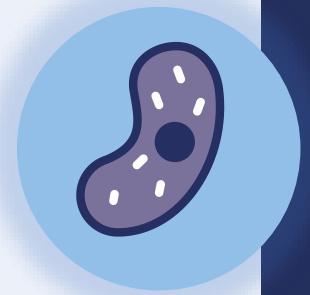
Prior Knowledge Review

Answer the questions below.

1. State the life processes.
   Movement, respiration, sensitivity, growth, reproduction, excretion and nutrition.
2. Explain the difference between unicellular and multicellular organisms.
   Unicellular organisms are made up of only one cell (e.g. bacteria), whereas multicellular organisms can be made up of any number of cells (e.g. plants and animals)
3. Explain what a microscope is used for.
   To magnify small objects that would otherwise not be visible with the naked eye.
4. State the organelles that are found in plant cells but not animal cells.
   Chloroplast, cell wall, vacuole
5. Name the organelle that is the site of aerobic respiration.
   Mitochondria

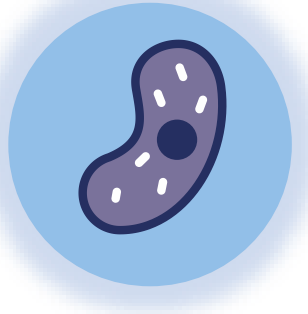


Do Now

Prior Knowledge Review

B3.1.1

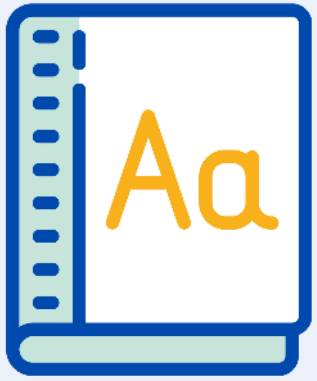
Science Mastery



Following this lesson, students will be able to:

- State the differences between plant and animal cells
- Describe the features of plant and animal cells and the functions of each organelle
- Describe how to view observe a slide under the microscope

Key Words:



nucleus **organelle** **slide**

specimen **cytoplasm** **chloroplast**

Lesson Objectives

The Big Idea: Cells are Alive

Science Mastery

Growth and Differentiation

How do bacteria spread? What does a virus look like under a microscope? How do substances move between cells? What causes cancer?

All living things are made of cells, with many working together as tissues, organs and organ systems. The exchange of substances between cells and their environment allows the life processes to occur, fuelled by the organelles within. Differentiated cells allow living things to thrive in a huge variety of habitats.

This is the **second** unit we are studying as part of the big idea: **Cells are Alive**

In this unit, we will learn more about cell structure and specialisation. We will learn to classify cells as eukaryotic or prokaryotic according to some basic features and revisit the function of the main organelles (e.g. nucleus). We will learn how scientists now use electron microscopes to study cells in more detail. We will then learn about the three main methods of cell transport: diffusion, osmosis and active transport. We will study how different cells are adapted for efficient exchange and apply this learning about methods of cell transport to different examples.

Finally, we will study cell specialisation and learn how cells divide by mitosis to allow for growth and repair. We will learn that cancers are a group of diseases that can arise from uncontrolled cell growth. We will also learn how scientists use stem cells to study and treat different diseases.

We will develop our mathematical skills when we practise using the equation for calculating magnification. We will also learn how to use calculations to represent how rapidly bacteria can divide.

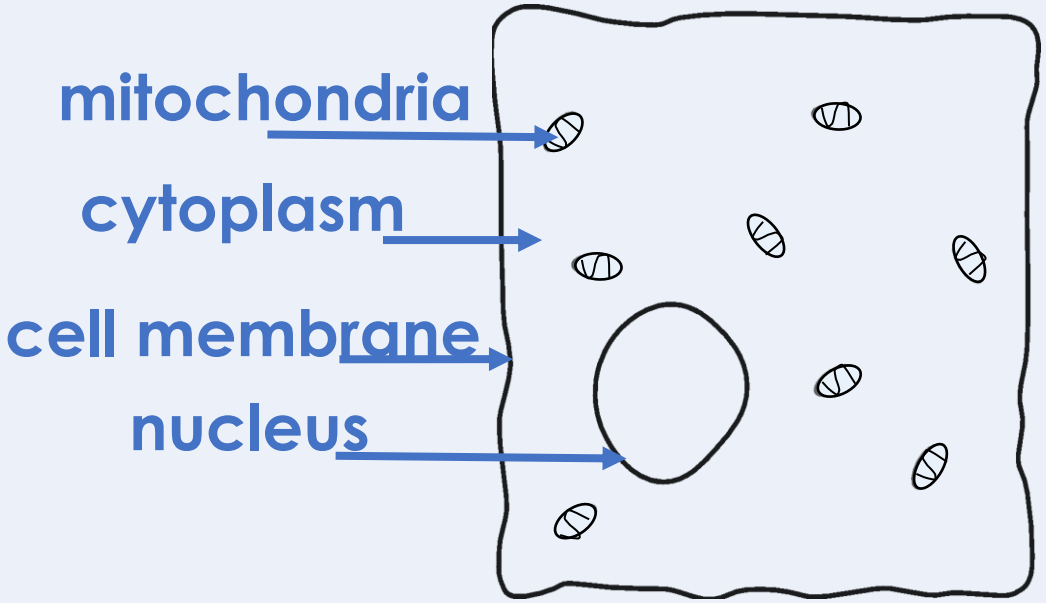
We will develop our practical enquiry skills by investigating bacterial growth using agar plates. We will practise using aseptic technique to safely grow bacteria. We will also have another opportunity to use microscopes to investigate cells. Finally, we will investigate

