

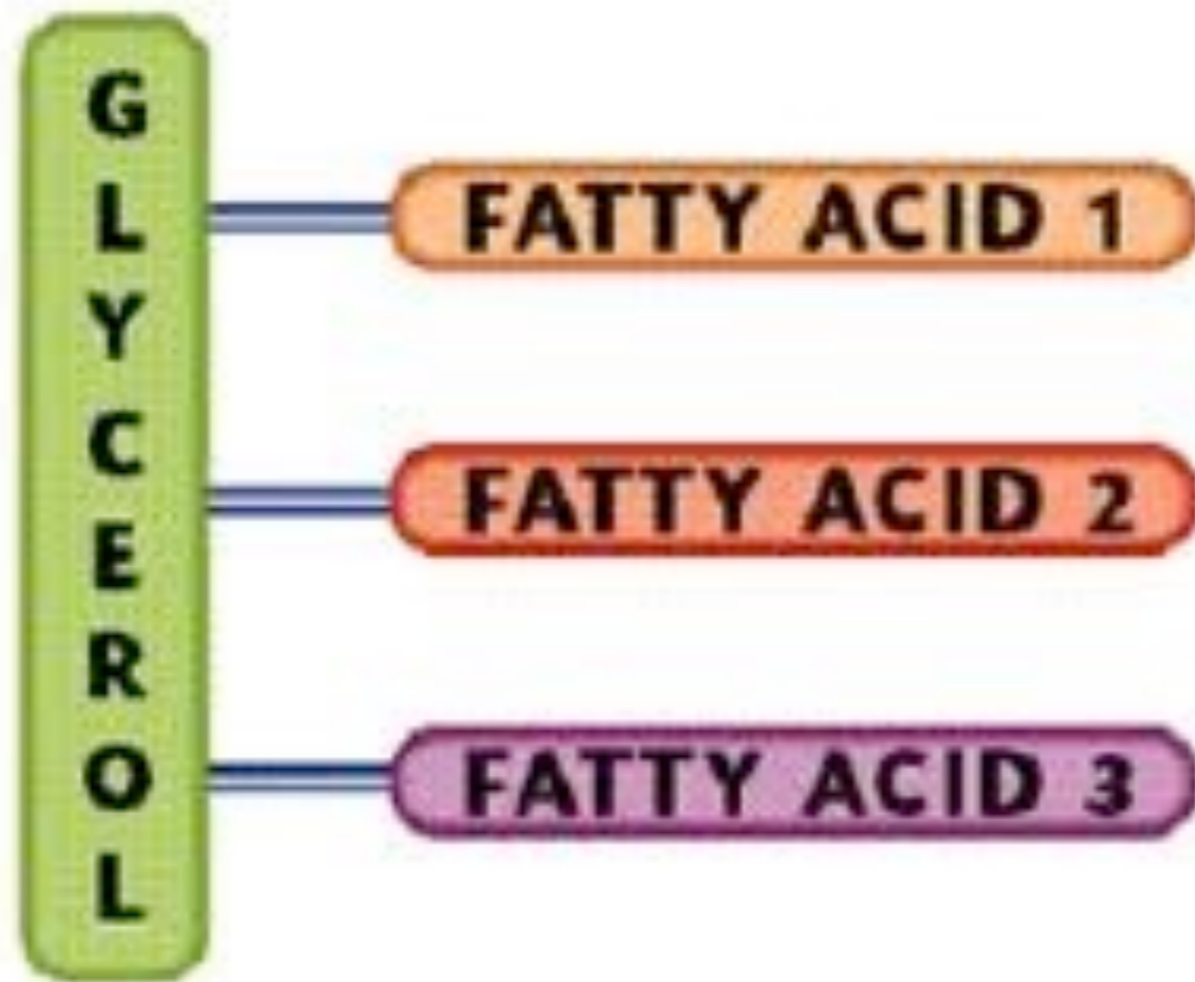
Lipids

Lipids

- * Made up of C, H and O as well, but with more H.
- * They store more energy than carbohydrates, but harder to get the energy out of.
- * Four classes of lipids: oils and fats, waxes, phospholipids and steroids.

