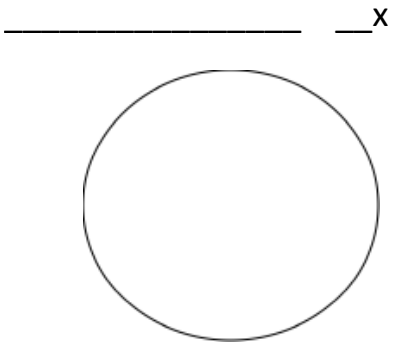
18. Bacterial morphology

A. Bacteria: brief background

The bacteria domain includes living species of independent cells, usually with DNA packaged in a long chromosome. Bacteria also have rings of DNA (plasmids) that may contain genes for resistance to antibiotic medicines. Distinctive cell shapes (shape = morphology) are found in different bacterial species.



Common bacterial morphologies:

Coccus (sphere-shaped; plural cocci)

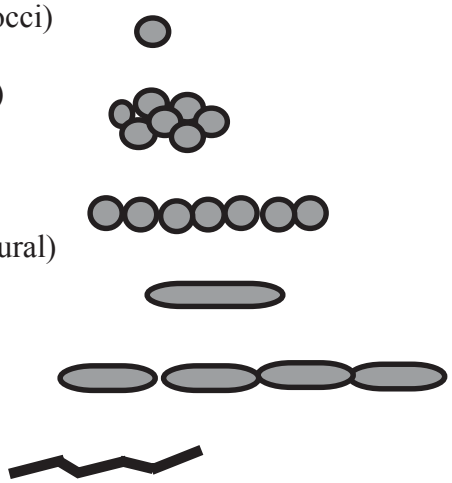
Staphylococcus (mass of coccus)

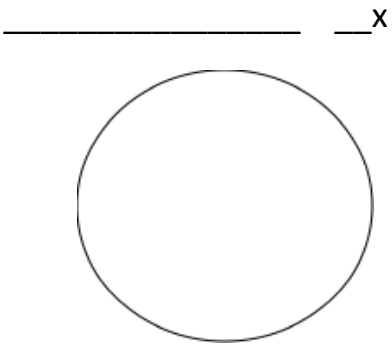
Streptococcus (chain of coccus)

Bacillus (rod-shaped; bacilli is plural)

Streptobacillus (chain of bacilli)

Spirillum (spiral or twisted)





C. Negative stain:

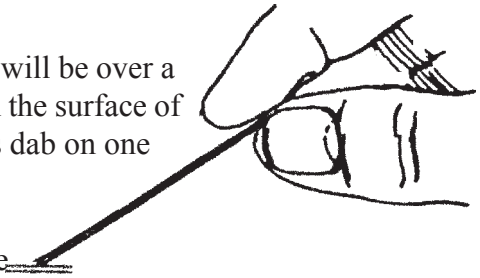
B. Bacteria on prepared slides

1. Begin on scanning power, even though individual bacteria are too small to be seen at this magnification.On scanning power, search for a blurry or colored area on the slide. Focus on this area, rotate to low, then to high power (450 or 400x).

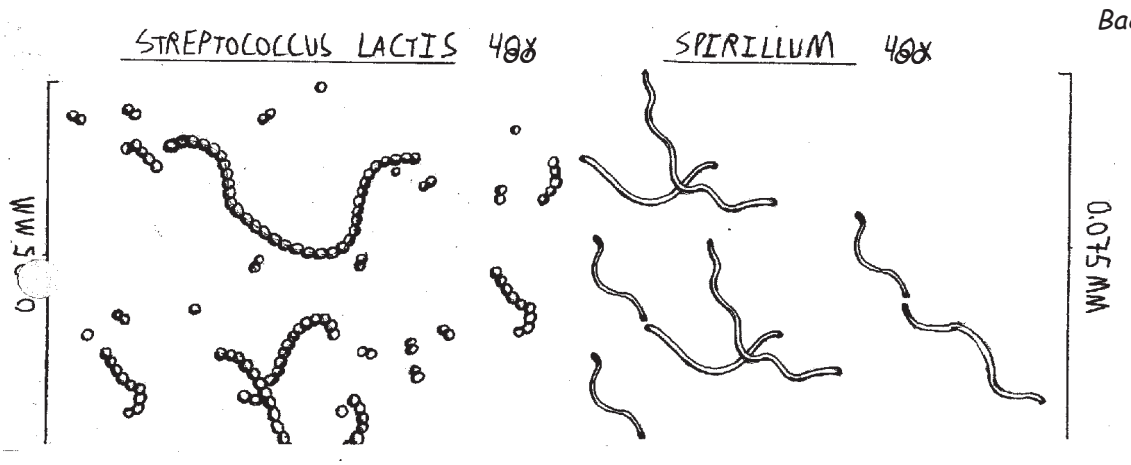
2. Search around the cloudy areas on high power and look for tiny shapes. Be patient, bacteria are incredibly small. If you cannot see them, do not search for more than a few minutes on high power. Switch back to scanning power, find another patch of color and work your way up to high again.

