



Dr. Bbosa Science

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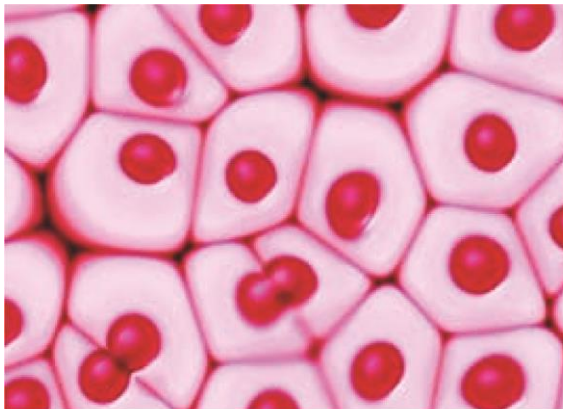
**Theme: Diversity Living Things**

**S1 New Curriculum Biology- Chapter 2 - Cells**

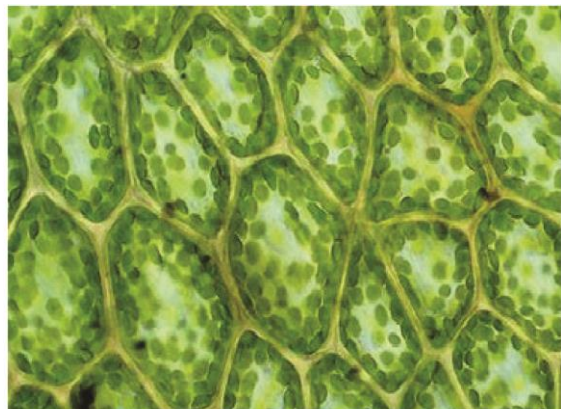
(If giving notes the underlined words or phrases can be left as blank spaces to be filled student as the write the notes)

**The cell**

The cell is the basic unit of living organisms responsible for carrying out biological process.

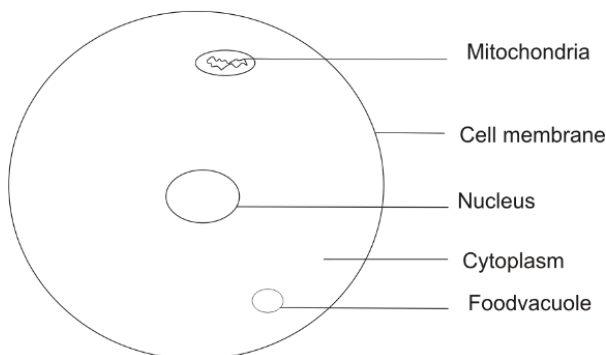


Animal cells under light microscope

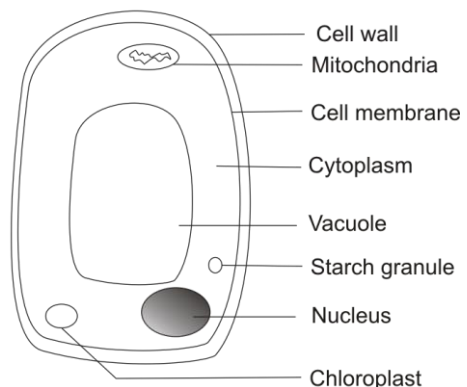


Plant cells under light microscope

A drawing of animal cell



A drawing of a plant cell



**Trial 1:** Why do we use a microscope to observe cells?

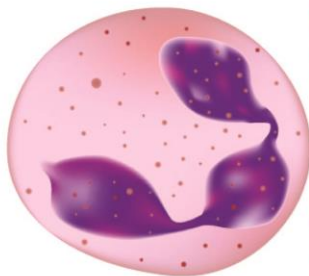
## Differences between plant and animal cells

Plant cell	Animal cell
Has a cell wall	Lacks a cell wall
Has a big vacuole	Lack a vacuole
Has chloroplast	Lacks chloroplast
Has starch granules	Lacks starch

