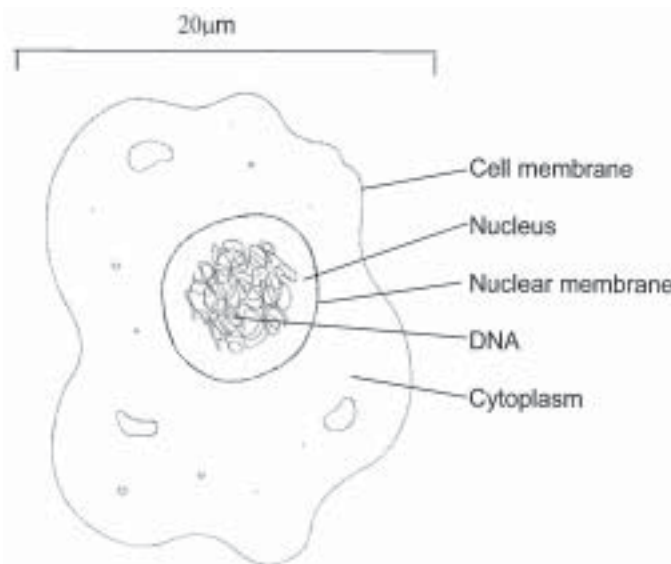


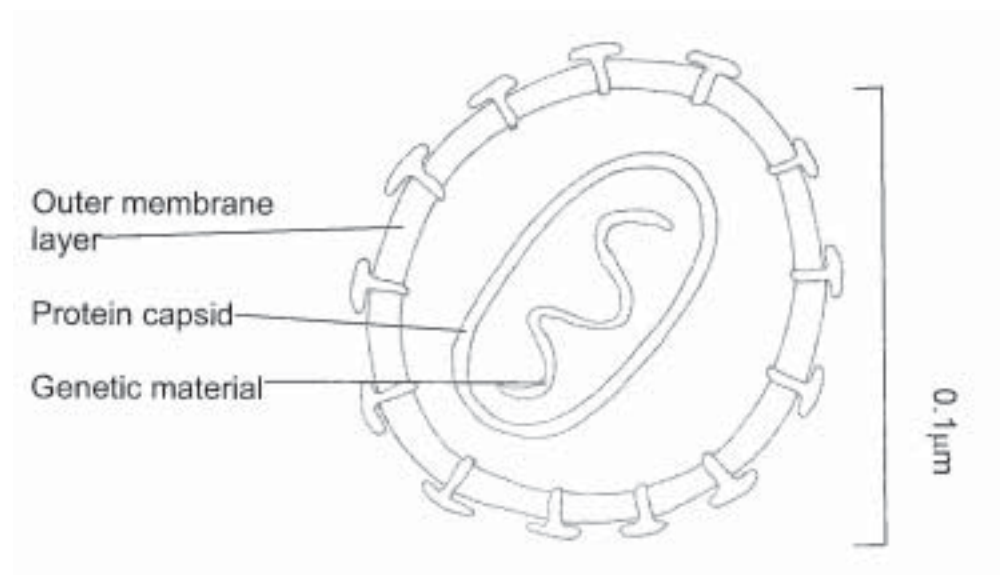
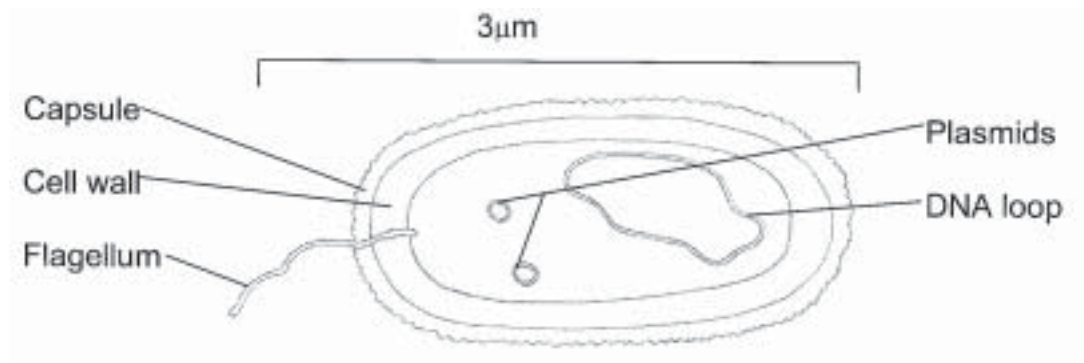
Cells : animal cells, bacteria and viruses

