

How to Grow Bacteria

Do you want to see bacteria with your own eyes on a Petri dish?

Here's a recipe for you:

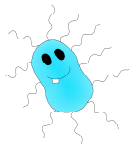
Caution! For this experiment, you need to use boiling water. Hot water must only be handled by an adult.

Materials & equipment needed:

- 1 cup of water
- 1 teaspoon of agar or gelatin (gelatin may be easier to get, but can be liquefied by some bacteria)
- 1 teaspoon of sugar
- 1 teaspoon of beef- or chicken stock powder
- 1 microwavable glass- or plastic bowl
- Spoon
- 1 to 2 Petri dishes
- Sticky tape
- Felt-tip pen to label Petri dishes
- A warm place for incubation of the Petri dishes (e.g. under a lamp, near a heater, etc.)

How to proceed:

- a. Pour the water into the bowl and bring to the boil in the microwave.
- b. Add sugar, agar and meat stock powder to the boiling water and stir with spoon until all the ingredients have dissolved.
- c. Cool the mixture for a couple of minutes. The mixture needs to be still liquid and hot.
- d. Take the lids off the Petri dishes, but hold them as close above the Petri dishes as possible to avoid contamination. Have an adult quickly half-fill the Petri dishes with the hot mixture and immediately put the lids back on the Petri dishes. Do one Petri dish at a time. This should be done as fast as possible to avoid contamination with bacteria in the air.



- e. Put the Petri dishes in the fridge for a couple of hours until the mixture has set and become solid. Once solid turn them upside down for storage. If you have worked properly, limiting contamination, you should be able to store the Petri dishes in the fridge for some days without unwanted growth of bacteria or fungi.
- f. When you are ready to collect and grow your bacteria take the Petri dishes out of the fridge and expose them to bacteria (you may also catch some fungi). Here are some suggestions for gaining bacteria:
 - Gently print your fingers in the agar of the Petri dish;
 - Leave the Petri dish open for a couple of hours to expose it to the air;
 - Sprinkle some soil in a glass of water, mix and transfer some of the water with a cotton swab to the Petri dish;
 - Use a clean cotton swab to run it along various things and then rub it lightly across the agar of the Petri dish (you can e.g. do this with your skin, your mouth, the toilet seat, a computer keyboard, door handle, etc.
- g. Put the lids back on the Petri dishes, turn them upside down and label them on the back with your felt-tip pen. Incubate the Petri dishes for 1 to 2 days in your incubator (warm place) or leave them at room temperature for up to 5 days. It is necessary to incubate the plates upside down to avoid condensation water from the lids dripping on the agar.
- h. Observe every day. After a while you will start to see bacteria colonies or fungi that will grow bigger each day. If you want to slow down growth seal the Petri dishes with tape and put them back in the fridge. Keep them separated from food.
- i. Once your experiment is finished, dispose the sealed Petri dishes in the bin.