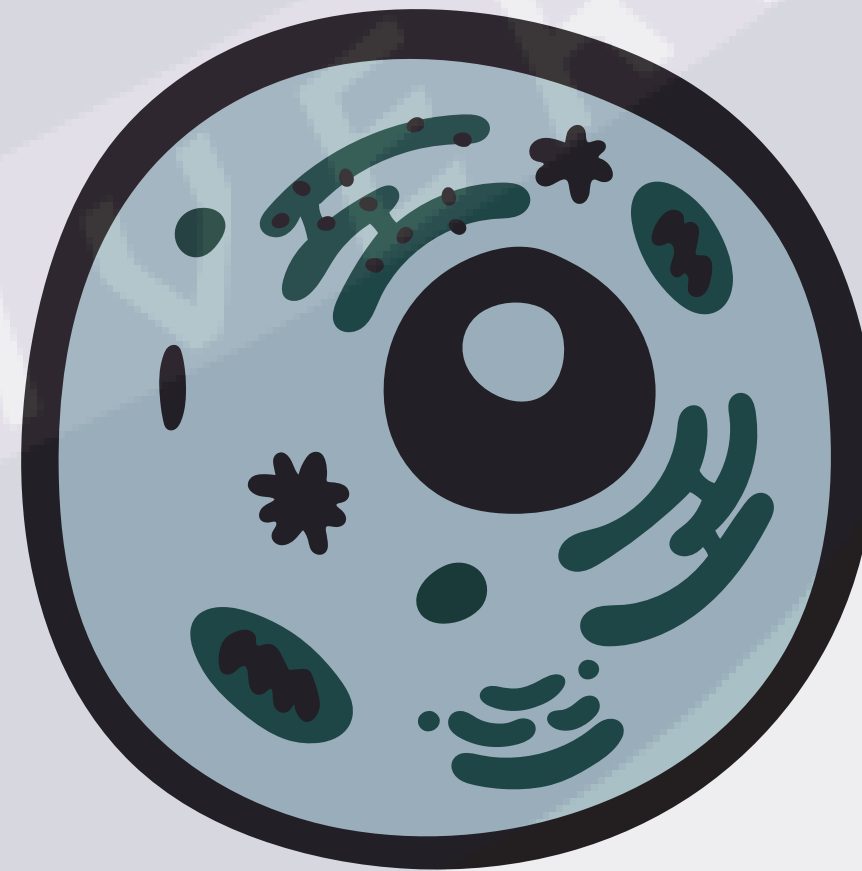
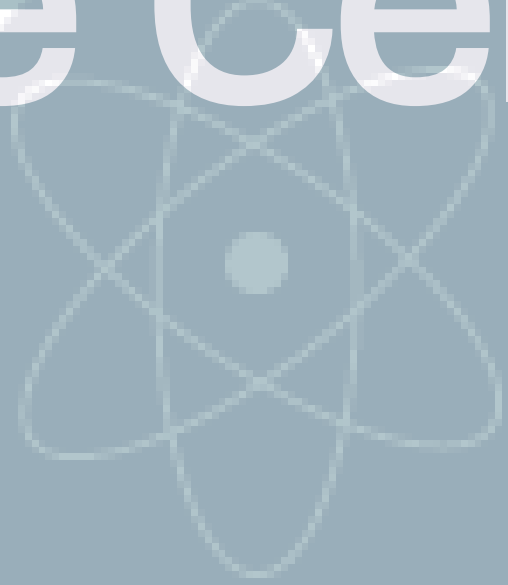
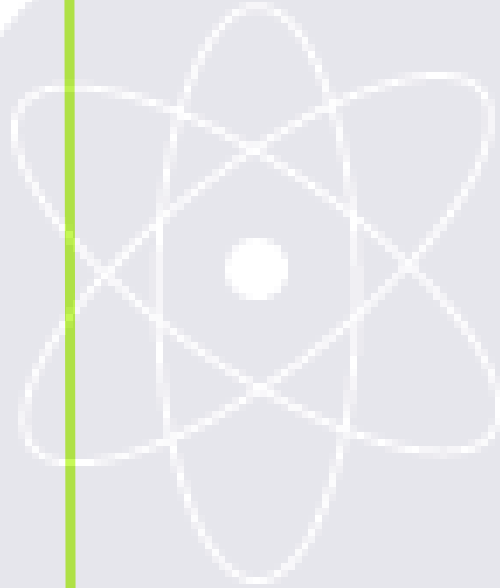
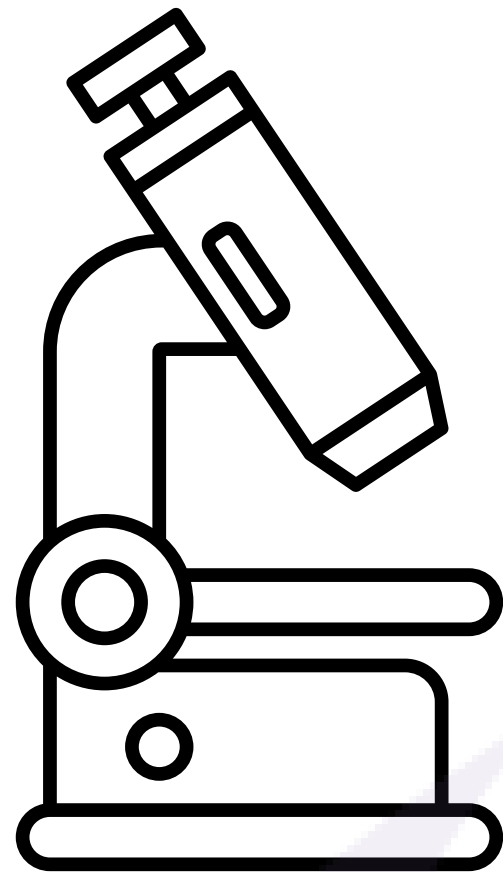


