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 monosaccharidesPolysaccharide = \_\_\_\_\_\_\_\_\_\_ 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 = COOH3 fatty acids 1 glycerol  |
| Uses explained  | **THE CELL MEMBRANE** = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = selectively permeableHaving 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) EnzymesAntibodiesHormones Pigments  | Peptide bond- bond between 2 Amino Acids Dipeptide – 2 amino acids bondedPolypeptide = 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 |  |  |

