Knowledge Organiser: Y7 Animal Cells

7 Life Processes

Movement

Respiration

Sensitivity

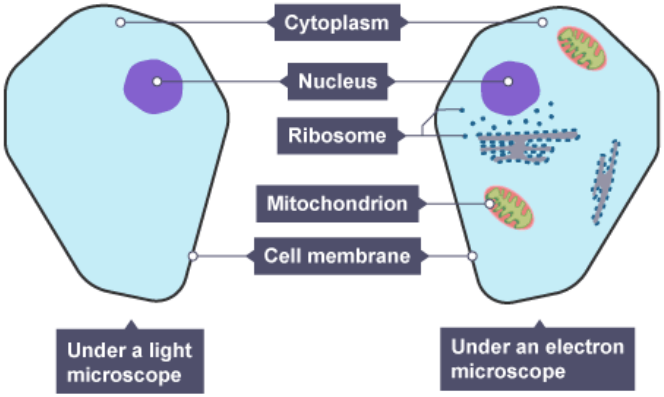
Growth

Reproduction

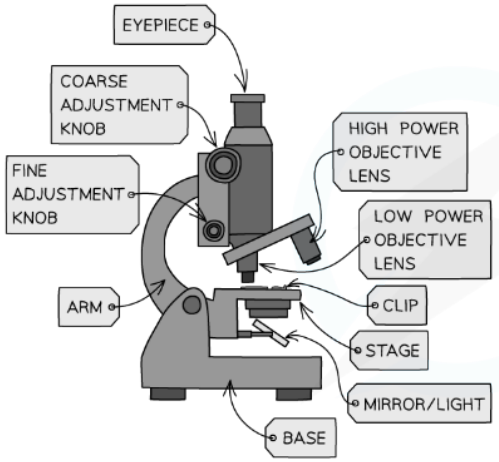
Excretion

Nutrition

Cell Structure



Using a Light Microscope



TO USE A MICROSCOPE TO LOOK AT A SPECIMEN:

1. CLIP THE SLIDE CAREFULLY ONTO THE STAGE.
2. ENSURE THE LOWEST-POWERED OBJECTIVE LENS IS OVER THE SLIDE.
3. USE THE COARSE ADJUSTMENT KNOB TO BRING THE STAGE UP JUST BELOW THE LENS.
4. LOOK DOWN THE EYEPIECE AND GRADUALLY MOVE THE STAGE DOWNWARDS USING THE COARSE ADJUSTMENT KNOB. STOP WHEN THE IMAGE IS ROUGHLY IN FOCUS.
5. TO BRING THE IMAGE INTO FOCUS, ADJUST THE FINE-ADJUSTMENT KNOB UNTIL A CLEAR IMAGE IS OBTAINED.
6. TO OBSERVE THE IMAGE WITH A HIGHER MAGNIFICATION, CHANGE THE OBJECTIVE LENS TO A HIGHER POWER AND READJUST THE STAGE USING THE COARSE AND FINE ADJUSTMENT KNOBS.

Total Magnification = Magnification of the **eyepiece lens** x Magnification of the **objective lens**

Sub-cellular structure	**Function**
Nucleus	Controls the activities of the cell. It contains **genetic material** (DNA).
Cell Membrane	Controls the **movement of substances** into and out of the cell.
Cytoplasm	A jelly like substance that fills the cell, where most **chemical reactions** take place.
Mitochondria	The site of **aerobic respiration**, which releases energy for the cell.
Ribosomes	Where proteins are made (proteins are made by a process called **protein synthesis**).

Main Human Organs

Heart – pump blood around the body.

Lungs – allow gas exchange.

Brain – control the body.

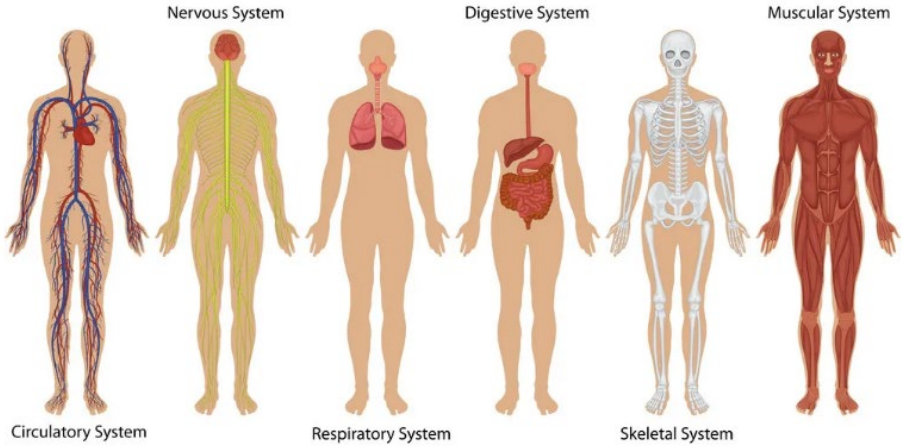
Kidneys – filter blood.