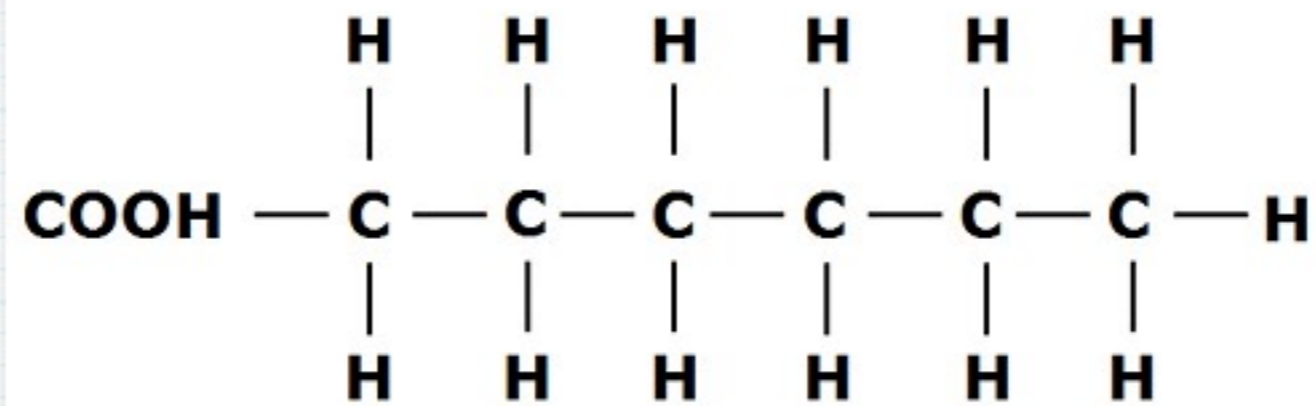
Fats and Oils

- * Each of these is known as a triglyceride, contain three fatty acids attached to a glycerol molecule.



Fats and Oils

- * If the fatty acids are straight, they are known as saturated fatty acids and the substance is a fat (i.e. lard, butter, animal fat – solid at room temperature).
- * Can lead to coronary artery disease if over eaten.