Ch. 4: The Cell



Microscopy:



Light Microscope – Visible light is passed through the specimen and then through glass lenses.

Electron Microscope – Focuses a beam of electrons through the specimen or onto its surface.

Cell Fractionation – The process of centrifuging disrupted cells at sequential speeds to create pellets enriched with specific cellular components.

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Cell Structure:

Organelles – The membrane-enclosed structures within Eukaryotic cells.

Cytosol – A semi fluid, jellylike substance in which all sub cellular components are suspended.

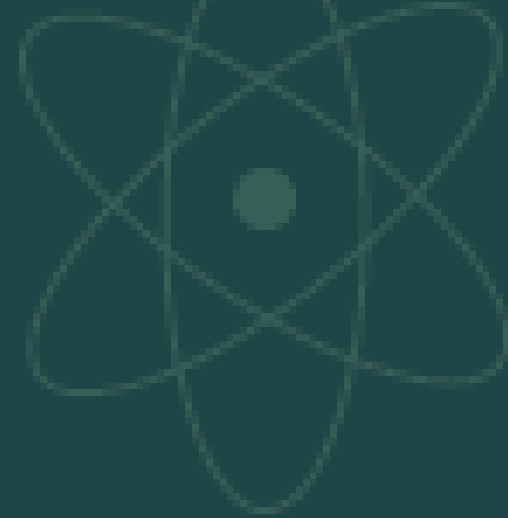
Nucleoid – A non-membrane-enclosed region where DNA of prokaryotic cells is concentrated in.

Plasma Membrane – A selective barrier that allows passage of enough oxygen, nutrients, and waste to service the cell.

Nuclear Envelope – Encloses the nucleus, separating its contents from the cytoplasm.

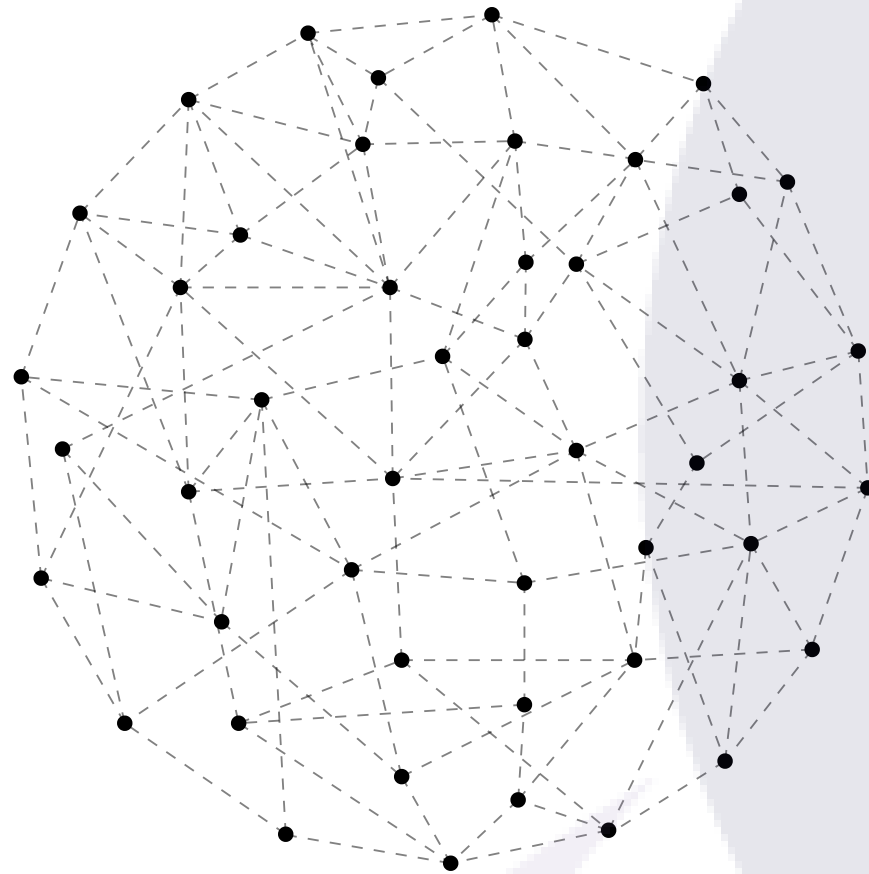
Nuclear Lamina – A netlike array of protein filaments that maintain the shape of the nucleus.

Parts of a Cell:



Reference sheet on website!

The Cytoskeleton:



Cytoskeleton – A network of fibers extending throughout the cytoplasm.

Microtubules – Large hollow rods constructed from tubulin.

- Support the cell & provide track for motor proteins.
- Two types:
 - Flagella & cilia

Centrosome – A region often located near the nucleus and is considered a "microtubule-organizing center".

- Centrioles – Composed of nine sets of triplet microtubules arranged in a ring.

Dyneins – Motor proteins attached along each outer microtubule.

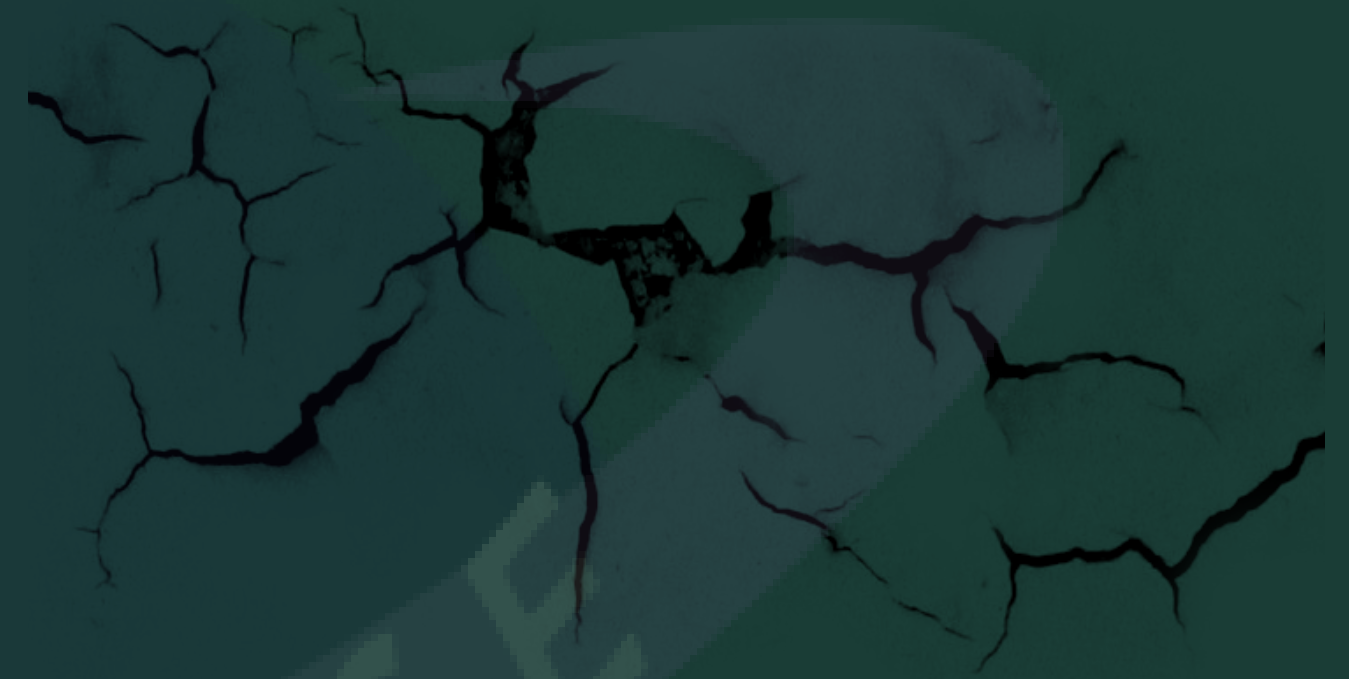
Extracellular Components:



Cell wall – An extracellular structure of plant cells.



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Extracellular matrix (ECM)
– Consists of glycoproteins and other carbohydrate-containing molecules secreted by the cell.

- Most abundant glycoprotein is collagen.
- Proteoglycans – Consists of a small core protein with many carbohydrate chains covalently attached.
- Fibronectin, a glycoprotein along with other ECM proteins bind to cell-surface receptors called integrins that are built into the plasma membrane.
- Plasmodesmata – Membrane-lined channels filled with cytosol (in plant cells).

Cell junctions:



Tight Junctions – Plasma membranes of neighboring cells are very tightly pressed against each other, bound by specific proteins.

Desmosomes – One type of anchoring junction that functions like rivets, fastening cells together into strong sheets.

Gap Junctions – Communicating junctions that provide cytoplasmic channels from one cell to an adjacent cell, similar in function to plasmodesmata.

Endosymbiont theory – States that an early ancestor of eukaryotic cells engulfed an oxygen-using non-photosynthetic prokaryotic cell.

