

# KS3 Big idea 8: Organisms part 1

## Glossary:

- **Antagonistic muscle pair**

Muscles working in unison to create movement.

- **Bone marrow**

Tissue found inside some bones where new blood cells are made.

- **Cartilage**

Smooth tissue found at the end of bones, which reduces friction between them.

- **Cell**

The unit of a living organism, contains parts to carry out life processes.

- **Circulatory system**

Transports substances around the body in the blood.

- **Diffusion**

One way for substances to move into and out of cells.

- **Digestive system**

Breaks down and then absorbs food molecules.

- **Immune system**

Protects the body against infections.

- **Joints**

Places where bones meet.

- **Ligaments**

Connect bones in joints.

- **Multi-cellular**

Living things made of many types of cell.

- **Muscular skeletal system**

Muscles and bones working together to cause movement and support the body.

- **Organ**

Group of different tissues working together to carry out a job.

- **Reproductive system**

Produces sperm and eggs, and is where the foetus develops.

- **Respiratory system**

Replaces oxygen and removes carbon dioxide from blood.

- **Structural adaptations**

Special features to help a cell carry out its functions.

- **Tendons**

Connect muscles to bones.

- **Tissue**

Group of cells of one type.

- **Uni-cellular**

Living things made up of one cell.

## Activities

1. Suggest two organs which your ribcage protects.

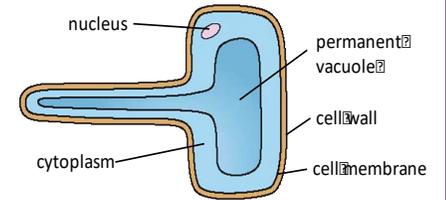
2. Explain the difference between a ligament and a tendon.

3. Compare and contrast a plant and animal cell. You should include similarities and differences in your answer.

4. The following plant cell is specialised.

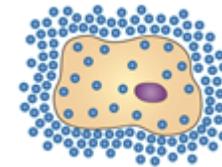
a) Explain how it is different to a general plant cell.

b) The cell is a 'root hair cell', how do these differences link to its function



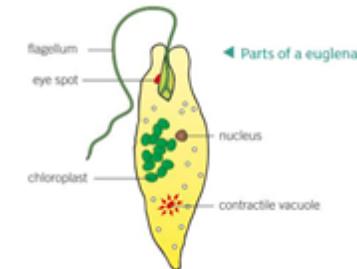
5. Specialised cells enable organs to carry out their functions. State the function of a red blood cell and a leaf cell.

6. The diagram shows an animal cell and the blue circles represent oxygen particles. Explain why oxygen particles will move into the cell by diffusion, and say why this is useful for the cell.



7. The diagram shows a microscopic, uni-cellular organism called Euglena. It is **not** a plant or an animal cell.

Use the diagram to suggest two activities that Euglena can do.

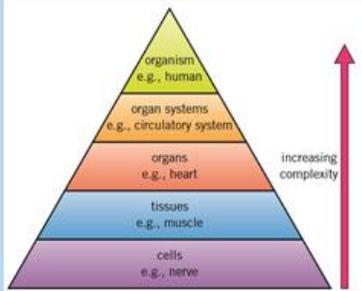


### QUICK QUESTIONS:

1. State 3 differences between plant and animal cells.
2. State the main function of the digestive system.
3. List the 5 levels of organisation from largest to smallest.
4. Name 4 jobs of the skeleton.

### 1. Levels of organisation

All living things are made of one or more **cells**. For any **multi-cellular** organism, there are 5 levels of organisation. Cells form tissues. Organs are made of two or more tissues.



### 2. The skeleton

The average adult human skeleton is made of 206 bones. Its jobs are to:

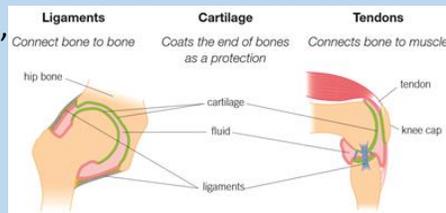
- support the body
- protect vital organs
- help the body move
- make blood cells

The skeleton is part of an organ system called the muscular skeletal system.



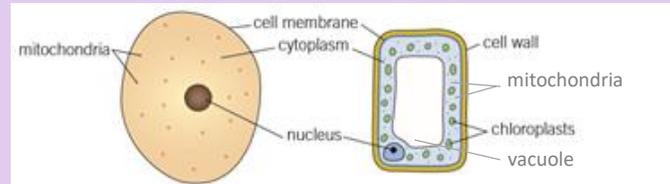
### 3. Movement – joints and muscles

Joints are found between bones in the skeleton. They allow movement to happen; for this **muscle tissue** must contract to pull on **tendons**. The tendons attach the muscle to a bone, which is then pulled. Muscles often work together in pairs called **antagonistic muscle pairs**.



### 4. Observing plant and animal cells

Plant and animal cells have the following features:



Cells can only be seen through a **microscope**.

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### 5. Plant and animal cells and their parts

Part	Job	Plant	Animal
<b>Nucleus</b>	Controls the cell	YES	YES
<b>Cell membrane</b>	Controls movement in and out of a cell	YES	YES
<b>Cytoplasm</b>	Chemical reactions	YES	YES
<b>Mitochondria</b>	Respiration	YES	YES

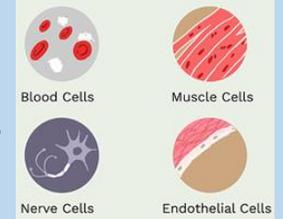
Plant cells also have a cell wall for strength, chloroplasts for photosynthesis and a vacuole filled with cell sap.

### 6. Specialised cells

In **multi-cellular organisms** there are many different types of cell. These cells are **specialised** and are slightly different to the 'standard' plant and animal cells. These differences help the cell to carry out its **function**.

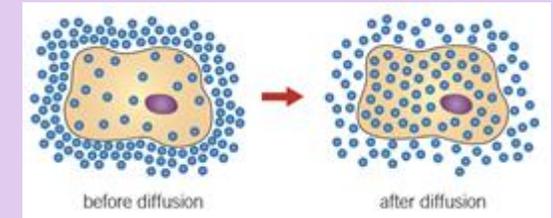
Examples:

Animals: **muscle, blood** and **nerve cells**  
Plants: **leaf cells** and **root hair cells**.



### 7. Movement in and out of cells

Substances moving into and out of cells must cross the **cell membrane**. They do this by a process called **diffusion**. Particles move from an area of **high concentration** to an area of low concentration.



### 8. Uni-cellular organisms

Uni-cellular organisms are made of one single cell. This cell must be able to do all the jobs that specialised cells do for multi-cellular organisms. They are not plant or animal cells, but they share some of the same structures.