NAME _____

DATE _____

Introduction to Prokaryotes: Archaea

Archaea are prokayrotes and are similar in size and shape to bacteria. They differ from bacteria in the composition of their cell walls, their tRNA, and in other ways. Many archaea are extremophiles; that is, they live at extremes of temperature, pH, or other environmental conditions that would destroy many other life forms. In this activity you will study the growth of *Halobacterium*, a member of the Archaea. You will inoculate a pure culture of *Halobacterium* onto nutrient agar, a standard medium for culturing a wide range of microorganisms, and onto *Halobacterium* agar, which is similar in composition to nutrient agar but with the addition of 250 g of NaCl per liter of medium. After incubation, you will observe the growth, if any, of *Halobacterium* on these two media.

Streaking plates

Proceed to a workstation and pick up an agar plate poured with *Halobacterium* agar. Invert the plate and mark the bottom with an "H" for *Halobacterium* agar. Also mark it with the date and your initials. Repeat with a nutrient agar plate, but mark it "N" for nutrient agar. Use the following procedure for streaking the plates.

1. Pass the inoculating loop through the burner flame. After flaming, do not put the loop down or allow it to touch any surface.
2. Using the hand that is not holding the inoculating loop, pick up the *Halobacterium* culture tube. Check that the cap is tight before inverting the tube a couple of times to suspend the cells.
3. After suspending the cells, hold the tube at approximately a 45° angle while performing the following steps.
4. Use the little finger of the hand holding the inoculating loop to grasp and remove the cap from the culture tube. Do not put the cap down or allow it to touch any surface.
5. Pass the mouth of the tube through the burner flame.
6. Insert the inoculating loop into the liquid culture in the tube. Remove the loop, reflame the mouth of the tube, and cap it. Replace the culture tube in its rack.
7. Lift the lid of the *Halobacterium* agar plate just enough to insert the loop and, using a zigzag pattern, drag the loop across the agar surface, trying to cover as much of the agar surface as possible. Do not gouge the loop into the agar.
8. Reflame the loop.
9. Repeat for the nutrient agar plate.

Incubating plates

Invert the plates and place them in a resealable plastic bag along with a notecard with your initials and the date. Plates are incubated inverted so that any condensation will fall onto the lid rather than on the agar surface, where it might cause contamination. Below, record the conditions of incubation.

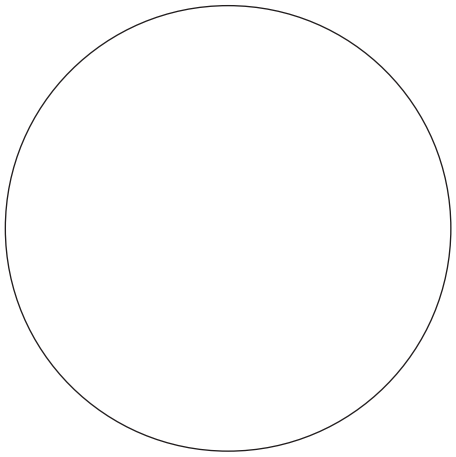
_____

_____

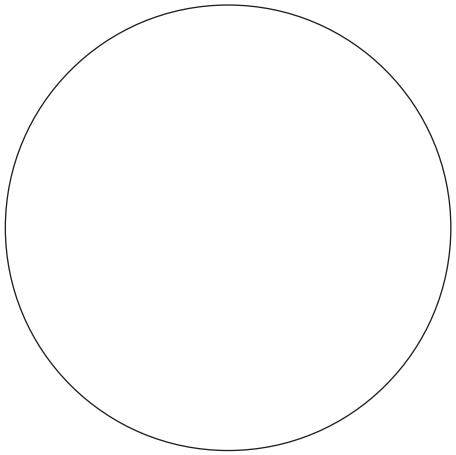
Reading plates

Record below your observations of the incubated plates.

Halobacterium agar plate



Nutrient agar plate



In which of the following, would you be most likely to find *Halobacterium*? (Circle your answers.)

Lake Michigan	Atlantic Ocean
Dead Sea	Great Salt Lake
Walden Pond	Owens Lake, California

Is *Halobacterium* an extremophile? Explain your answer.

Carolina Biological Supply Company
2700 York Road, Burlington, North Carolina 27215
Phone: 800.334.5551 • Fax: 800.222.7112
Technical Support: 800.227.1150 • www.carolina.com
CB163691403