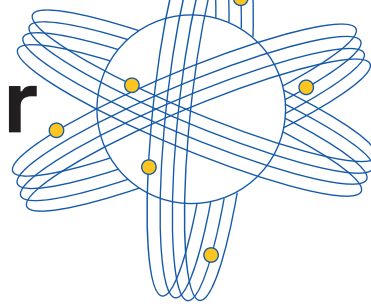


# Design a Virus or Bacteria Model



Cold and flu season is here with runny noses and sore throats. But beneath the surface, an incredible microscopic battle is taking place inside our bodies.

Viruses and bacteria may make us sick, but they are built very differently. Viruses are made up of protective capsids and spike proteins that help them invade cells, while bacteria are fully functioning cells with structures that help them grow and reproduce. Both rely on DNA or RNA – the instructions that control how living things function.

With July also marking Plastic Free July, this is a great opportunity to reuse household plastics while learning about the science behind health and disease.

## TĪMATA! LET'S GET STARTED!

### What you will need:

- Plastics – This is your chance to reuse that plastic sitting around the house. Doon't buy anything new this is about repurposing what you already have!
- Mahi toi (Art Materials) – Get creative. You can use pencils, paint, pens, coloured paper.
- Adhesives
- Cutting Tool – Use carefully. Those under four or anyone using a saw or power tool will need close, careful supervision.

### Instructions:

Assemble your materials and make a plan of action. What shape will your virus or bacterium be? What components will be included in your model? Use your materials and your creativity to drive your options. There are no wrong choices, as nature shows us.

### Purpose and Connection

Visualising the complex structures of germs can help us understand what happens in our body when it is infected and how we treat and prevent illness. Resting and taking the right kind of medicine allows your body to respond and recover while this biological battle takes place. When we know what is happening on a molecular level, we can appreciate the steps necessary to heal our bodies so that we enable a return to our normal daily duties.

### Reflect:

- What did you learn when creating your model? The microscopic world is an amazing place, both for its complexity and its simplicity.

**Microbes come in all sorts of shapes and sizes!** \*Not to scale

**Viruses**

Polyhedral  
Spherical  
Helical  
Complex

**Bacteria**

Spherical  
Rod  
Spiral and other

**What will your model microbe look like?**

**Both Viruses and Bacteria contain Instructions (DNA/RNA)**

These instructions are like the **master plans for building new microbes**

**The instructions are easily destroyed** so must be protected by a strong outer layer, like treasure in a treasure chest!

**Viruses** do this with a **protective outer layer** called a **capsid**.

**Bacteria** do this by **winding their DNA tightly into a nucleoid**, all enclosed within their cell membrane and wall.

**What will you make for your model microbe's instructions? How will you protect them?**