

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME
GRADE 8
INTEGRATED SCIENCE

Week 1

Lesson 2

Topic: Plant and Animal Cells

Objectives

- Given unlabelled diagrams of plant and animal cells, students will accurately identify at least four parts from each of the two cells.
- Given a table on parts of plant and animal cells and the functions of the parts, students will correctly match the parts with their respective functions.
- After observing the diagrams of the plant and animal cell, students will correctly identify at least three differences between the two cells.
- Given a table of the different types of tissues and their functions, students will correctly match the types with their respective functions.

Content

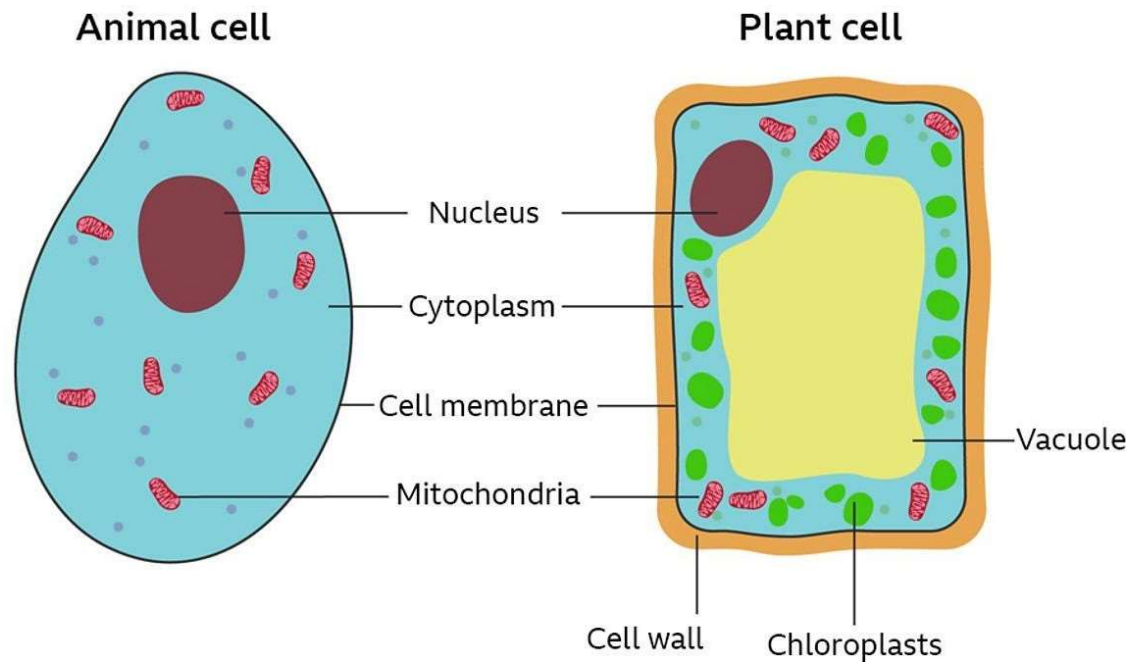
- With the development of the light or compound microscope, the **cell theory** was established. **Cells** are known as the building blocks of life and can be found in all living organisms. Some organisms like bacteria are made up of only one cell and are called unicellular organisms while others like human beings, are made up of many cells and are therefore called multi-cellular organisms.
- Eminent scientists such as Robert Hooke (1635-1705), Anton Van Leeuwenhoek (1632-1723) and Theodore Schwann (1810-1832) made outstanding contributions to the establishment of the cell theory.

Fact sheet

The structure of cells

Cells vary in size, shape, arrangement and functions. The diagrams below give a basic overview of the structure of a typical animal and plant cell.

The diagrams show the structure of the plant and animal cell



source (Ejikeugwu, 2020)

- The differences and similarities between plant and animal cells can also be observed from the diagrams above.

Table 1: Shows the differences in the structure of animal and plant cells.

Animal cells	Plant cells
No cell wall	Have a cell wall
No chloroplasts	Many contain chloroplast
Not rigid, can change shape	Rigid, have a fixed shape
Often don't have vacuoles	Have a central vacuole with cell sap
When present, vacuoles are very small	Vacuole is normally single and large

The functions of the structure of the plant and animal cell.

The structures found in cells all have specific functions that are important for keeping each cell alive and helping it to function properly. The table below summarises the function and importance of the different structures found in cells.

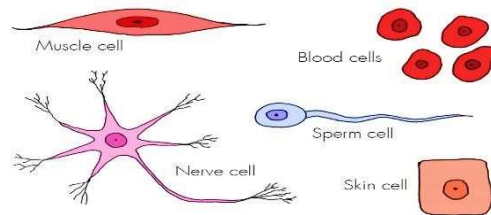
Table 2 below summarises the function and importance of the different structures found in plant and animal cell

Type of cell	Structure	Function and importance
Animal and plant cell	Cell membrane	Forms the boundary between the cell and its surroundings. Controls the movement of substances in to and out of the cells.
	Nucleus (containing chromosomes)	The chromosomes contain the genetic code or DNA. Information in the chromosomes is used to control the development and function of the cell. Without a nucleus, most cells will die.
	Cytoplasm	Contains many cell organelles. This is where cell activities take place.
	Mitochondria (singular is 'mitochondrion')	Small organelles are responsible for releasing energy for the cell.
Plant cells	Cell wall	Gives protection and shape to the cell. Helps plant stay upright
	Vacuole	Stores water and dissolved substances. Important for the exchange of various substances.
	Chloroplast	Contains the green pigment chlorophyll. Are important because they are the sites of food production in plants (photosynthesis takes place here)

Follow the link for additional information: <https://www.youtube.com/watch?v=NkC9AiJf7gI>

Fun fact

There are over 200 different types of cells in the human body. The following are some examples:



source: (CK12 Foundation, 2020)

Remember the Modern Cell Theory states that:

The cell is the
smallest living unit
in all organism

All living things
are made of cells

All cells come from
pre-existing cells

Homework

1. Read up on the life histories (biographies) of the three scientists mentioned in the handout. Write a brief account of their life's work in the area of the cell theory.

References

Bernard, M., Blackman, S., Dalgety, F., McDonald, C., O'Jon, J., Roberts, W., . . . Shivraj, D. (2000). *Science in Daily life Bk 2*. Georgetown, Guyana: Ministry of Education, NCERD.

CK12 Foundation. (2020). *Organisation of the Body*. Retrieved from
pinterest.com: <https://www.pinterest.com/pin/199354720993996774/>

Ejikeugwu, C. (2020). *microdok*. Retrieved from MicroDok.com: [https://microdok.com/what-](https://microdok.com/what-is-a-cell/)

<https://www.britannica.com/>
<https://www.britannica.com/science/fundamental-tissue>

<https://www.britannica.com/>

<https://www.britannica.com/science/fundamental-tissue>

kirby, P.-G., Madhosingh, L., & Morrison, K. (2014). *Biology for CSEC* (2nd ed.). Cheltenham, UK: Nelson Thornes Ltd.

Thomas, Y. (2020). *Cells*. Retrieved from pinterest.com:
<https://www.pinterest.co.uk/pin/506655026828498556/>