This activity will revise the structure of an animal cell and the microorganisms that can cause disease. Students colour in labels and structures on a typical animal cell, a bacterial cell and a virus.

1.

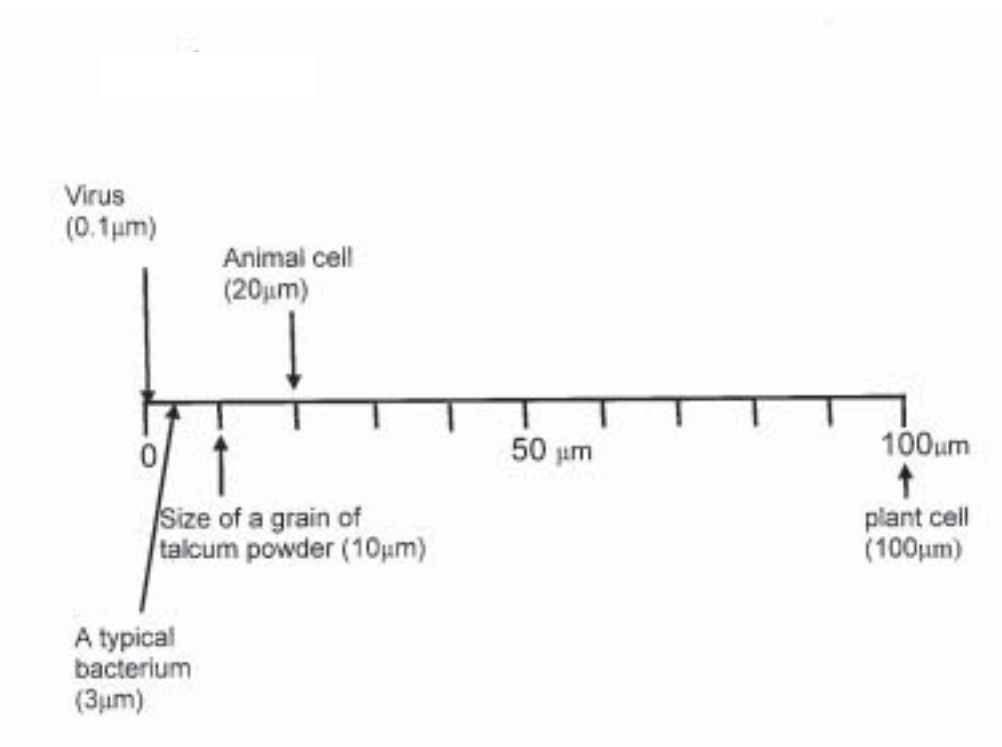


References
<p>Textbook Chapter 1</p> <p>Specification 13.8, 13.9 Infectious Diseases</p>



Size of microorganisms

2.



