Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**ORGANIC MOLECULES NOTES**

**Carbohydrates**

Chemical formulae

|  |  |  |
| --- | --- | --- |
| Molecular Formula | Empirical formula | Structural Formula\*\*recognize it |
| C6H12O6 | CH2O | Has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

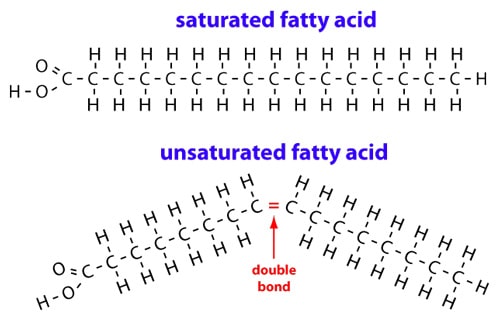
**Composition and uses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Elements Present** | **Used by organisms for** | | **Building Blocks** |
| Carbon  Hydrogen  Oxygen | \_\_\_\_\_\_\_\_\_  See starch and glycogen below | \_\_\_\_\_\_\_\_\_\_  See Chitin and cellulose below | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (simple sugars  Ex: glucose THIS IS THE BODIES quick cheap energy supply |
| **Examples & Functions / Related terms & info**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = 2 connected monosaccharides  Polysaccharide = \_\_\_\_\_\_\_\_\_\_ connected monosaccharides   * Starch – polysaccharide stored in plants used as energy reserve * Glycogen - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Chitin – makes up the exoskeleton (provides support) of arthropods which are invertebrates. * Cellulose – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   Names of carbohydrates usually end in \_\_\_\_\_\_\_ ex: | | | |

**Indicators**

Lugols iodine solution turns from \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is present.

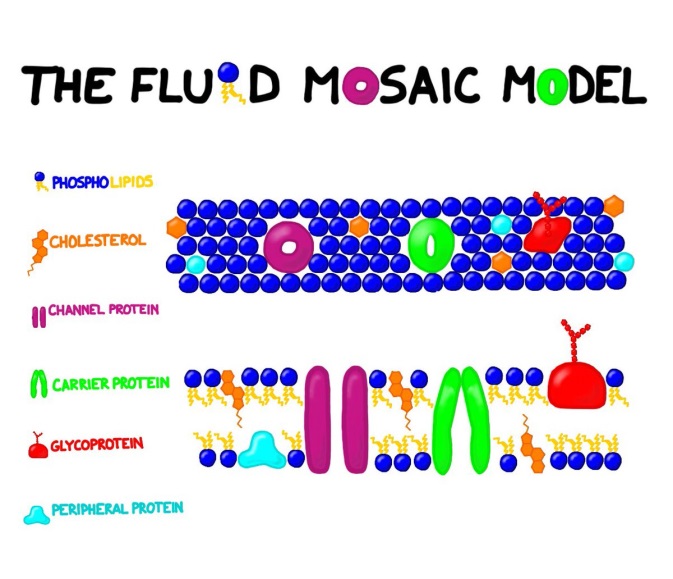
Benedicts solution turns from \_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ when \_\_\_\_\_\_\_\_\_\_\_\_ is present with the addition of heat.

****

**Lipids**

**Composition and uses**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Elements Present** | | **Used by organisms for** | | **Types of Fats** | |
| Carbon  Hydrogen  Oxygen  NO SPECIFIC RATIO OF H:O | | Stored \_\_\_\_\_\_\_\_  See types of fats | Structure  & cell membrane | **Saturated fats**  All \_\_\_\_\_\_\_\_\_\_\_ bonds C-C  \_\_\_\_\_\_\_\_\_ chain  Solid at room temperature  FATS  Mostly animals  **Unsaturated Fats**  Some \_\_\_\_\_\_\_\_\_ C=C bonds or triple bonds  \_\_\_\_\_\_\_\_\_ chain  Liquids at room temp  OILS  Mostly plant  **Cholesterol C27H46O**  Component of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_  **Triglycerides –\_ \_\_\_\_\_\_\_\_\_** not used right away converted to this for \_\_\_\_\_\_\_\_ in fat cells | |
| **Building Blocks**  **Of Lipids**  Carboxyl Group = COOH    3 fatty acids    1 glycerol | | | |
| Uses explained | **THE CELL MEMBRANE** = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = selectively permeable  Having the right amount of lipids aka “The Fat goldilocks theory”  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of multiple \_\_\_\_\_\_\_\_\_ of fats each has role in how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the gaps in the cell membrane are.  **Saturated fats =** tightly bonded TOO MUCH: TOO LITTLE:  **Unsaturated fats =** bent molecules TOO MUCH: TOO LITTLE:  **Cholesterol =** very large & takes up space TOO MUCH: TOO LITTLE:  BUT JUST RIGHT= combination of three types of fats that results in enough “gaps” to allow for \_\_\_\_\_\_\_\_\_\_\_ crucial molecules (ie \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_) to pass through but not larger bulky molecules (ie \_\_\_\_\_\_\_\_\_) **selectively permeable – only some stuff can pass through.** | | | |