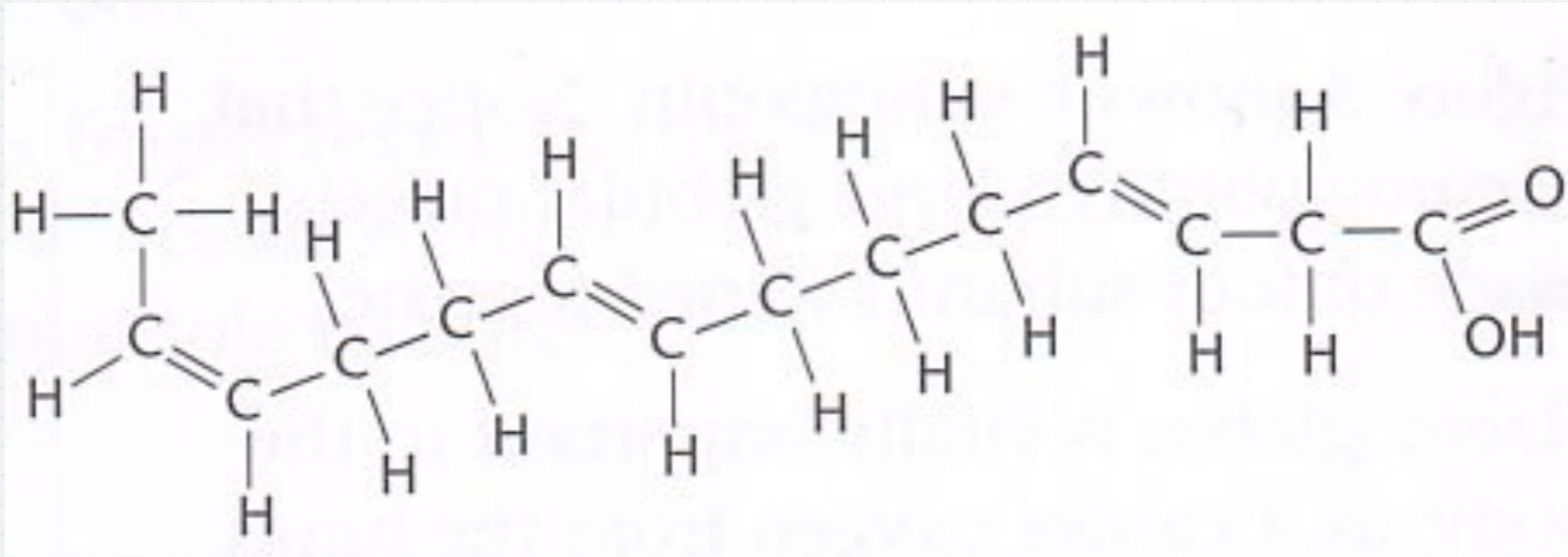


Saturated Fat



Fats and Oils

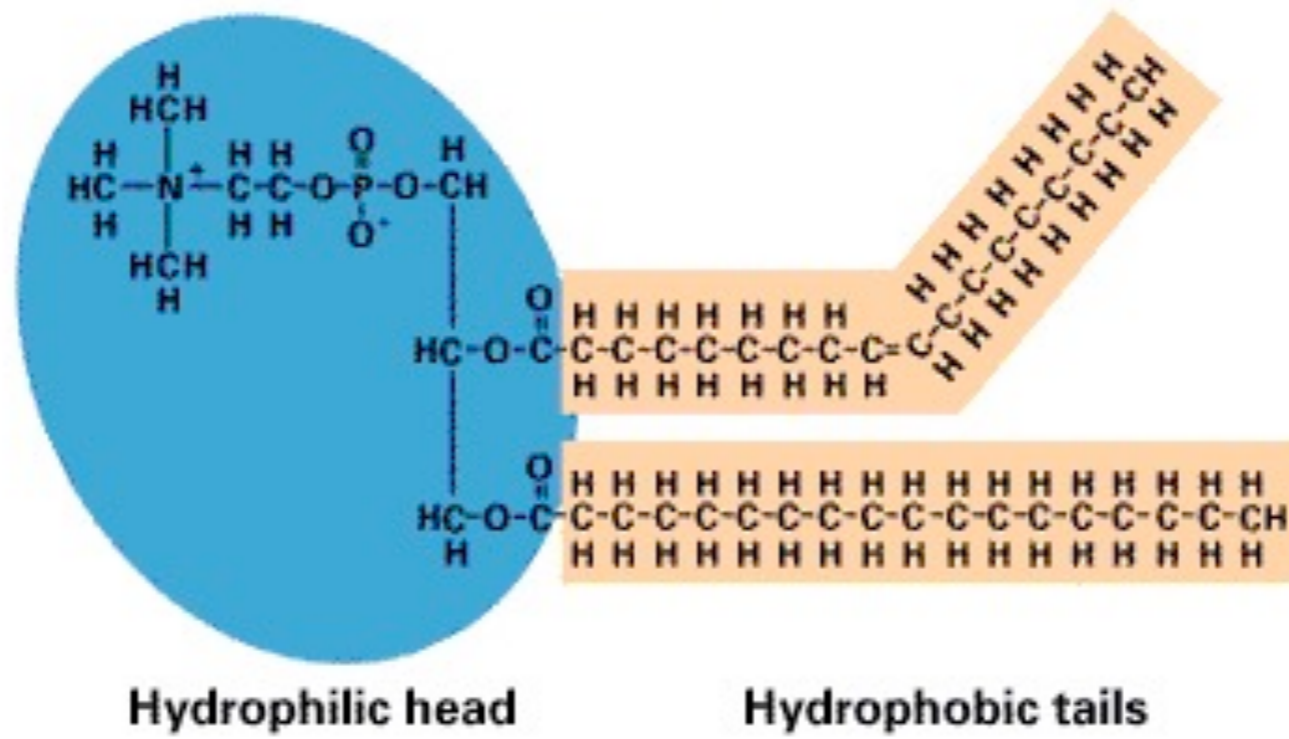
- * If they are bent, they are called unsaturated fatty acids and the substance is an oil (peanut oil, canola oil, plant oils). Liquid at room temperature



