

Precursors

Linear Polymers - Covalent bonds
- nucleotides in DNA and RNA
- too big to fit in a cell
- fold into complex 3D shapes

Supramolecular Complexes - Groups of linear polymers
-enzymes, ribosomes...

Subcellular Organelles - Golgi
- ER
- Group of supramolecular complexes

--> Cells --> --> Organisms
Tissues

Cell Requirements to live, grow and propagate

Precursors (that which comes before) precursors are oxidized for energy or combined to form larger biomolecules

Energy to drive chemical reactions and/or other cellular processes (ex: muscle contractions)

Information to direct and control cellular growth, propagation and response to environmental change

Stabilizing Forces

London Forces (dispersion, induced dipoles) - **Weakest**
- electron clouds overlap, short lifespan, constantly breaking and reforming

Hydrophobic Interaction - Special London force, non-polar molecules dissolved in water. the two don't mix so H₂O forms a rigid structure around the non-polar molecules

Dipole-Dipole Interactions

Hydrogen Bond - Strong Dipole-dipole interaction
- attached to N, O, F (F not in living cells)
- lots of attractive force

Electrostatic Interaction - Ion pairing or salt bridges

Energy decrease = more stable when nonpolar molecules interact with each other surrounded by water
- The 5 hold life together

General Definitions

Biochemistry: the study of the matter that makes up living things

Structural Complementarity: what holds us together

Classes of Precursor Molecules

Carbohydrates - **PRIMARY ENERGY SOURCE**
- Most abundant molecule in biosphere
- Sugars
- Play a role in other molecules

Lipids (fats and oils) - excess of everything
- energy reserve (reservoir)
- can store an infinite amount
- stored in adipose cells
- **MAIN COMPONENTS OF THE CELL MEMBRANE (barrier)**

Amino Acids - serve as a precursor to the proteins
- Bio source for nitrogen and sulfur
- can be oxidized for energy in case of starvation

Nucleotides - DNA and RNA
- Trap and shuttle energy
- ATP
- signal transduction (*turns hormone into a cellular response*)

Ochem v. Biochem

Organic chemistry is about carbon compounds Biochemistry is about carbon compounds that crawl

