THE UNIVERSITY of EDINBURGH | Discovery Research Platform for Hidden Cell Biology

Bake a Beautiful Cell Biscuit

Cells are the tiny building blocks that make up all living things. Imagine something made of Lego, but the bricks are so tiny that you cannot see them without a microscope! Different living things are made of different numbers of cells. Bacteria are just single cells, but your body is made up of millions of cells. Cell biologists are scientists who study cells in order to understand how they work. By looking at cells under microscopes, they have learned that plant and animal cells have some important differences.

*The different parts of a cell are called **organelles**, and have different jobs:*

Mitochondria provide energy for the cell.

The **cell membrane** protects the cell but allows water in and out.

The **cytoplasm** gives the cell its shape and holds the other organelles in place.

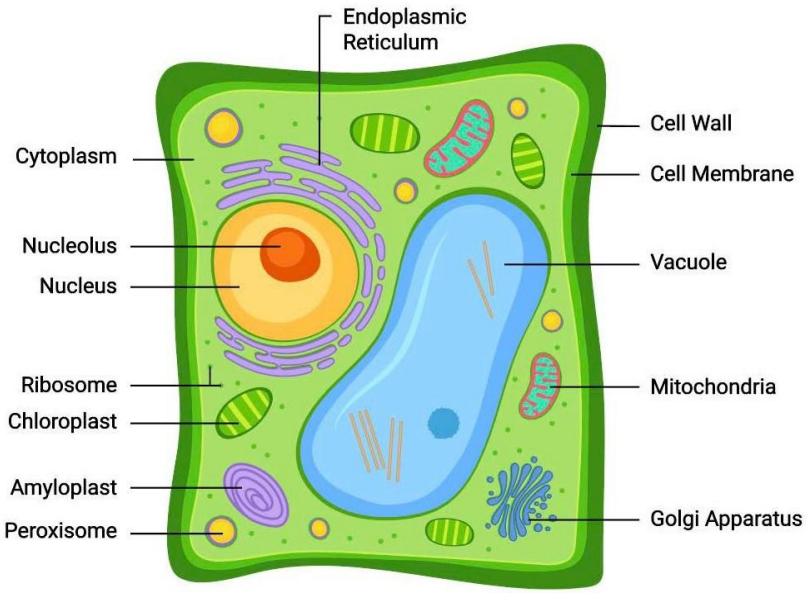
The **vacuole** is a storage pod which can contain food for the cell or even waste.

The **nucleus** contains DNA (where all our genetic information is stored). Think of it as being like the brain of the cell.

The **cell wall** is only found in plant cells and is strong enough to stop the cell from bursting when it fills with water.

Chloroplasts are only found in plant cells and are where the plant turns sunlight into food in a process called photosynthesis.

Plant Cell



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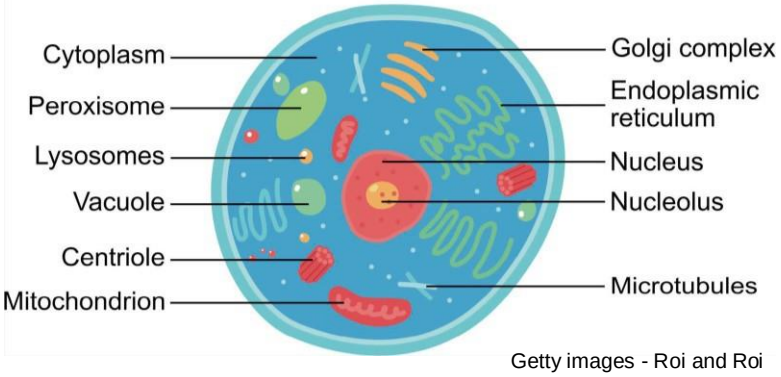
Animal Cell



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Now for the fun bit! Try to make some edible cell diagrams using dough and sweeties! The next picture shows some we made. Can you work out which is the animal and which is the plant cell?

To make your own biscuits you will need:

- short crust pastry dough (you can make your own or use ready-made stuff)
- greaseproof paper or a non-stick oven tray
- boiled sweets
- cake decorating sprinkles (optional)

Make sure to get adult help with crushing or chopping the sweets and using the hot oven

1. Crush or chop your boiled sweets.
2. Build your biscuits directly onto the grease-proof paper or oven tray. Roll out your pastry into a long thin sausage to make the cell membrane, or go a little thicker for the wall if making a plant cell. Do not make the outside ring too thick, even if it's for a plant cell, as the dough will expand in the oven!
3. Use smaller rings of dough inside the cell to make some of the other organelles.
4. Fill up the rings with chopped boiled sweets to make the cytoplasm and the nucleus. Don't be afraid to fill the gaps right up with bits of sweetie. As they melt, the sweets will spread out to fill the spaces.
5. Put the biscuits into the oven at 200 degrees Celsius and bake for 4 to 8 minutes.
6. Take the biscuits out when the sweets have fully melted. Don't worry if the melted sweets have gone brown; the colour comes back as the biscuits cool.
7. Let the biscuits cool until the sweets have hardened up into ‘glass sheets’. You can now add more detail to your cells using cake decoration sprinkles if you have them.
8. Take a photo of your cells and share it on our Instagram page **@wccb_pe** using the hashtag **#cellbiscuits** so we can see your efforts!
9. Enjoy eating your crumbly, crunchy, fruity biscuits!

Once you have perfected the plant and animal cells, you could try a more complicated edible diagram such as this example of cell division (separation of the genetic material, taking place in the nucleus).