Phospholipids

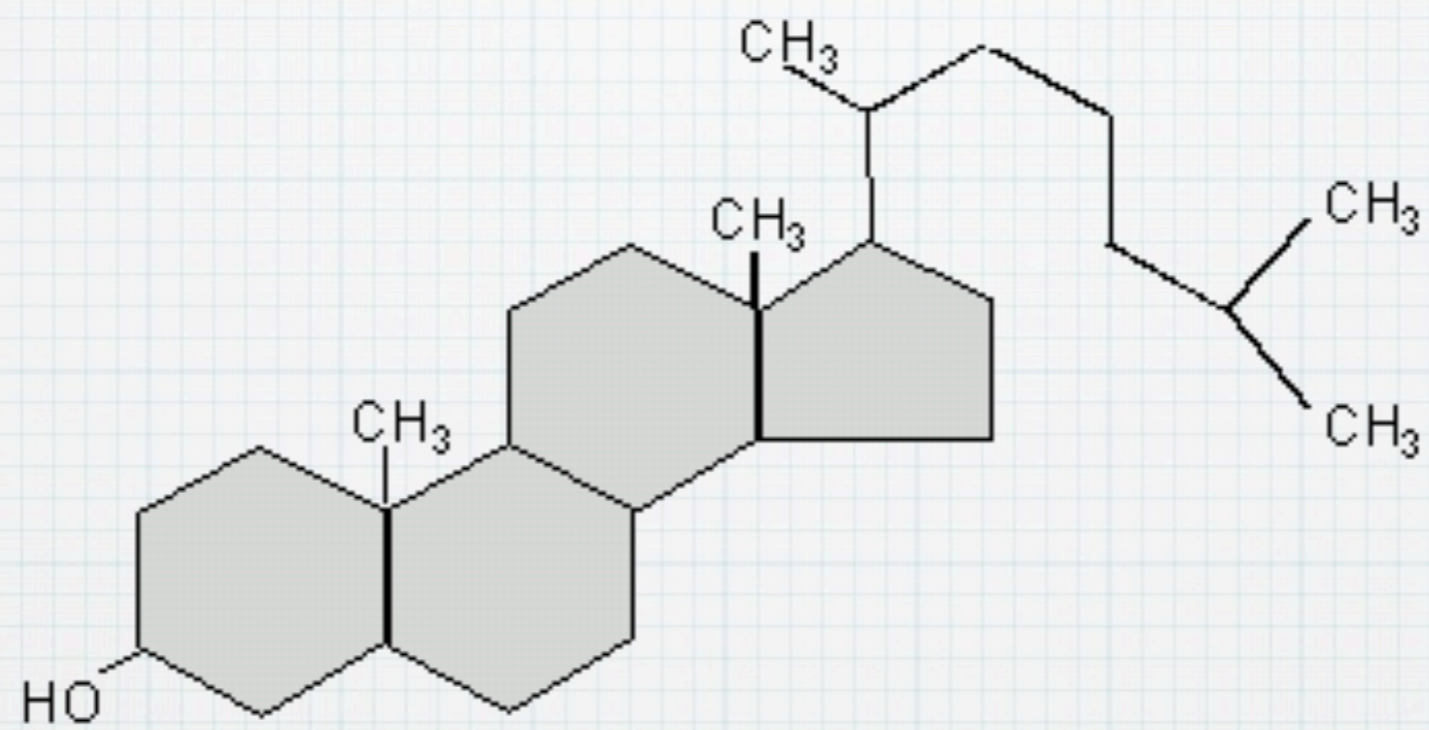
- * Main component of cell membranes.

A Phospholipid



Steroids

- * Made up of four fused carbon rings.
- * All are derivatives of cholesterol.
- * All sex hormones are natural steroids.



Waxes

- * They are used by animals and plants as waterproofing agents.
- * Basically they are steroids with long side chains coming off of them.
- * Examples: beeswax, cutin on leaves...



