Flagella and Cilia - cellular appendages

can propel cells or propel materials over the cell surface

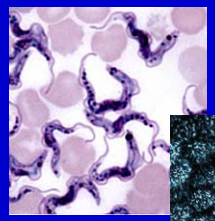
cells that have flagella have few (usually 1 or 2)

cells that have cilia have many - covering the surface

flagella move with whip-like movements to propel the cell

cilia have a more regular stroke and groups of cilia appear to move in unison, resulting in a wave-like motion

flagella 5 to 20x longer than cilia



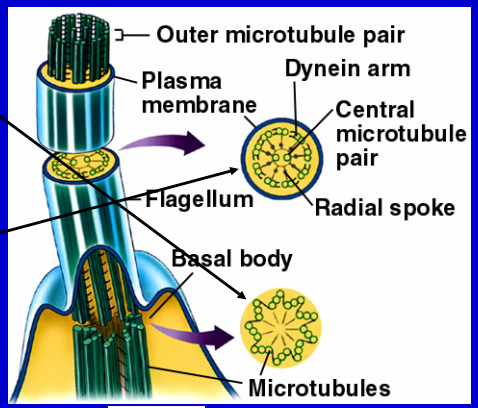
Structure

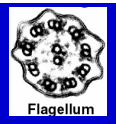
has basal body with 9 + 0 structure of microtubules

flagellum is membrane bound with pairs of microtubules in a 9+2 pattern

each pair of tubules has short arms of another protein - dynein -

that extend to neighboring tubules



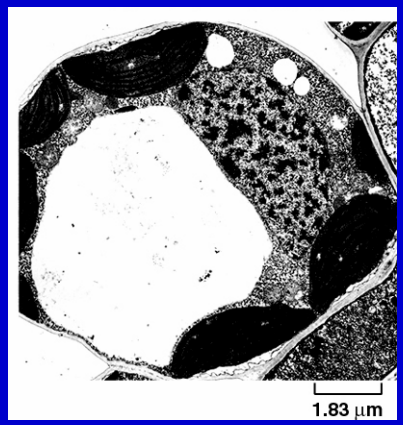


movement of the flagellum is produced by sliding of the microtubule pairs

Plant Cells have, in addition to the collection of organelles found in other groups, a **central vacuole** for storage and for producing _____ pressure inside the the cell.

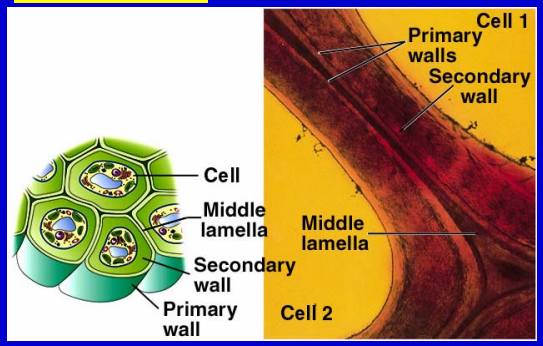
The central vacuole is usually filled with water and solutes. A high solute concentration draws water into the vacuole, expanding the vacuole and the cell.

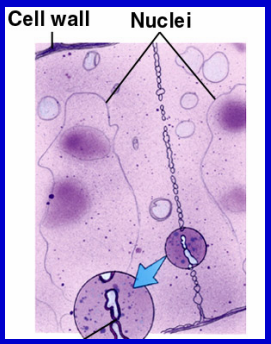
Because plant cells are enclosed by a cell wall, the expansion of the vacuole can exert pressure on the cell without causing the cell to burst.



Plants have cell walls made of cellulose.

During cell division plant cells build dividing walls between the two new cells called the **cell plate**. An adhesive layer - the **middle lamella** - is laid down between the new cell walls





Cell walls can be thickened through the addition of materials to the inside of the primary cell wall.