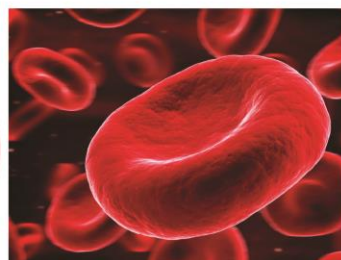
## Functions of parts of the cell

1. **nucleus** control activities in the cell
2. **mitochondria** produces energy
3. **cell membrane** protect inner parts of the cell and also determine substances that enter and leave the cell.
4. **cell wall** protect the cell and provide shape and rigidity to the cell
5. **chloroplasts** contain chlorophyll that attract energy for photosynthesis
6. **food vacuole** is where food is digested
7. **cytoplasm** is where cellular activities take place
8. **starch granules** are stored food.

## Examples of specialised animal cells



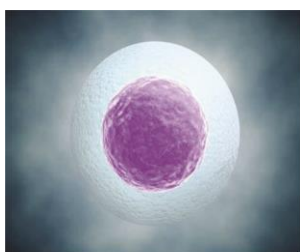
White blood cell



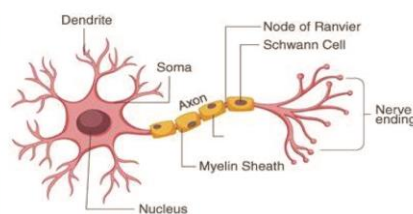
Red blood cell



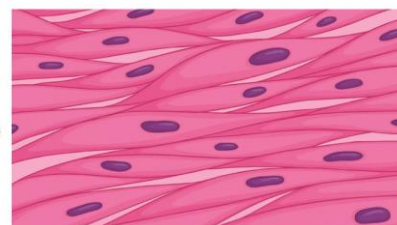
Sperm cell



Ovum



Nerve cells



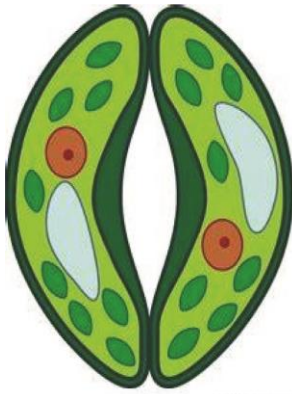
Muscle cells

## Functions of specialised animal cells

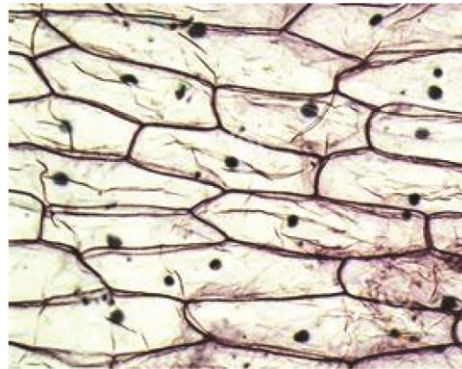
- (i) White cell blood cells are irregular and contain enzymes that digest pathogens into harmless substances.

- (ii) Red blood cells are biconcave in shape and contain haemoglobin, a pigment that transports oxygen in blood
- (iii) Sperm fertilize ovum
- (iv) Ovum is a reproductive cell in the female
- (v) Nerve cells are long to transmit impulses (electrical information) in the body
- (vi) Muscle cells are thin and long; contract and relax to cause movement of the body.

