CHAPTER 2 : Basic components of living systems

The ultrastructure of plant cells

Cellulose cell wall

-Plant cell walls are made of cellulose, a complex carbohydrate

-Freely permeable

-Give the cell shape

-Contents of cell press against cell wall making it rigid, supporting the cell individually and the plant as a whole

-Acts as a defense mechanism, protecting the contents of the cell against invading pathogens

-All plants have cellulose cell walls

Plant cell organelles

-Unlike animal cells, plant cells are rigid structures

-Structures unique to plant cells include vacuoles and chloroplasts

Vacuoles

-Membrane lined sacs in cytoplasm containing cell sap

-Most plant cells have large permanent vacuoles, important in the matrix plance of turgor, so contents of cell push against wall and maintain a light framework for the cell

-Membrane of a vacuole in a plant certis caned the tonorlast, selectively permeable, some small molecules can pars through, others can not

-If they appear in a P.a. cells, they're enall and transient (not permanent)

Chloroplasts

-Organelles responsible for photosynthesis in plant cells

-Found in cells green parts, eg. leaves

- -Double membrane structure, similar to mitochondria
- -Fluid enclosed in chloroplast is called stoma
- -Have an internal network of membranes, form flattened sacs, thylakoids
- -Several thylakoids stacked together are called granum (pl)grana
- -Grana are joined by membranes called lamellae

-Grana contain chlorophyll pigments, where light-dependant reactions occur during photosynthesis

- -Starch produced by photosynthesis is present as starch grains
- -Like mitochondria, chloroplasts contain DNA and ribosomes
- -Can make their own proteins