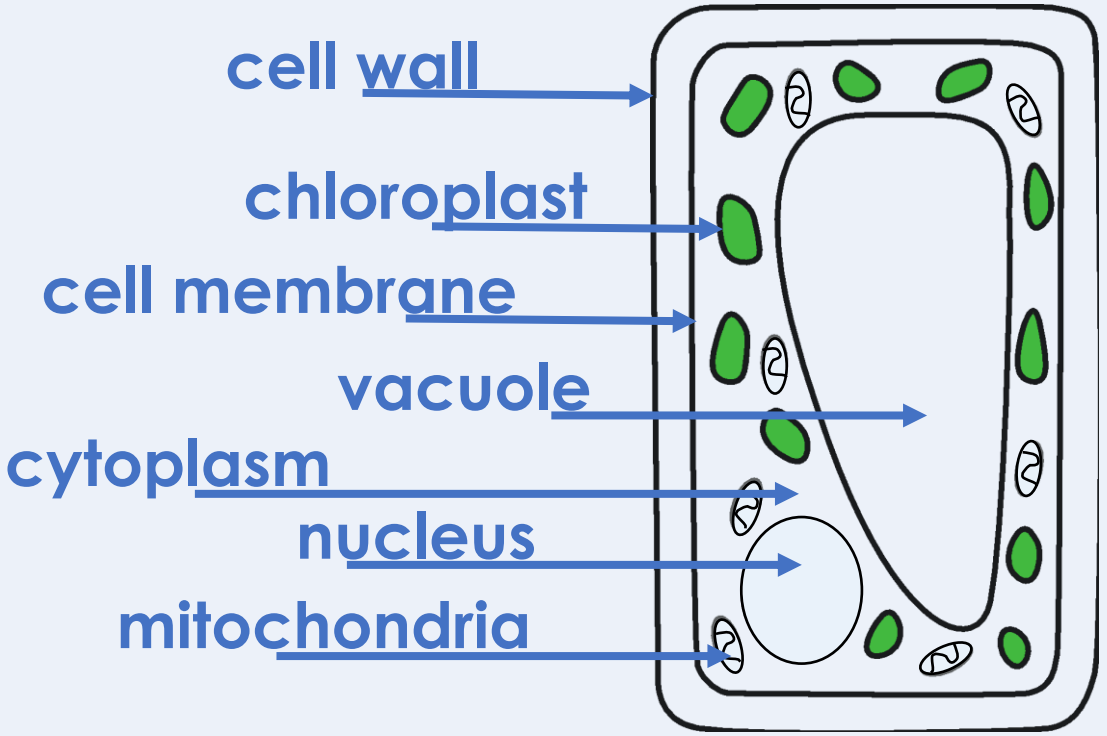
Introduction

Plant and animal cells

Can you remember the parts of an animal and plant cell?

Plant and animal cells both contain a nucleus, cytoplasm, mitochondria and a cell membrane
Plant cells also contain a cell wall, chloroplasts and a vacuole





Quick Quiz

State the function of each of the organelles

Nucleus **Controls the cell activities and contains the genetic material**

Cytoplasm **Jelly-like substance where chemical reactions occur**

Cell membrane **Controls the substances that enter and leave the cell**

Chloroplast **Location of photosynthesis, contains chlorophyll to absorb sunlight**

