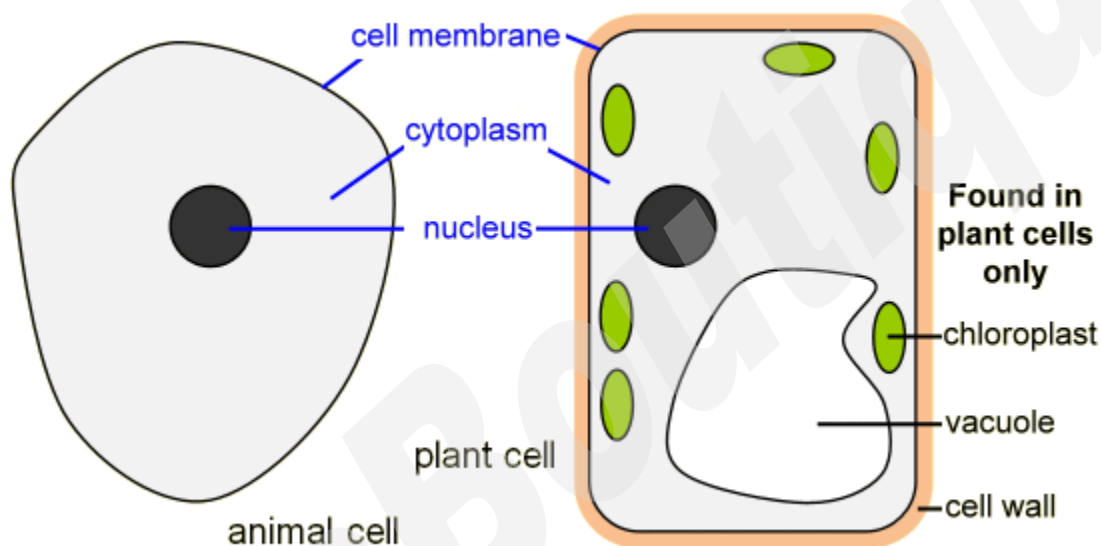


Organisation of the organism

(IGCSE Biology Syllabus 2016-2018)

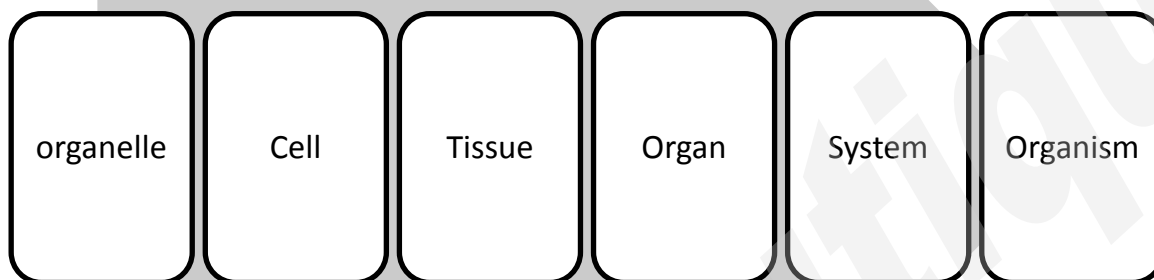
Cell Structure and Organisation

- All living things are made of cells




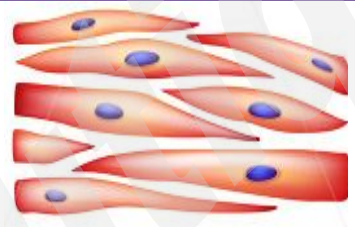
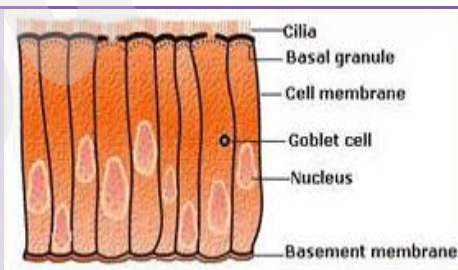
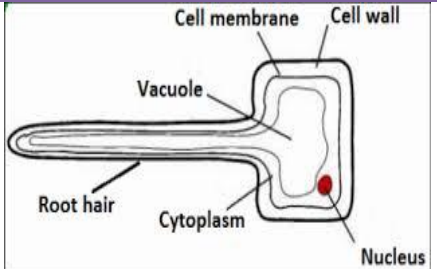
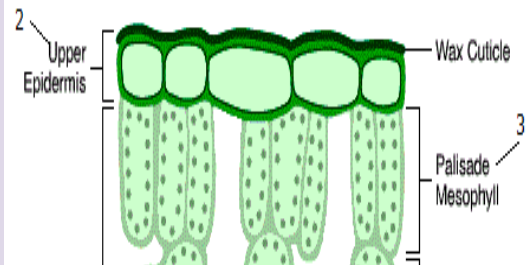
Cell structure	Function
Cell membrane	Partially permeable to allow certain substances to enter and leave the cell
Cytoplasm	Where chemical reactions take place
Nucleus	Contains DNA and controls the cells
Mitochondria	Organelle where aerobic respiration happens
Ribosome	Makes protein and can be found floating within the cytoplasm
Only plant cells have	
Vacuole	Stores food and water and helps to maintain shape of cell
Cell wall	Rigid to keep shape of cell
Chloroplasts	Contain chlorophyll, which absorbs light energy for photosynthesis

Level of Organisation



- Organelle: a specialised part of a cell that has its own function, e.g. nucleus
- Cell: the smallest part of a living structure that can operate as an independent unit e.g. red blood cell
- Tissue: a group of cells with similar structures, working together to perform a shared function e.g. muscle tissue
- Organ: a structure made up of a group of tissues, working together to perform specific functions e.g. heart
- System: group of organs with related functions, working together to perform body functions e.g. respiratory system

Types of cell

Cell	Function	Adaptations	Diagram
Red blood cell	Transport of oxygen	-Biconcave shape -No nucleus -Flexible -Has haemoglobin	
Muscle cell	Contracts to get structures closer together	-Long -Many protein fibers in cytoplasm to shorten cell when energy available	
Ciliated cell	Move and push mucus	-Tiny hairs called cilia	
Root hair cell	Absorb minerals and water	-Elongated shape for more surface area -No cytoplasm so that water passes freely	
Palisade cell	Photosynthesis	-Regular shape so many can fit in a small space -Many chloroplasts	

Size of specimens

$$\text{Magnification} = \frac{\text{size of drawing}}{\text{size of specimen}} = \frac{\text{image}}{\text{actual}} = \frac{I}{A}$$

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