

Subject: Biology
Year: 7 and 8
Term: 1
Topic: B1 Living Systems

Lesson Sequence

1. Using a microscope
2. Animal cells
3. Plant cells
4. Diffusion
5. Unicellular Organisms
6. Cells, tissues, organs and systems
7. Human skeleton
8. Muscles
9. Movement
10. Joints

Key Assessments

Microscope Assessment –
Preparing slides

EA Exam 1

Core Texts

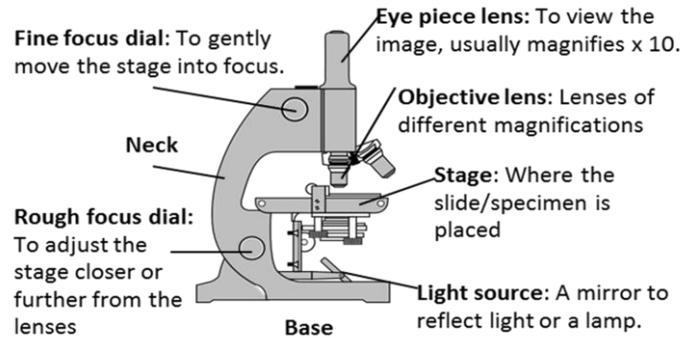
SMART Science

BBC Bitesize KS3 Science

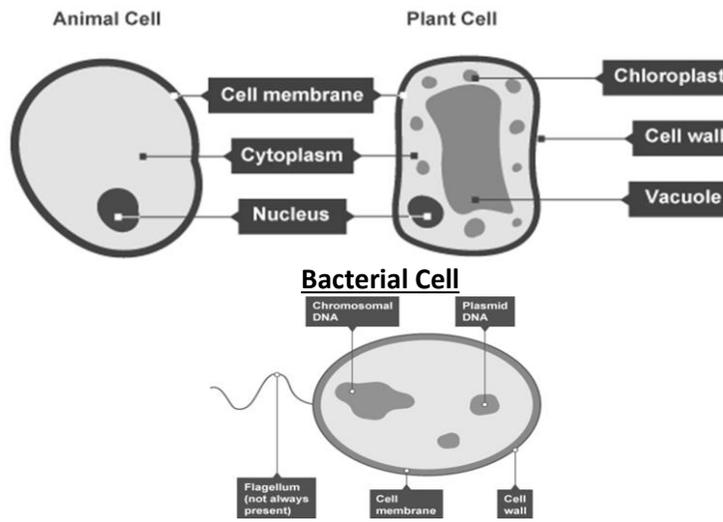
Key Words

Antagonistic Pair	Two muscles that work in opposite directions to each other to produce a wide range of movement.	Electron Microscope	Instrument used to magnify small things using a beam of electrons.
Bicep	A muscle that makes the arm move. Biceps pull the forearm upwards. Antagonistic to the triceps.	Joint	The structure where two bones meet.
Bone Marrow	Living part in the centre of bones that makes blood cells.	Ligament	Joins two bones together.
Cartilage	A substance found in joints that makes their movement smooth.	Light Microscope	Instrument used to magnify small things using a ray of light.
Equilibrium	Meaning balanced, the same amount on both sides.	Multicellular	Living things made of many cells E.g. Oak tree.

Light Microscope



Animal Cells and Plant Cells



Organelles

Organelle	Function	Type of Cell
Cell membrane	Controls the movement of water, glucose, oxygen and carbon dioxide	Plant, animal, bacteria
Cytoplasm	Watery jelly where most of the reactions inside a cell occur	Plant, animal, bacteria
Mitochondria	Where energy is released	Plant, animal
Nucleus	Controls the cell, contains genetic information	Plant, animal
Ribosomes	Where proteins are made	Plant, animal, bacteria
Cell wall	Supports the cell (made of cellulose in plants)	Plant, bacteria
Chloroplasts	Where plants make energy from sunlight, photosynthesis happens here	Plant
Vacuole	Stores cell sap.	Plant
Chromosomal DNA	Large loop of DNA not contained in a nucleus	Bacteria
Plasmid DNA	Small circular pieces of DNA that can be passed onto other bacteria. Discovered using an electron microscope	Bacteria
Flagellum	Enables movement	Bacteria, sperm cells

Key Words

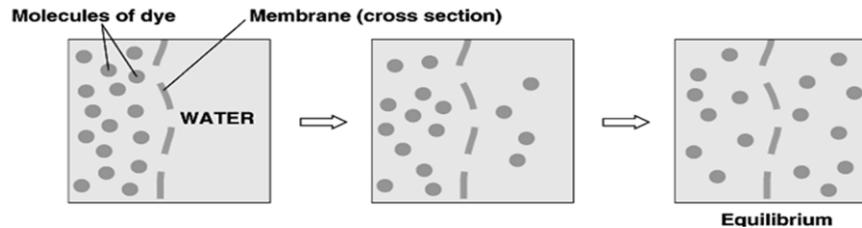
Organelle	A tiny structure in a cell that performs a specific job.	Synovial Fluid	A liquid found in synovial joints that reduces friction between moving bones. E.g. hip
Skeleton	Arrangement of bones and joints. It protects organs from harm and allows movement – muscles are attached to the skeleton.	Tendon	Joins a muscle to a bone.
Specialised Cell	Cells that carry out a specific function.	Unicellular	A living creature made of only one cell e.g. amoeba or bacteria.

