Structure & Function of Macromolecules?

dehydration reaction	water molecule **formed** when 2 molecules are ***covalently*** bonded	connecting monomers to form a polymer
enzymes	speed up chemical RXNs	can be made of
hydrolysis	bond betewen monomers broken by adding a water molecule	polymers disassembled to monomers by this
glycosidic linkage	***covalent*** bond formed between monosaccaraides in a dehydration reaction	
saturated fatty acids	as many H bonds possible	
unsaturated fatty acids	one or more double binds w/ 1 fewer H fewer carbon	
polypeptide	polymer of Amino Acids	

Proteins!

primary structure	linear amino acid chain	initial folding of linear polypeptide is driven by hydrogen bond formation of polypeptide backbone

Proteins! (cont)

secondary structure	forms alpha heleces and beta pleated sheets through hydrogen bonding between polypeptide backbone	to form alpha-helices and beta-sheets - secondary structure
tertiary structure	hydrophobic interaction drives this structure	3D shape interactions between side chains
quaternary structure	2 or more aggregated polypeptide chains	ex: hemoglobin, collagen
Protein folding	not very efficient = about 30% of all newly synthesized polypeptides are misfolded and tagged	
ubiquitin liagase	ubiquitin tags misfolded proteins for the proteasome to breakdown	

Nucleic Acids

pyrimidine	C and T and Uracil	smaller than purines
purines	A and G	larger than pyrimidines

General Cell Stuff

Plant cells	mitochondria nucleus(nucleolous, nuclear envelope, chromtin) peroxisomes cell wall chloroplasts ribosomes ERs Golgi central vacuole
Animal Cells	

Endomembrane system

Included is ...	nuclear envelope ER Golgi lysosomes vessicles and vacuoles
Tasks	protein synthesis transport proteins into membranes, organelles, or out of cell metabolism movement of lipids
Rough ER	ribosomes attached

Enzymes

Enzymes	Enzymes often change shape when they bind their substrate(s).	NOT always protien
allosteric site	CAN be the same as an active site	ATP can be a substrate at active site or bind allosteric ly as inhibitor

Fibers of the cytoskeleton

microt-ubules	thickest	contain tubulin dimers	maintain cell shap cell motility (cilia/ flagella) chromosome mvmt organelle mvmt
microfila-ments	thinnest solid rods aka actin filaments	made of actin	maintain adn change cell shape contractions cell motility animal cell division
interm-ediate filaments	mid-range	made of protein	anchor nucleus
microt-ubules	guide vessicles ftom ER to Golgi and from Golgi to plasma membranse	separation of chromo-somes	
centorsome	miicroT grow from centrosome near nucleus	centrioles - witin centrosome	

Fibers of the cytoskeleton (cont)

cillia nand flagella	motile cilia typically *do not* have signal receiving attenae(n-onmotile)	bending of flagella dn cillia = dyneins 9motor proteins attached to microT)	
motor proteins	two ATPase heads that bind swivel unbind (repeat) for a walking motion to move proteins	ATP for energy	dyneins (-) kinesins (+)

Membranes

lipid bilayer