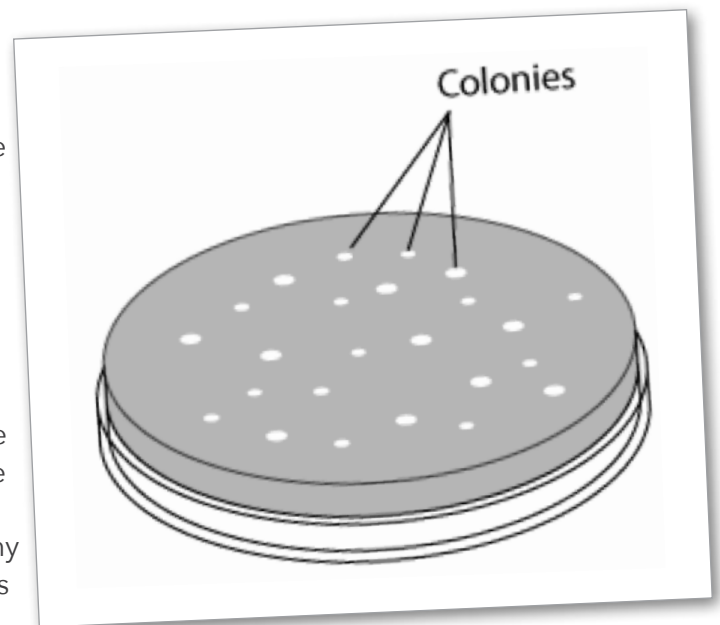


Culturing Great Salt Lake Microbes

Background

Microbes are everywhere, living by the billions in our water, soil, and air. They are a vital part of any ecosystem, as they recycle nutrients, produce oxygen, provide nitrogen for plants, breakdown pollutants, and are a food source for other organisms. Yet because they are so tiny, we barely notice them.

If you give microbes the food they need and a comfortable environment, an individual microscopic cell can grow and multiply to form a visible "colony." If you have seen spots of mold on a piece of bread, or slimy spots on leftover food in the refrigerator, then you have seen colonies. A colony is made up of millions of genetically identical cells that are all descendants of a single cell. Different kinds of microbes form colonies with different colors, shapes, and textures.



What do the microbes of Great Salt Lake look like? For this lab, you will grow colonies of Great Salt Lake microbes. You will begin by spreading a sample on a plate filled with sterile growth media, which gives the microbes the basic nutrients they need to grow and reproduce. With time and under the right conditions, the microbes will form colonies that you can observe.

FOR LIQUID SAMPLES

You will need the following materials:

- Agar plate(s)
- Water sample(s)
- Sterile pipet(s)
- Sterile spreading tool(s)
- Markers
- Tape or Parafilm

1. Label your plate(s) with the following:

- Your name
- Today's date
- Description of the sample

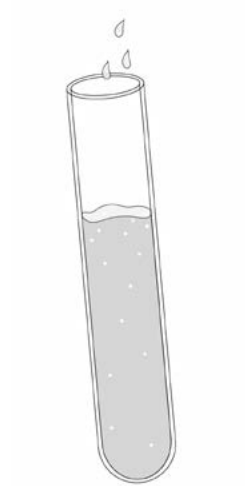
2. Determine how much sample you will put on your agar plate. The suggestions below are for a 100 mm agar plate, adjust as needed:

- Clear sample from the lake = 10-15 drops
- Murky sample from the lake = 5-10 drops
- Sample from an incubated Winogradsky Column = 3-5 drops

Holding the lid slightly open, use a sterile pipet to drip your water sample onto the surface of the agar. Do not let the pipet touch the agar.

3. Use a sterile spreading tool to gently spread the water sample across the surface of the agar. Be careful not to dig into the agar, just barely smudge the surface.
4. Replace the lid and leave the plate to sit until all the liquid is absorbed. Seal the edges of the plate with tape or Parafilm.
5. If you are plating multiple samples, repeat the steps above with a clean pipet and spreading tool each time.
6. Store your plates upside down in an incubator, or a dark, warm place. Observe and record microbial growth each day.

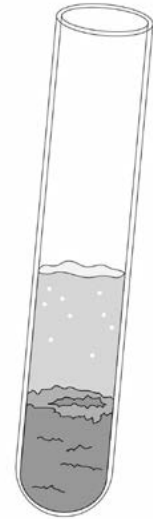
Observations:



FOR SEDIMENT SAMPLES

You will need the following materials:

- Agar plate(s)
- Sediment sample(s)
- Inoculating loop(s) (optional)
- Sterile pipets
- Small sterile container(s) or tube(s)
- Distilled water
- Sterile spreading tool(s)
- Markers
- Tape or Parafilm



TIP: It's ok if you don't see anything on your plate right away. Microbes are very tiny—they're on there, even though you can't see them.

1. Label your plate(s) with the following:
 - Your name
 - Today's date
 - Description of the sample
2. Scoop out a small amount of sample with a pipet or an inoculating loop and put it into a sterile container or tube.
3. Add a small amount of distilled water and pipet up and down to mix the solid with the liquid. Let the solids settle out of the sample for a few seconds.
4. Holding the lid slightly open, use a sterile pipet to drip 1-3 drops of the liquid onto your agar plate. Do not let the pipet touch the agar.
5. Use a sterile spreading tool to gently spread the sample across the surface of the agar. Be careful not to dig into the agar, just barely smudge the surface.
6. Replace the lid and seal the edge with tape or Parafilm.
7. If you are plating multiple samples, repeat the steps above with new sterile containers, pipettes, and spreading tools each time.
8. Store your plates upside down in an incubator, or a dark, warm place. Observe and record microbial growth each day.

Observations: