

FORM 2 SCIENCE 2022

STRANDS	SUB-STRANDS
8.0: SCIENCE SKILLS	<ul style="list-style-type: none">• Laboratory Safety/ Equipment• Science Skills
8.1: LIVING WORLD	<ul style="list-style-type: none">• Cell• Disease• Micro- organisms• Plant in Tonga• Animal in Tonga• Respiratory System• Digestive System
8.2: PHYSICAL WORLD	<ul style="list-style-type: none">• Energy• Force
8.3: MATERIAL WORLD	<ul style="list-style-type: none">• Mass• Volume• Density• Physical and Chemical change
8.4: PLANET EARTH AND BEYOND	<ul style="list-style-type: none">• Moon• Tide• Stars• Soil

UNIT 8.1: LIVING WORLD

Major Learning outcome for UNIT 8.1:

After this UNIT students should be able to:

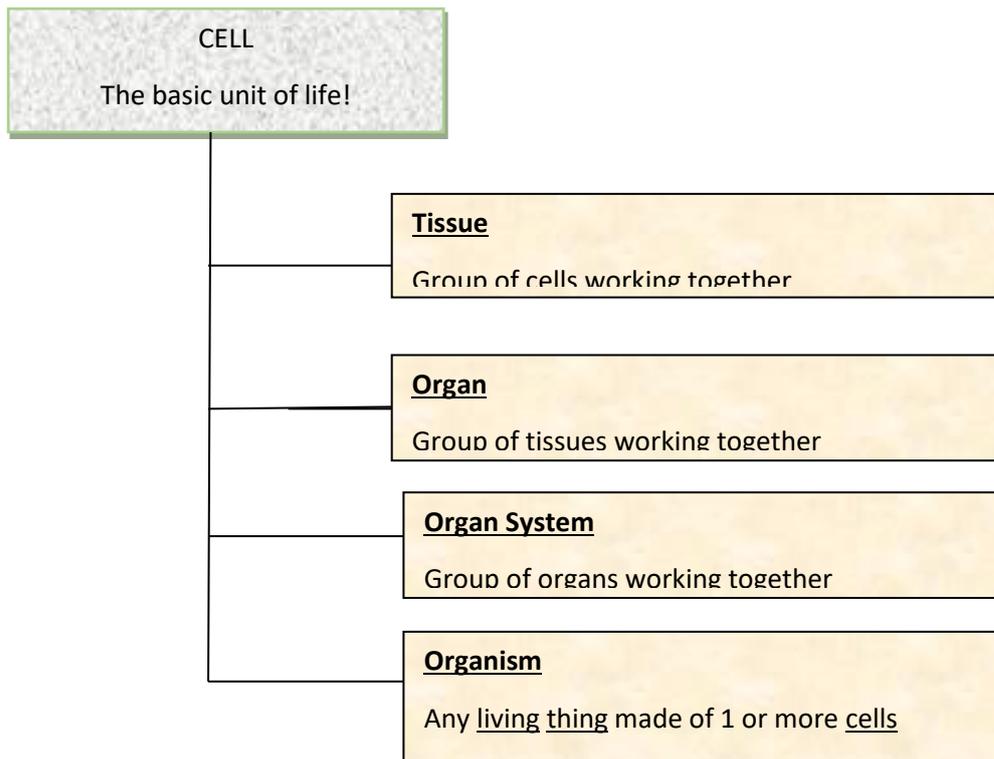
Describe some features of living things, plants and animals in Tonga, two human body systems and related health issues.

Teacher: Deborah Mahe / Phone #: 7201262

UNIT 8.1

CELL

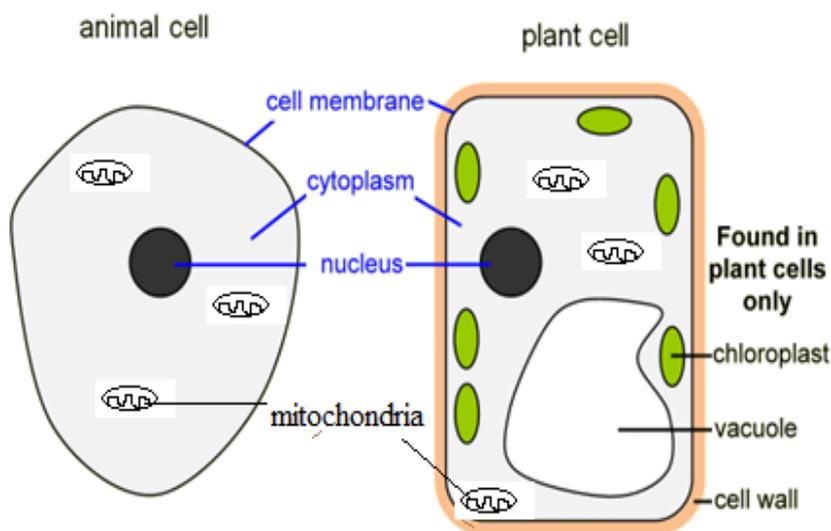
Cell is the building blocks of all living things. They are very small that we cannot be able to see them with our eyes so we need a **microscope** to study them.



Cells are studied using Electron microscope which increases the size of the studied structure by many thousand times. The structures within a cell are called **ORGANELLES**.

I. Cell Theory:

- The **cell theory has two components** - all living things are made up of cells and all cells arise from other cells.



Plant and Animal Cells

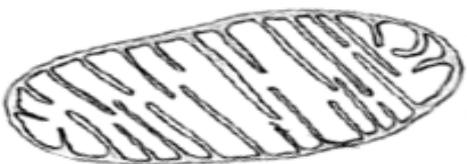
I. Plant Cell

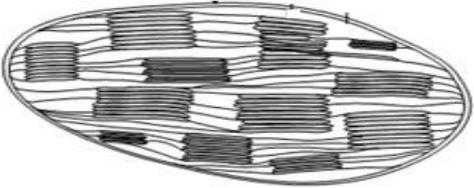
- plant cells have **regular shape**.
- they have **large vacuole**.
- they have a **cell wall**.
- they contain a **chloroplast**.

II. Animal Cell

- Animal cell has an irregular shape
- it has no cell wall
- it has no chloroplast
- Contain no vacuole and if it is present it is usually small.

III. Cell organelles (structures inside the cell)

Part	Function	Found in
Cell membrane	Controls movement of materials in and out of the cell.	Plant and animal cells
Cytoplasm	Jelly-like substance, where chemical reactions happen.	Plant and animal cells
Nucleus	Controls what happens inside the cell. Carries genetic information (DNA). In exams don't call the nucleus the 'brain' of the cell. That is not a good description and will not get you marks.	Plant and animal cells
Mitochondria 	The 'powerhouse' of the cell. This is the organelle where respiration takes place, i.e produce energy (ATP).	Plant and animal cells

<p>Chloroplast</p> 	<p>Where photosynthesis happens - chloroplasts contain a green PIGMENT called chlorophyll which traps light energy from the sun for the process of photosynthesis.</p>	<p>Plant cells only</p>
<p>Vacuole</p>	<p>Contains a liquid called cell sap, which keeps the cells firm. It stores food, water, metabolic and toxic waste.</p>	<p>Large organelle in plants but usually small if present in animal cell.</p>
<p>Cell wall</p>	<p>Made of a tough substance called cellulose, which supports the cell.</p>	<p>Plant cells only</p>

Unicellular	Organism containing only one cell
Multi-cellular	Organism containing many cells.
Microorganisms (microbe)	Any organisms which can be seen with the aid of a microscope.