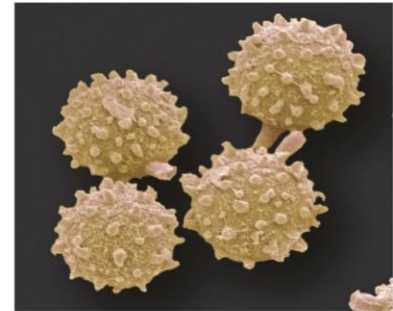
### Examples of specialized Plant cells



Guard cell

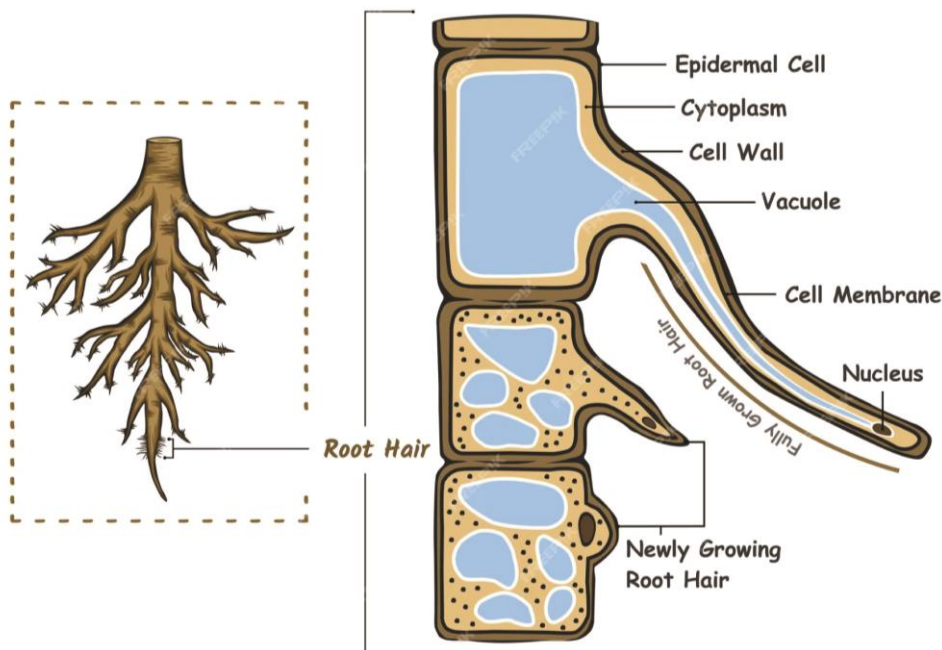


Epidermal cells



Spores

### Root Structures



### Functions of specialised plant cells

- (i) Guard cells open and close the stomata
- (ii) Epidermal cells protect inner parts of the plant
- (iii) Spores fertilize the plant ova
- (iv) Root hair are elongated with thin walls to absorb water and dissolved mineral salts from the soil

**Trial 2:** Why should some cells in plant and animals be specialized

**Trial 3:** Which cells in blood increase when a person catches an infection

**Trial 4:** Why may the red blood cell of a person living in places of low oxygen concentration such as at high mountains be more than the one who lives in a place with high oxygen concentration such as at sea level.

**Trial 5:** Fill in the missing information in the table below

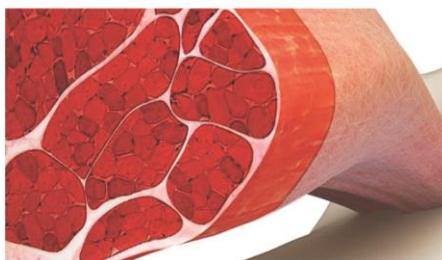
Specialized cells	Special features	Function in the body
Red blood cells	Has haemoglobin It is biconcave	
Muscle cells		
Sperms cell		
Nerve cell		
Root hair		
Guard cell	<ul style="list-style-type: none"><li>- Has many chloroplasts</li><li>- Has thick inner wall</li><li>- Has thin outer wall</li></ul>	

## Level of organization

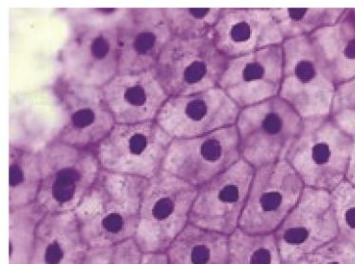
### Tissues

A tissue is a group of similar cells that perform a common function.

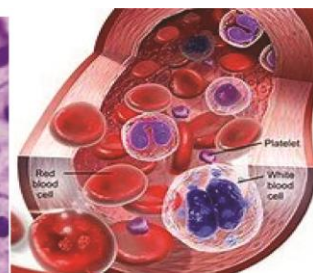
Examples are in animal:



Muscle



Epithelial tissue



Blood

- muscles for contraction to produce movement
- Epithelial tissue to cover and protect tissues inside
- Blood for transportation of oxygen and protection against diseases.

