

can vary greatly in size & shape

have plasma membrane

all have ribosomes

many have internal photosynthetic membranes

stiff cell wall

cytoskeleton

- Eukaryotes: have a membrane-bound nucleus (animal cells)

smaller membrane-bound organelles

these cells are much larger

have diverse & dynamic cytoskeleton

- Key processes cell need to do:

produce energy

regulate the manufacture & degradation of proteins

take up materials from outside the cell & release materials from inside the cell

transport materials w/in the cell

signal to other cells to form coordinated responses

replicate for growth, development or replenishment

- Transport proteins: transmembrane proteins that transport molecules (there are 3 broad classes of transport proteins that affect membrane permeability)

Channels

Carrier proteins (transporters)

Pumps

- Entirety of cellular life is based on movement of sodium, potassium, & chlorine across cell membranes

can't be an equal concentration of sodium, & chlorine across cell

- Facilitated Diffusion through Channel Proteins: cells have many diff. types of channel proteins in their membranes, each featuring a structure that allows it to admit a particular type of ion or small molecule
 - these are responsible for facilitated diffusion
 - facilitated diffusion: the passive transport of substance that wouldn't otherwise cross the membrane
 - potassium channels only allow potassium to go through a cell membrane (diff. from other channels)
- Facilitated Diffusion through Carrier Proteins: facilitated diffusion can occur through channels or through carrier proteins, or transporters, which change shape during the transport process
 - facilitated diffusion by transporters occurs only down a concentration gradient, reducing difference b/t solutions
 - glucose is a building block for important macromolecules & a major energy source but lipid bilayers are only moderately permeable to glucose
- Active Transport by Pumps: cells can transport molecules or ions against an electrochemical gradient (does require energy unlike other movements across membrane-requires energy in form of ATP)