Lipids

ENERGY for your body

Transport fat soluble vitamins

Protect organs, growth, and development

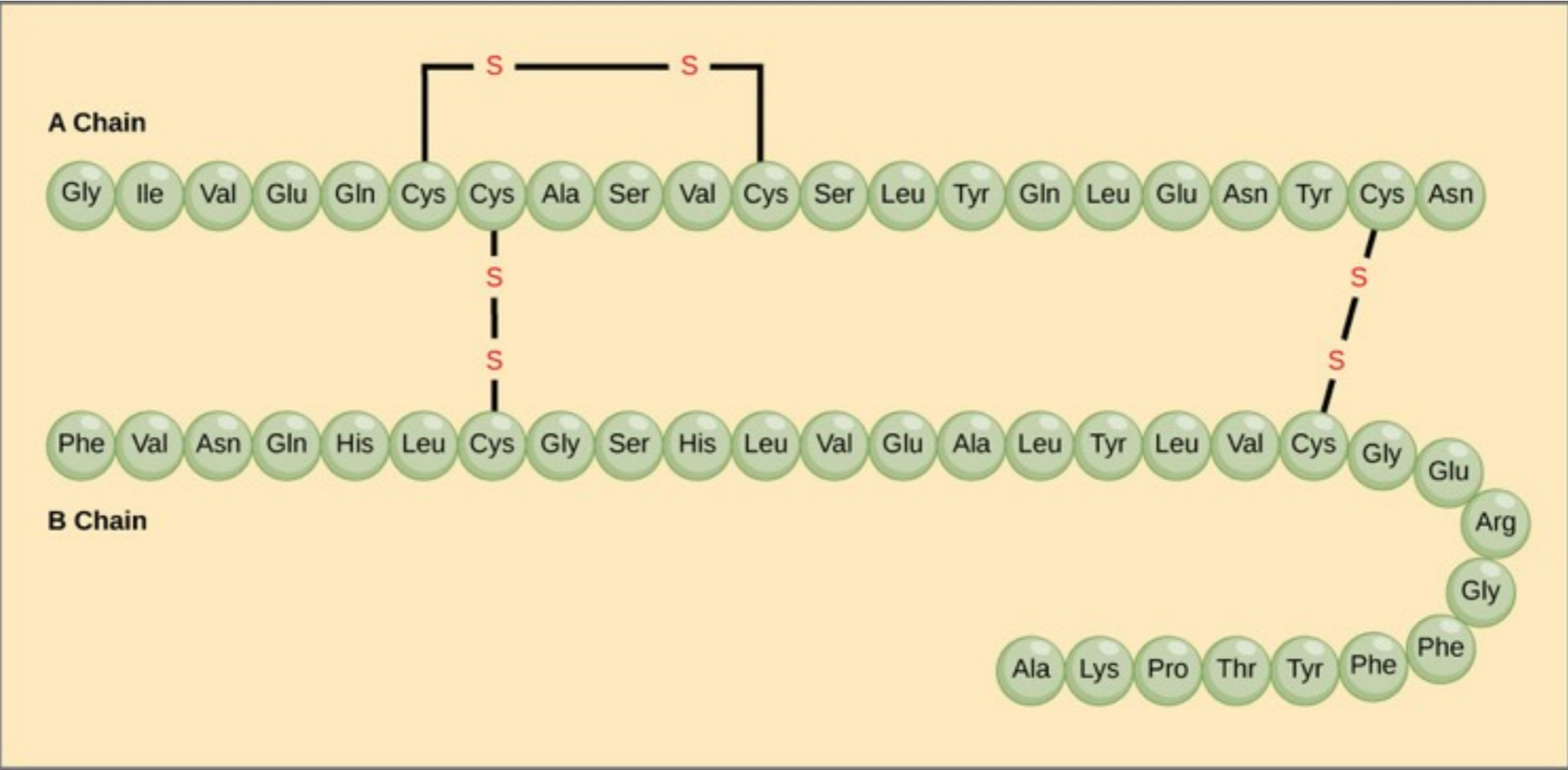
1 Gram = 9 calories



Protein

Proteins

- * Most diverse and important molecules in living organisms.
- * Made up of small subunits called amino acids that are held together by peptide bonds.



Proteins

- * Enzymes are special proteins that are used to speed up chemical reactions without getting used up themselves.

Antibodies

- * Recall from the immune system, antibodies are special proteins that detect foreign invaders

Proteins

Building blocks for muscle
Growth and repair of muscle

1 gram = 4 calories

Complete

Poultry, fish, meat, dairy

Incomplete

Nuts, grains, beans

Acceptable Macronutrient Distribution Ranges:

Age group	PERCENTAGE OF TOTAL CALORIES FROM		
	CARBOHYDRATE	PROTEIN	FAT
1-3 years	45 - 65 %	5 - 20 %	30 - 40 %
4-18 years	45 - 65 %	10 - 30 %	25 - 35 %
19 years and over	45 - 65 %	10 - 35 %	20 - 35 %



