**MOLECULE IDENTIFICATION**

1. **- CARBOHYDRATES :**

**Looking for a formula with C1H2O1 ratio.**

**Example of some monosaccharides C5H10O5 (PENTOSE) or C6H12O6 (HEXOSE)**

**Structures look like:**

 **Glucose – Monosaccharide (hexose 6 carbons)**



**RIBOSE**

**DEOXYRIBOSE**

* **Both of the above are Pentose monosaccharide sugars (5 carbons)**

**Or like this – Two monosaccharides join to form a DISACCHARIDE**

 **Maltose – Disaccharide**

A disaccharide of two GLUCOSES called **MALTOSE**

**Or when 100s of glucoses join together to form Polysaccharides:**



**CELLULOSE – every 2nd glucose upside down**

**GLYCOGEN – lots of branching**

**STARCH**

1. **- FATS/LIPIDS**

 **Neutral Fats – Like a Triglyceride – To store energy**



**Recognize both monomers : Glycerol and a Fatty acid:**



**GLYCEROL**



**Phospholipids: To form cell membranes**



**Phospholipid Bilayer forming cell membrane:**



**Sterol Lipids – Look a bit like honeycomb**



**Cholesterol is used to firm up a cell's cell membrane and other cells will take cholesterol and modify its structure to make a variety of sterol lipid hormones**



1. **-PROTEINS:**

**Look for the monomers of a protein : Amino Acids**



**Amino acids connect together to form dipeptides (2 aa's) or polypeptides (many aa's linked together).**



**Small Polypeptides shown Below:**



**FOUR LEVELS OF STRUCTURE to a protein**



1. **-NUCLEIC ACIDS :**

**Look for the monomers : NUCLEOTIDES - Include a Phosphate Group, a 5-Carbon (pentose) Sugar and a Nitrogen-containing Base.**



 **When these monomers (nucleotides) are joined together they can form DNA (Deoxyribonucleic Acid) or RNA (Ribonucleic Acid). DNA uses nucleotides that possess a "DEOXYRIBOSE Sugar – C5H10O4". RNA on the other hand uses nucleotides that possess a "RIBOSE sugar – C5H10O5"**



**DNA Structure: Double stranded and Helical – Double Helix**



**RNA Structure : Single-stranded and linear (straight)**



1. **ATP and the ATP CYCLE:**

**All life forms use a special molecule called Adenosine Triphosphate for all cellular processes that require energy. This ATP molecule is fairly similar to an RNA Nucleotide, but instead of possessing one Phosphate group, it possess 3 Phosphate groups.**



**As fast as this molecule is formed in cells, it is hydrolyzed with water to release energy that can be used by the cell. Then the low energy molecules produced through this reaction (Adenosine Diphosphate and a free Phosphate group) can then be joined back together by restoring their bond by adding energy in. This is called the ATP Cycle:**



**ADENOSINE:**

