify different types of bacteria.

Materials: prepared slides of bacteria, compound light microscope.

Background Information: Use your textbook.

- 1. Describe the field of microbiology. (p. 214)
- 2. What are the characteristics of bacteria? (p. 215)

Procedure:

All work can be done on blank white paper. Use a pencil and proper biological drawings.

Part A: Three basic shapes of bacteria - use your text reference p. 215.

- 1. View the prepared slides of bacteria under high power.
- 2. Identify and draw each bacteria type cocci, bacilli, spirilla
- 3. Under your drawings, label each bacteria type and list the identifying characteristics (e.g. round, rod, spiral shaped) of each type of bacteria.
 - You should have 3 scientific drawings. Complete drawings at high power for your microscope.
 - Don't forget the 'requirements' for a scientific drawing: field of view, title, magnification, etc...





1. Use the dichotomous key (on the last page) to identify the bacteria provided.

Use the dichotomous key to classify each of the following Bacteria



- 1. What would it mean if a person had a strep infection?
- 2. What would it mean if a person had a staph infection?

Classifying Bacteria - Dichotomous Key

If the general shape of a bacterium is round, go to section I (skip II and III)

If the general shape of a bacterium is rod, go to section II (skip I and III)

If the general shape of a bacterium is spiral, go to section III (skip I and II)

Section I

If in pairs, go to a or a' only If in chains, go to b or b' only If in clumps, go to C only

a - without a heavy capsule (cover) - Diplococcus meningitidis (spinal meningitis)
a' - with a heavy capsule - Diplococcus pneumoniae (Pneumonia)
b - large in size - Streptococcus pyogenes (Tonsillitis)
b' - small in size - Streptococcus lactis (Buttermilk)
c - Staphylococcus aureus (boils)

Section II

If in chains, go to d only If in pairs, go to e only If single, go to f or f' or f"

d - Bacillus anthracis (Anthrax)

e - Bacillus lactis (Sauerkraut)

f - with flagella (hairs) - Bacillus typhosa (Typhoid fever)

f' - with a bulge (spore) in middle - Bacillus botulinum (Botulism poisoning)

f" - with a bulge (spore) at end - Bacillus tetani (Tetanus)

Section III

Treponema pallidum (Syphilis)

Part C: Discussion questions

- Many bacteria are <u>heterotrophs</u> while cyanobacteria (blue green algae) are <u>autotrophs</u>. What is the difference between a heterotroph and an autotroph (use your textbook glossary and/or index)?
- 2. Use your text (p. 216-217) to describe how bacteria reproduce by:

a. binary fission

b. conjugation (include the role of plasmids)

- 3. Describe how some bacteria use endospores (p.217).
- 4. What is a symbiotic relationship? What are the different kinds of symbiotic relationships? Provide an example of a bacteria type for each (use your textbook glossary and/or index, and research if necessary).

- 5. Define the following terms (p. 216 and/or research):
 - obligate anaerobes
 - faculative anaerobes
 - obligate aerobes
 - fermentation