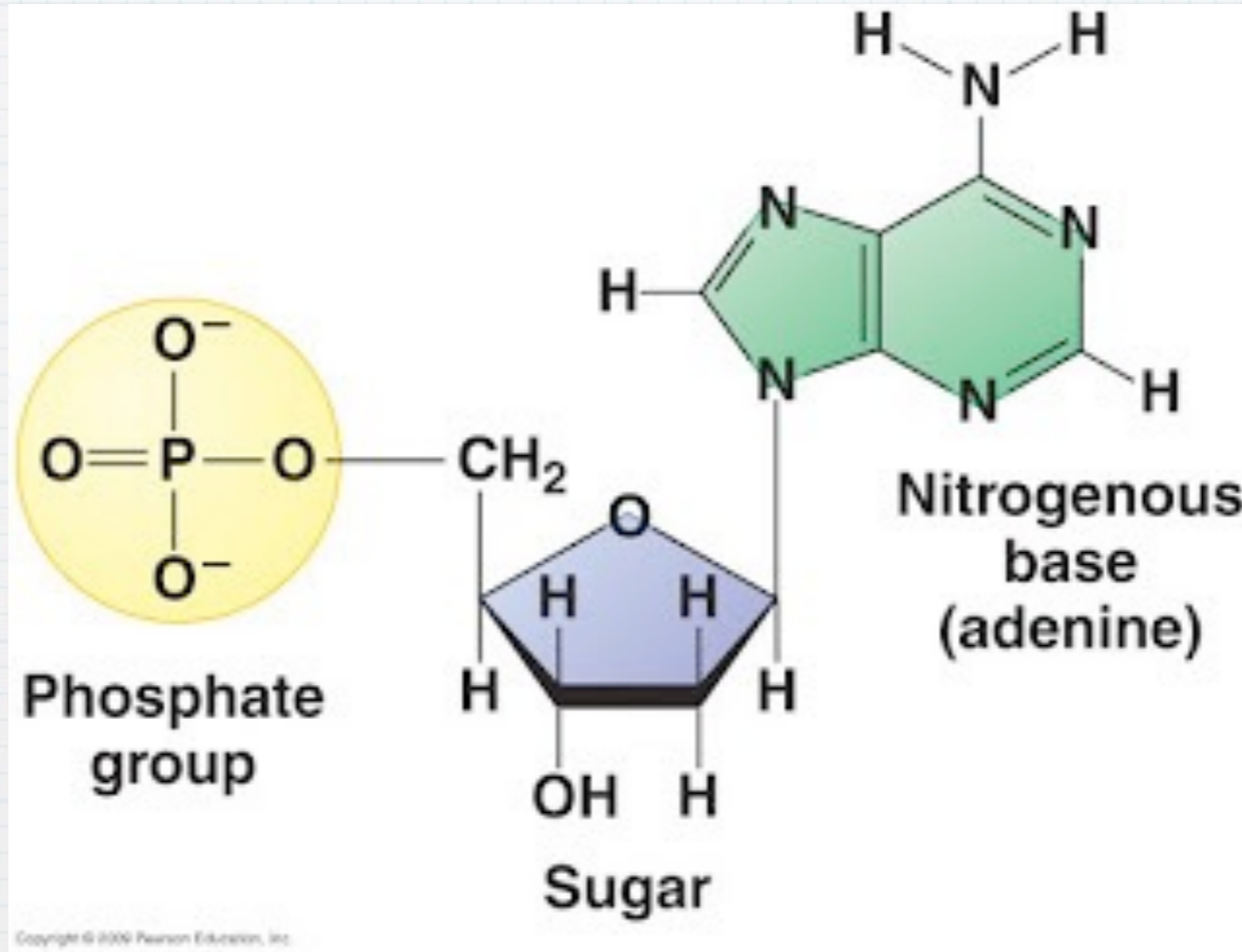
Nucleic Acids

Nucleic Acids (DNA and RNA)

- * Nucleic acids are polynucleotides made up of smaller nucleotide subunits.
- * They carry genetic information, form specific structures in a cell or carry out specific roles in a cell.
- * Found in all living things and viruses.

Nucleic Acids (DNA and RNA)

- * The two most common are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
- * Nucleotides consist of
 - * A phosphate
 - * A sugar
 - * A base



Other Nucleic Acids

- * 1) Adenosine triphosphate (ATP) which is the energy currency of the cell.
- * 2) NAD, FAD, GDP and NADP, which are used in cellular respiration or photosynthesis.