Diffusion: The process in which particles move from a region where they are in a high concentration to a region where they are in a low concentration.

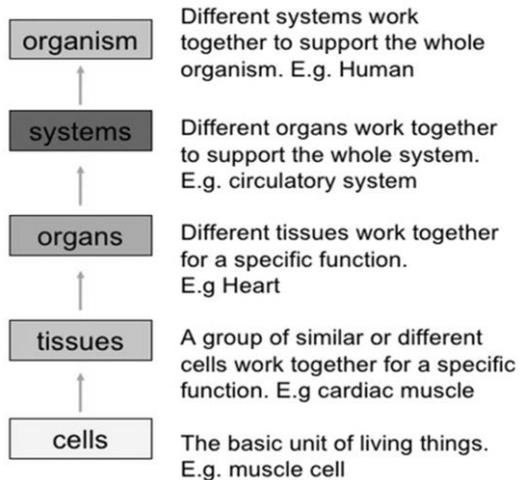
Diffusion Into Cells

- The cell membrane is partially permeable - has many tiny holes to let small particles through.
- If more particles of a substance are outside the cell than inside it we say the cell has a low concentration. E.g. Water
- Particles will then move from the outside of the cell into the cell.
- Eventually particles will move until the concentration is the same inside and outside the cell.

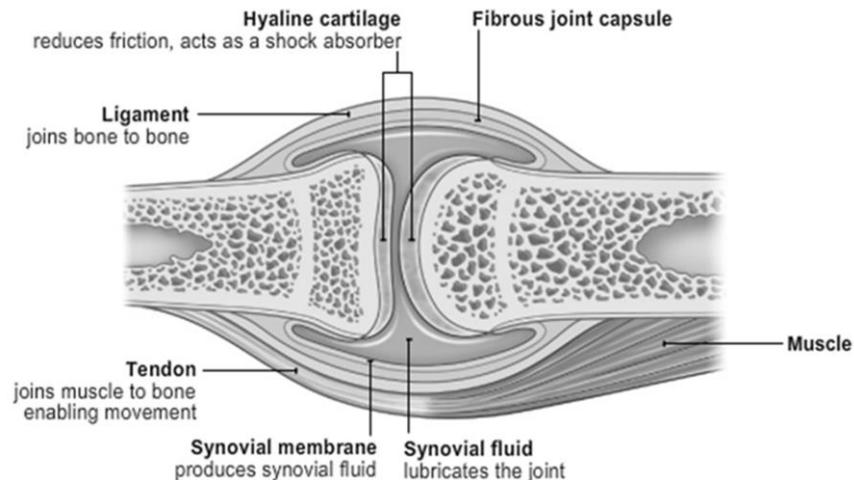
Other Examples: It is how oxygen enters the lungs during respiration, it is how plant roots take up water from the soil, and it is how plants take in carbon dioxide for photosynthesis.



Organisation of Living Organisms



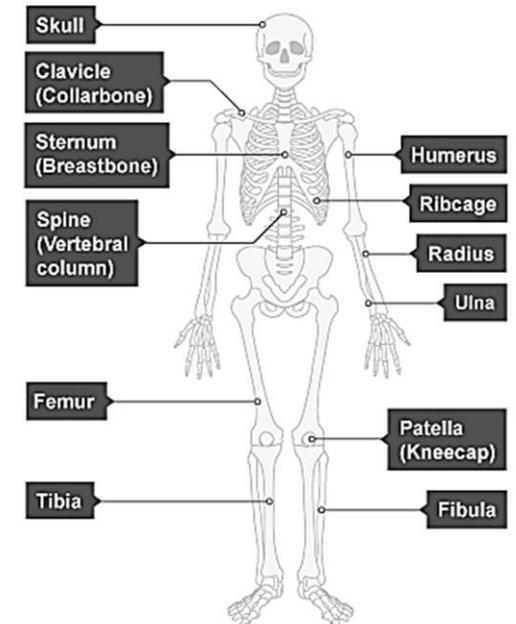
Synovial Joints



Human Skeleton

The skeleton:

- Protects vital organs from damage. E.g. Skull protects the brain.
- Ribs protect the lungs and heart.
- Bone marrow makes red and white blood cells.
- It holds vital organs in place.
- It gives the body a shape.



Bone Diseases:

Arthritis: A disease causing painful inflammation and stiffness of the joints

Leukaemia: Cancer of the bone marrow