

Build a Bacteria!

Activity Guide

Discover the diversity of bacteria and get creative making your own model bacteria!

Suitable for: age 7-11

Estimated duration: 30 minutes

You will need (per learner):

- Worksheets
- Glue or tape
- Pencils
- Coloured pens (green, blue, red, purple, yellow)
- Printed gene cards and blue tac (optional: laminated with velcro)
- Coloured paper or card
- Scissors
- String or coloured yarn

Introduction

Bacteria come in lots of shapes and sizes. When we identify bacteria in the laboratory we often name them by their shape or where they are found.

Round ones are called cocci, rod shaped ones are called bacilli, gently curved ones vibrio, and spiral ones are called spirilla or spirochetes. Some bacteria create a chain of multiple bacterial cells. Some bacteria can move around: tail-like structures called flagella allow some bacteria to move around their environment.

Bacteria have different surface proteins which can effect whether they can cause illness in humans.

Running the activity

Warm up discussion

- Begin by introducing the topic of bacteria - and introducing that bacteria come in lots of shapes and sizes, some might make us ill but some are helpful to us.

How to complete the activity

- Each learner has a worksheet to help them collect Gene Cards for each section.
- Each learner randomly picks a Gene Card for each section of their worksheet, and follows the instructions to build out their bacteria model!

1. *Bacterium shape*

- This card will determine the shape of the bacteria.
- Learners choose one blue Gene Card, which will give them 'rod' (oval) or 'sphere' (circle) bacterium shape.
- Learners draw a circle or oval onto a piece of colourful paper.

2. *Bacterium cell wall*

- This card will determine whether the bacteria is 'gram positive' or 'gram negative'.
- Learners choose one purple Gene Card, which will give them a 'gram positive' or 'gram negative' bacteria.
- Learners with gram positive bacteria should add a border to their shape in purple pen. Learners with gram negative bacteria don't need to add a border.
- Learners cut out their bacteria shape.

3. *How many bacteria?*

- This card will determine how many bacteria the learners will be making.
- Learners choose one orange Gene Card, which will indicate they are making two, three or four bacteria.
- Learners make additional bacteria following steps 1 and 2 to arrive at their total number of bacteria needed.
- Learners glue or tape together bacteria into a line.

4. *Flagella location*

- This card will determine where on their bacteria chain the flagella (which are like tails for bacteria) will be.
- Learners choose one green Gene Card, which will indicate their flagella are either 'at one end', 'at two ends' or 'all around' their bacteria chain.
- Learners use string or yarn with tape to add to their bacteria.

5. *Special Features*

- These cards will determine the surface features present on the bacteria - which give the bacteria different abilities.
- Learners choose two pink Gene Cards, which will indicate if their bacteria has one of the following abilities: immunity response trigger (i.e. their bacteria will activate the host immune response); immunity response evader (i.e. their bacteria can hide from the host immune system); pili (a surface protein that allows two bacteria to swap bits of DNA); toxin release (i.e. their bacteria can release toxins); cell wall support (i.e. their bacteria has an extra strong cell wall).
- Learners use the corresponding coloured pen to add dots to the surface of their bacteria.

Follow-on questions

- Ask the learners what their bacteria's features might mean in terms of whether they might cause harm to human health.