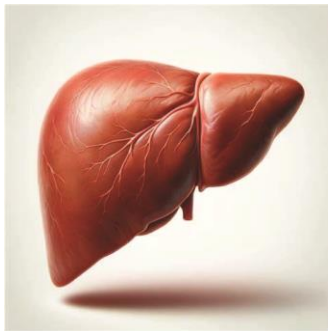
## Examples of tissues in plants

- conducting tissue for transportation of water and food in the cell
- epidermal tissues for protection
- photosynthesizing tissue for photosynthesis.

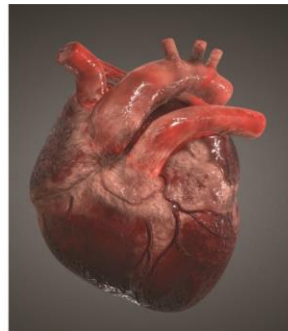
## Organ

Is a group of tissues that function together to perform a given functions.

Example of organs in animal are liver, kidney, lungs and heart.



Liver



Heart



Lungs

Liver – performs many functions in the body including conversion of toxins into harmless substances and regulation of blood sugars

Heart – pumps blood

Lung – is where gaseous exchange takes place in the body.

**Trial 6:** List three additional examples of organs in animals and their functions

Examples of organs in plants are leaves, roots, and stem.



Leaf



Roots

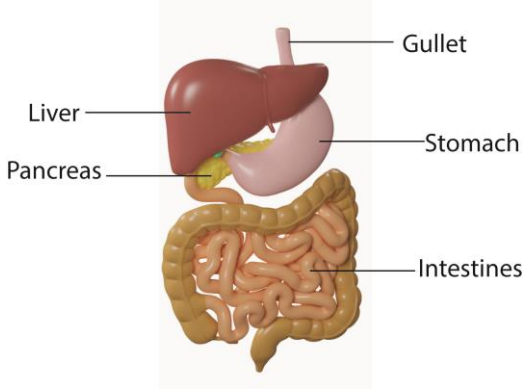
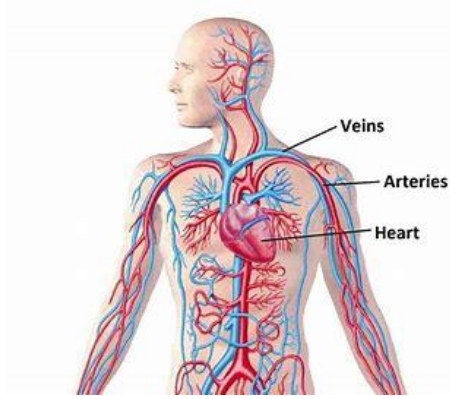