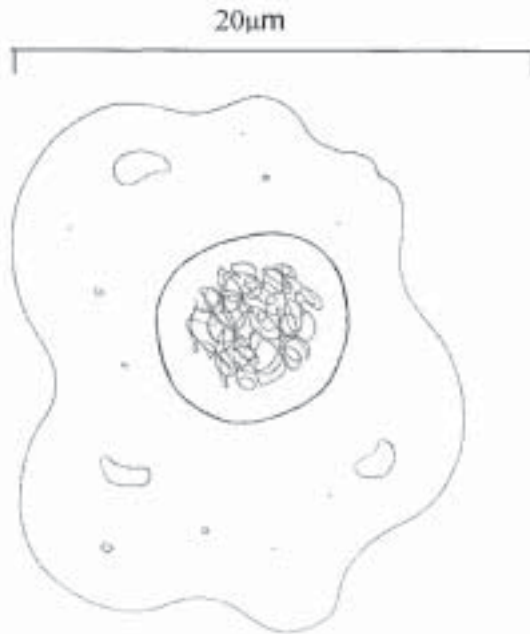
You could ask students to add a couple of other structures that they have found the size of to the scale.

3. Animal/human cells do not have a cell wall, so will not be affected by a chemical which disrupts cell wall synthesis. (A plant cell wall is made of a completely different material, so would also not be affected by penicillin).

Cells : animal cells, bacteria and viruses

This activity will revise the structure of an animal cell and the microorganisms that can cause disease.

1. Colour in the bubble writing naming structures present in the different cells. Then colour that structure in the drawing using the same colour. Use your SPU textbook or a biology textbook for the information you need.



A typical animal cell

The **cell membrane** allows certain molecules to pass in and out of the cell.

The **nucleus** contains the genetic material, **DNA**. The nucleus is surrounded by the **nuclear membrane**.

The **cell cytoplasm** contains specialised structures which carry out cell processes such as respiration.

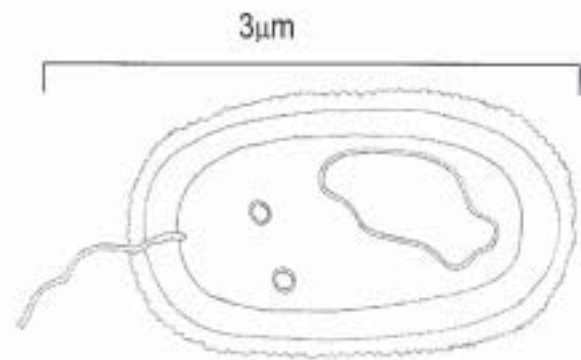
A generalised bacterium

Some bacteria have an outer mucus **capsule**.

The **cell wall** is rigid, giving the cell a characteristic shape.

The genetic material is in one large **DNA loop** and sometimes there are small circular **DNA plasmids**.

Some bacteria have a **flagellum** for movement.



Some viruses, such as HIV have an **outer membrane layer** made up of molecules from their host's cell membranes. The **genetic material** (either DNA or RNA) is inside a **protein capsid**.

Size of microorganisms

Most cells and microorganisms are too small to be seen with the naked eye. The smallest object that can be seen without any magnification is about $100\mu\text{m}$ in diameter, for example a plant cell. A printed full stop is about $300\mu\text{m}$ in diameter, so three plant cells would fit into a full stop.

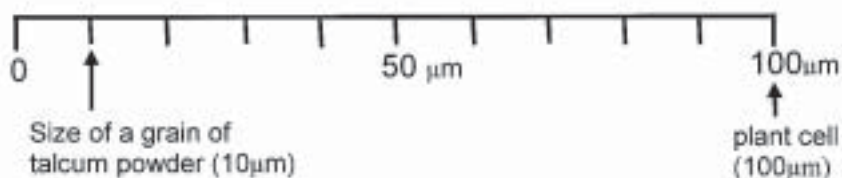
Units of measurement

cm = 1/100 m

mm = 1/1000 m

μm = 1/1000 000 m

nm = 1/1000 000 000 m



2. Add the size of a virus, animal cell and bacterium to the scale above to show their relative size.

Antibiotic drugs interfere with the chemical reactions of bacterial or fungal cells. For example, penicillin prevents the bacteria making the material for their cell wall.

3. Use the diagrams of structure of microorganisms in no.1 to explain why penicillin kills some strains of bacteria, but not human cells.