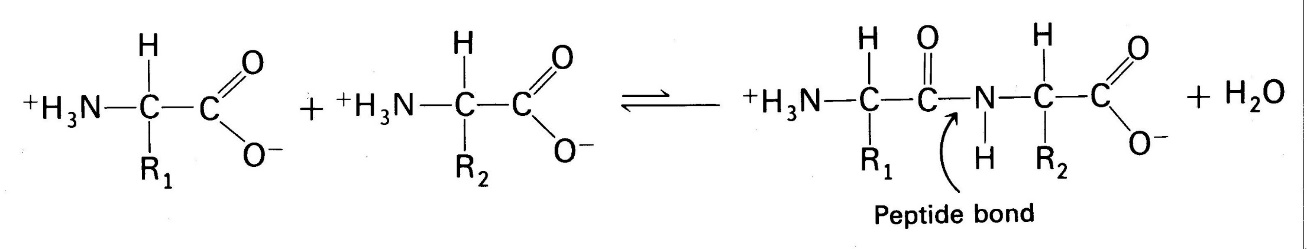


Side view / Cross section

Outside View

**ProteiNs**

|  |  |  |
| --- | --- | --- |
| **Elements Present** | **Used by organisms for** | **Related Terms & Info** |
| Carbon  Hydrogen  Oxygen  **\_\_\_\_\_\_\_\_\_\_\_\_\_** | Structure and movement (muscles)  Enzymes  Antibodies  Hormones  Pigments | Peptide bond- bond between 2 Amino Acids  Dipeptide – 2 amino acids bonded  Polypeptide = long chanin of AA bonded |
| **Building Block= Amino Acids (AA)**  R= Side chain.. varies among amino acids    Related image | | |

**Making Proteins ... Dehydration Synthesis**

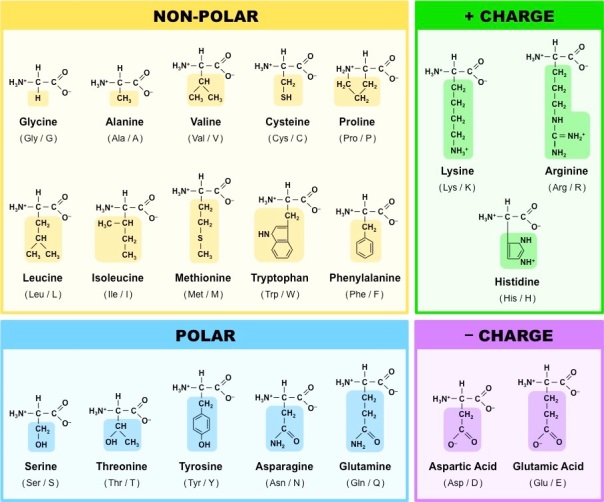
***Important proteins and functions:***

Enzymes- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Antibodies – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hormones – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ that affect \_\_\_\_\_\_\_\_\_\_\_\_\_ in separate area of body

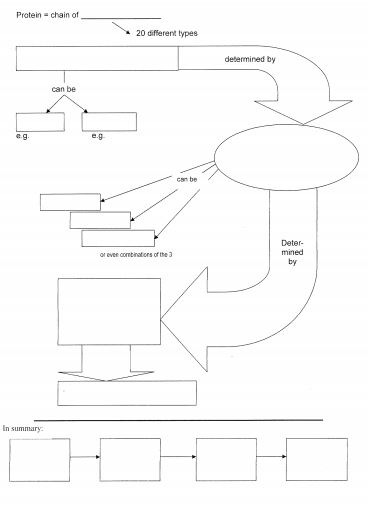
Muscle and Movement – component of all tissues and organs, provides higher and more sustained energy

\*\*\* Shape of the protein 🡪 Determines Function See next page

Other Information:

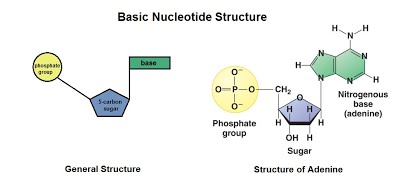
20 Amino Acids

9 essential amino acids = cannot be made by body.. must be ingested.



**Nucleic Acids**

Building block= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Two Types:**

|  |  |  |
| --- | --- | --- |
|  | DNA | RNA |
| Full Name | Deoxyribonucleic acid | Ribonucleic acid |
| Basic Structure | 2 long twisting strands of nucleotides in the form of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1 Single strand of nucleotides |
| Nucleotide sugar | deoxyribose | Ribose |
| Notrogenous bases | Guanine (G)  Cytosine (C)  Adenine (A)  **Thymine (T)** | Guanine (G)  Cytosine (C)  Adenine (A)  **Uracil (U)** |
| Location in cell | Nucleus (the chromosomes) | Cytoplasm and ribosomes |
| Function |  |  |