3. When you find bacteria, draw and measure two types.
(see examples on next page).

a. Use an applicator to collect bacteria from a culture. There will be over a million bacteria growing on the culture. Take a tiny dab from the surface of the culture (don't scoop it out like peanut butter). Smear this dab on one end of your slide.



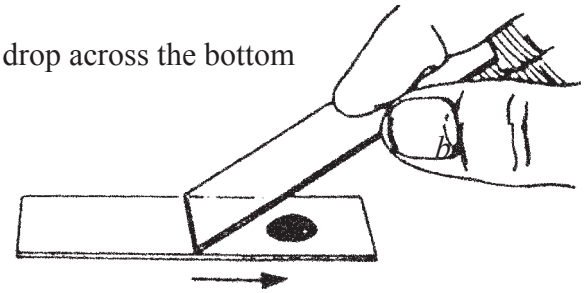
b. Put one drop of nigrosine stain on the bacteria smear. Slide a microscope slide back until it touches the drop.



Bacteria
400x

Your slide may be different than this example.

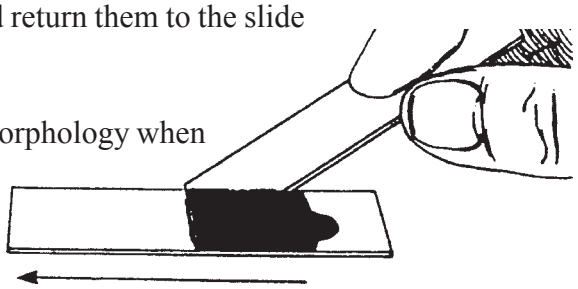
c. Smear the drop by using the top slide to pull the drop across the bottom slide. Let this dry.



d. Search for bacterial shapes. Measure and label. Remember, bacteria are tiny. They may look like little dots or rods in a sea of black. Draw, label and measure the bacteria.

e. Allow time at the end to clean up your stained slides. Dip slides in 10% bleach solution to sterilize them. Dry your slides and return them to the slide box. Wash your hands thoroughly.

Be prepared to identify different types of bacterial morphology when the instructor checks off your lab report.



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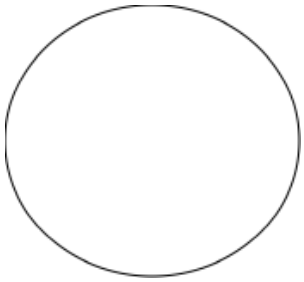

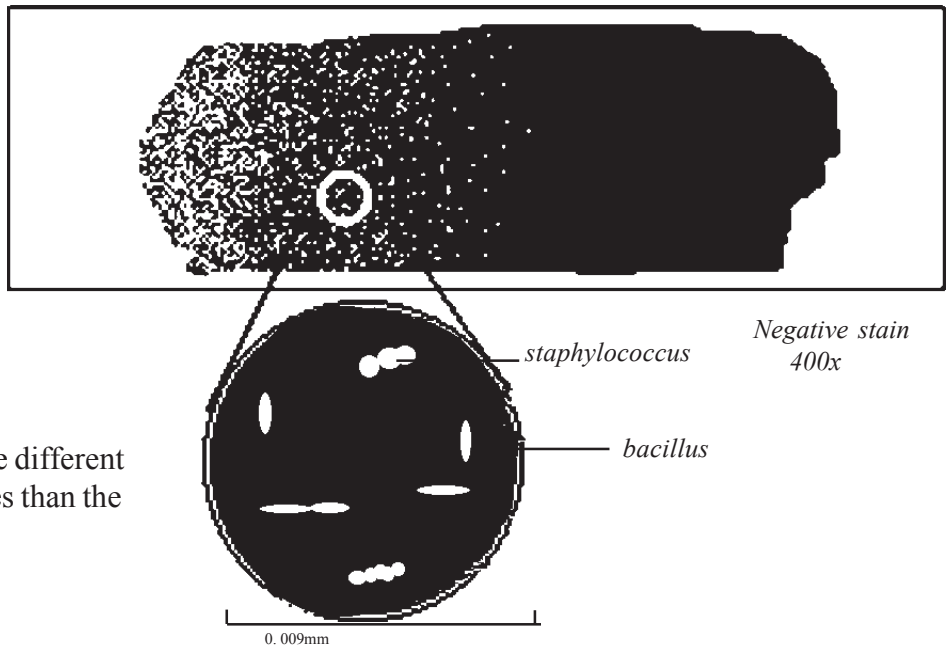

Negative stain
400x

Your culture may have different bacterial morphologies than the examples shown here.