AP bio review Cheat Sheet

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Chemistry of Life

Nonpolar covalent bonds: electrons shared equally between atoms	pH scale: between 0 and 14,
Polar covalent bonds: one atom has greater electrone-gativity unequal sharing of electrons	acids: excess of H+ ions pH>7
Ionic bonds: chemical bonds from attration between charged ions	Bases: excess of OH- pH>7

Hydrogen bonds: weak bonds berwwen partial + charged hydrogen atom and electronegatice oxygen/nitrogen of another, cause Cohesion(sticking of like molecules), adhesion(sticking of unlike molecules), and transpiration(movement of water molecules in plants)

Specific heat: amount of heat required to raise or lower temp by 1 degree C

Respiration/Fermentation

Glycolisis: breakdown two pyruvate(glu-cuse) into 2 pyruvate + 2 h20, 2 ATP, 2 NADH + 2H+

Pyruvate Oxidization: pyruvate turns into CO2, NADH, Acetyl CoA

Citric Acid/Krebs cycle: starts w/ acetyl CoA turns into 2CO2, 3NADH, 1ATP, 1FADH

ETC: pumping of protons to create a gradient which powers chemiosmosis

Chemiosmosis: ATP synthesis powered by ETC

Total yield: 30-32 ATP(2 from glycolisis, 2 from citric acid, 26-28 from oxidative phosphorylation)

C 6 H 12 O 6 + 6 O 2 --> 6 CO 2 + 6 H 2 O + ATP

Respiration/Fermentation (cont)

fermentation: expansion of glycolis where ATP is produced by substrate level phosphorylation, anerobic

Macromolecules

Monosa-ccharide: monomer of carbs	Lipids:fu nction is energy/ prote-ction	Proteins: polymers made of amino acid monomers, linked by peptide bonds	Nucleic acids: DNA and RNA, monomers are nucleo-tides
polysa-cch-arides: polymers of carbs	steroids: four rings fused together	Primary structure: amino acid sequence	Made of nitrog-enous base, 5 carbon sugar and a phosphate group
Energy-storing polysa-ccarides: starch, glycogen		Secondary:hydrogen bonding results in alpha helix or beta pleated sheet	
Structural polysa-cch-arides: cellulose, chitin		tertiary:complex shapes from bonding between R groups	

Macromolecules (cont)

QUaternary" two or more polypeptide chains into one large protein

The Cell

Ribosomes: protein factories	Isotonic solution: same amount of solute
Endoplasmic Reticulum: smooth(sythesis of lipids, package to transport vesicles), meatabolize carbs, detoxify, storage), Rough(sythesize proteins)	Hypert-onic: more solute
Golgi apparatus(receives, sorts, ships)	hypotonic: less solute

Endosymbiont theory: mitochondria and chloroplast from prokaryotic cells, have dna and double membrane

peroxisomes: transfer hydrogen to oxygen, detoxify

Energy of Life

Catabolic: release of energy by breakdown of complex to simple

Anabolic: consume enrgy to make compli-cated from simple

Exergonic: energy released

Endergonic: requires energy