Liver – break down toxins.

Skin – barrier.

Stomach – digest food.

Organ Systems



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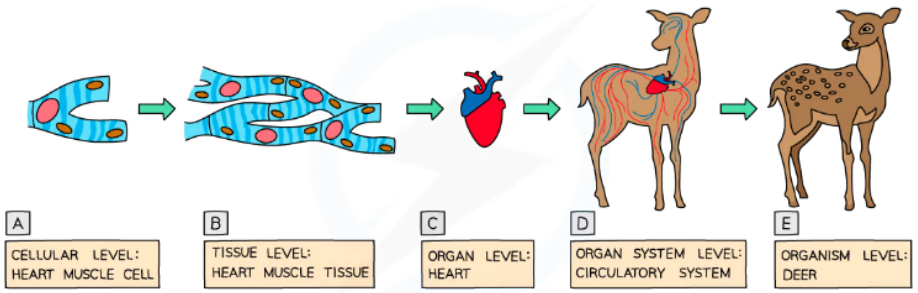
Levels of Organisation

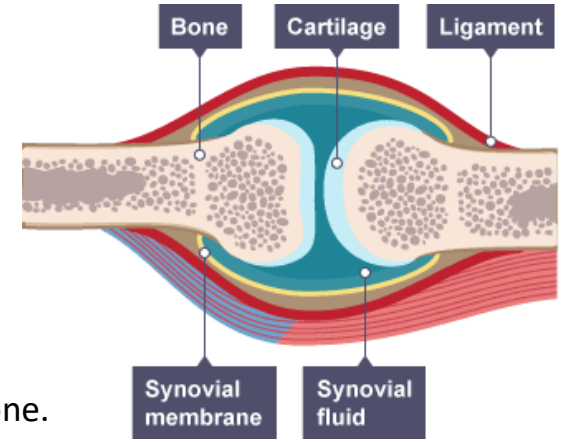
Level	Description
Cells	Basic functional and structural units in a living organism
Tissue	A group of cells of similar structure working together to perform a particular function
Organs	Made from a group of different tissues working together to perform a particular function
Organ systems	Made from a group of organs with related functions, working together to perform body functions within the organism



Functions of the Skeleton

- Support
- Protection
- Movement
- Making blood cells

Features of a joint:

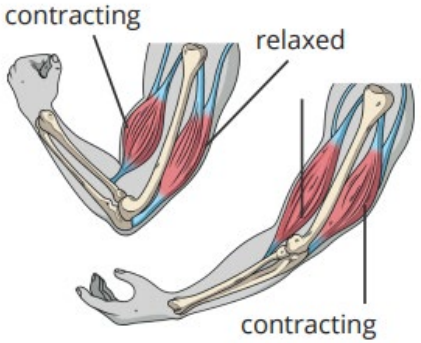


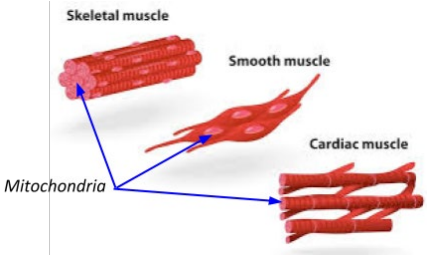
Features of a joint:

Tendons – attach muscle to bone.
Ligament – attach bone to bone.
Cartilage – prevents bones from rubbing together.
Synovial fluid – lubricates the joint to allow smooth movement.

Muscles

Muscles work by getting shorter (they contract).
Muscles are attached to bones by inelastic tendons. When a muscle contracts, it pulls on the bone, and the bone can move if it is part of a joint.
Skeletal muscles work in pairs called **antagonistic muscles**.





Muscles are made from muscle cells. Muscle contain **lots of mitochondria** - so they can transfer enough energy (via respiration) to contract.