

## Resource 4 – Growing bacteria

In this activity you will grow colonies of bacteria collected from sites around the school.

### What you will need

- Petri dishes with lids.
- Agar.
- Beef stock (powdered).
- Incubator.
- Hot water.
- Hand lens or stereo microscope.

### Background

Bacteria are very small and can only be seen with high-powered microscopes. A single grain of dirt may contain over 1,000,000 individual bacteria!

Bacteria can be found wherever life can exist. They play a very important role in the treatment of sewage as they break down the organic matter (this can include faeces, fats and oils). In this experiment you will grow bacteria. What you will see are large numbers of bacteria that clump together to form colonies.

### What to do

Firstly, you will need to prepare good living conditions for the bacteria.

Your teacher may supply plates called **agar plates** to complete this experiment. Or you can make your own by mixing half a teaspoon of beef stock powder and one teaspoon of agar into 100 cm<sup>3</sup> of near boiling water. Stir to dissolve the stock powder and then add the mixture to Petri dishes that have lids. Allow the dishes to cool and the agar to harden.

Next you will need to encourage the bacteria to grow. As they are everywhere, this is not difficult.

Try the following methods (or you could think of where you could collect your own sources of bacteria, but ask your teacher first).

- Expose one plate to the air in the school grounds and another in the classroom.
- Touch one with your thumb.
- Add the scrapings from under your finder nail.

Put the lids back on the Petri dishes. Tape them closed, label them and put them upside down into the incubator at 37°C for 24 hours.

**Caution: You should never open these dishes as you may be growing microorganisms that are dangerous. Your teacher will dispose of the dishes once you have completed the experiment.**

After 24 hours, look closely at the dishes. A stereo-microscope or lens will be useful. Complete the table below by drawing the colonies that you see and describing them.

You will find that microorganisms other than bacteria may grow on the plates, particularly fungi. Your teacher will be able to identify the different types of organisms growing on the plates.

Source of bacteria	Drawing of dish	Description of what has grown

### Questions

1. Which Petri dish has the greatest growth? Which the least?
2. Which dish had the largest number of different looking colonies of bacteria?
3. Within 24 hours you could see colonies where previously you could see none. What does this say about the growth of bacteria in terms of numbers?

## Further research

There are many interesting websites about bacteria. Access the following websites as a starting point.

Nanoworld on the University of Queensland website

<http://www.uq.edu.au/nanoworld/scalemag.html>

SuiteUniversity website

<http://www.suite101.com/article.cfm/microbiology/1083>