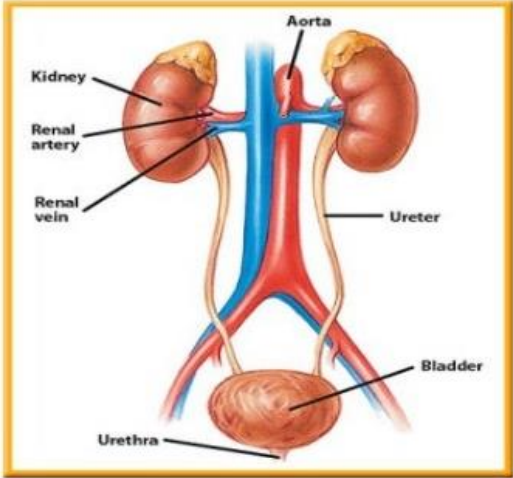
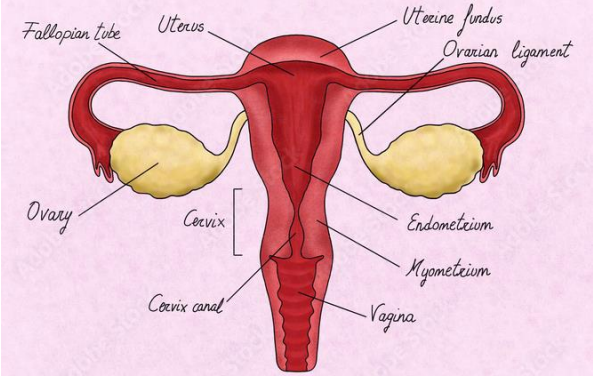
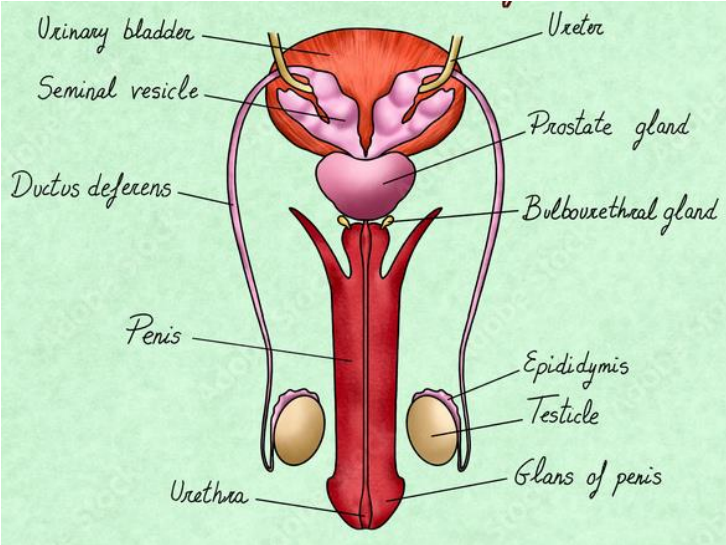
Stems

## Organ system

It is a group of organs that perform a common function.

Examples of systems and their functions are

Name of system	Main organs	Functions
Digestive system 	Stomach, liver, intestines, pancreas	Digestion and absorption of food
Circulatory system 	Heart, arteries, veins, capillaries	Carry food and oxygen around the body
Sensory system	Eyes, tongue, skin, ears, nose	Sense the environment
Nervous system 	Brain, spinal chords and nerves	Transmit massages and coordinate the body

<p>Excretory system</p>  <p>The diagram illustrates the excretory system. At the top, the Aorta is shown in blue. Two renal arteries branch off to the kidneys. From each kidney, a renal vein (red) carries filtered blood back to the heart, and a ureter carries urine to the bladder. The bladder is shown at the bottom, with the urethra leading out of the body.</p>	<p>Kidney, liver, bladder, lungs</p>	<p>Remove waste metabolic products from the body</p>
<p>Female reproductive system</p>  <p>The diagram shows the female reproductive system. The central organ is the pear-shaped uterus, divided into the upper Uterine fundus and the lower Cervix. Fallopian tubes extend from the uterus to the ovaries, which are held in place by Ovarian ligaments. The inner lining of the uterus is the Endometrium, and the muscular wall is the Myometrium. The Cervix leads into the Vagina, which has a Cervix canal. The diagram also shows the Fallopian tube and Ovary.</p>	<p>ovaries, uterus,</p>	<p>Reproduction</p>
<p>Male reproductive system</p>  <p>The diagram illustrates the male reproductive system. The two Testicles are shown at the bottom, each with an Epididymis on top. The Ductus deferens (vas deferens) carries sperm from the testicles up to the Ureter. The Ureter carries urine from the Urinary bladder. The Seminal vesicle and Prostate gland are located near the bladder. The Bulbourethral gland is situated below the prostate. The Penis is shown at the bottom, with the Glans of penis at the tip. The Urethra runs through the length of the penis.</p>	<p>Penis  Testis  Urinary bladder</p>	<p>Reproduction</p>

**Trial 7:**

- (a) The human skin is composed of many structures such as blood vessels, epidermal cells, nerves and sweat gland. Explain whether we should classify the skin as a tissue or as an organ.
- (b) What would happen to the cells if the following structure stopped working?
- (i) Nucleus
  - (ii) Mitochondrion
  - (iii) Cell membrane
  - (iv) Chloroplasts

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Thanks

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