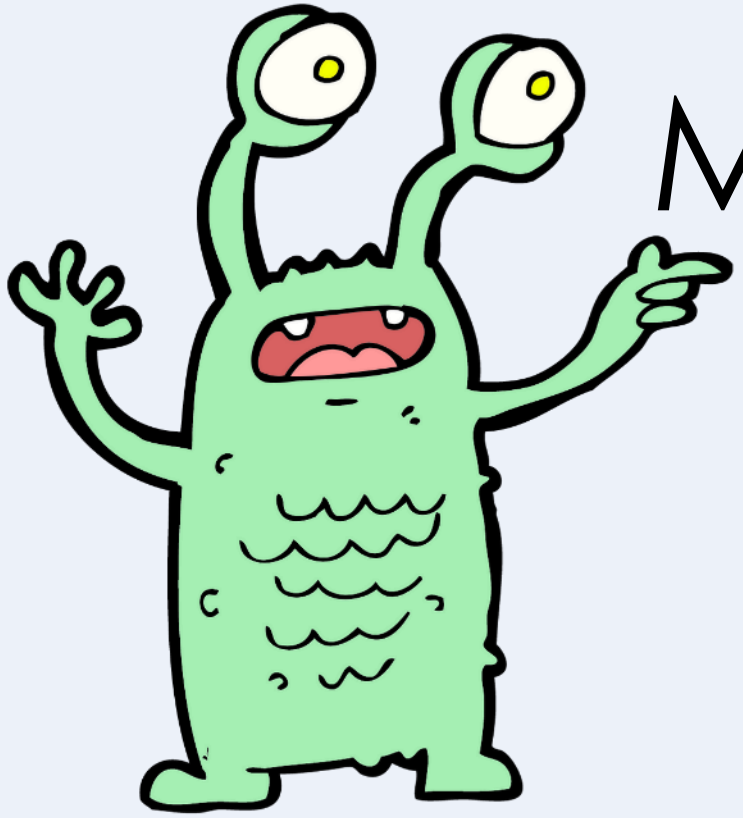
Vacuole **Contains liquid that stores substances for the cell and keeps it rigid**

Cell wall **Surrounds plant cells and provides strength and support.**

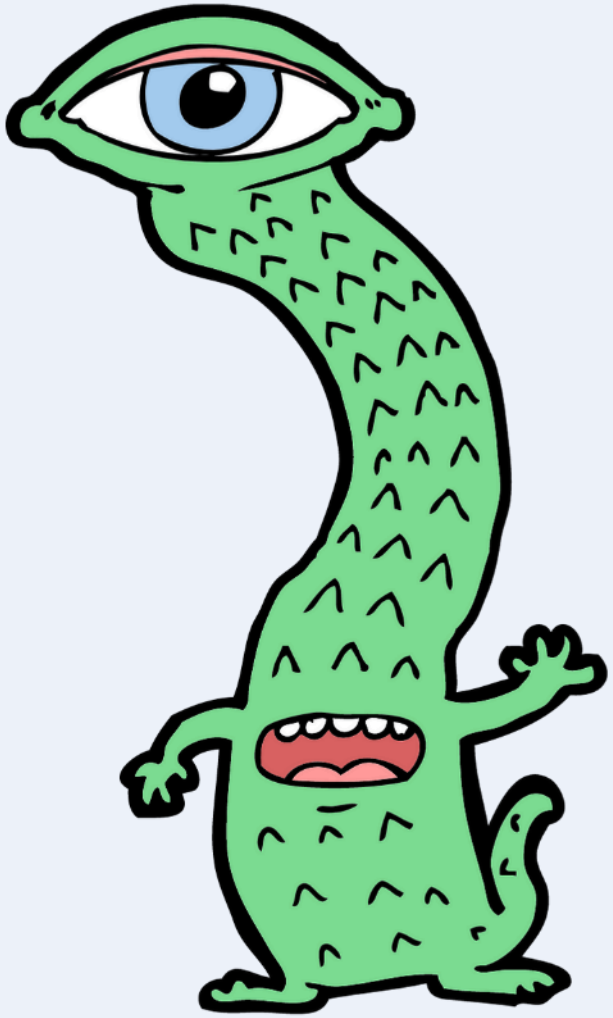
Check for understanding

Out of this world!

How would you describe this word to an alien from space?



Microscope



Talk Task

Answer the questions below.

1. Which organelles do plant cells have but animal cells do not?

- ☑ A. Nucleus, cell membrane, cytoplasm
- ❑ B. Cell wall, vacuole, chloroplasts
- ❑ C. Chloroplasts, cell membrane, nucleus

2. Which is the best explanation of the function of a microscope?

- ☑ A. To make small objects easier to view
- ❑ B. To see objects that are very far away
- ❑ C. To make big objects seem smaller

3. Which statement has the cell organelle correctly matched with its function?

- ❑ A. Cell wall, controls what enters and leaves the cell
- ❑ B. Chloroplast, absorbs sunlight for respiration
- ☑ C. Nucleus, controls cell activities and contains genetic information

Exit ticket

Feedback

Lesson B3.1.1	
What was good about this lesson?	What can we do to improve this lesson?

Send us your feedback by clicking this link. Thank you!