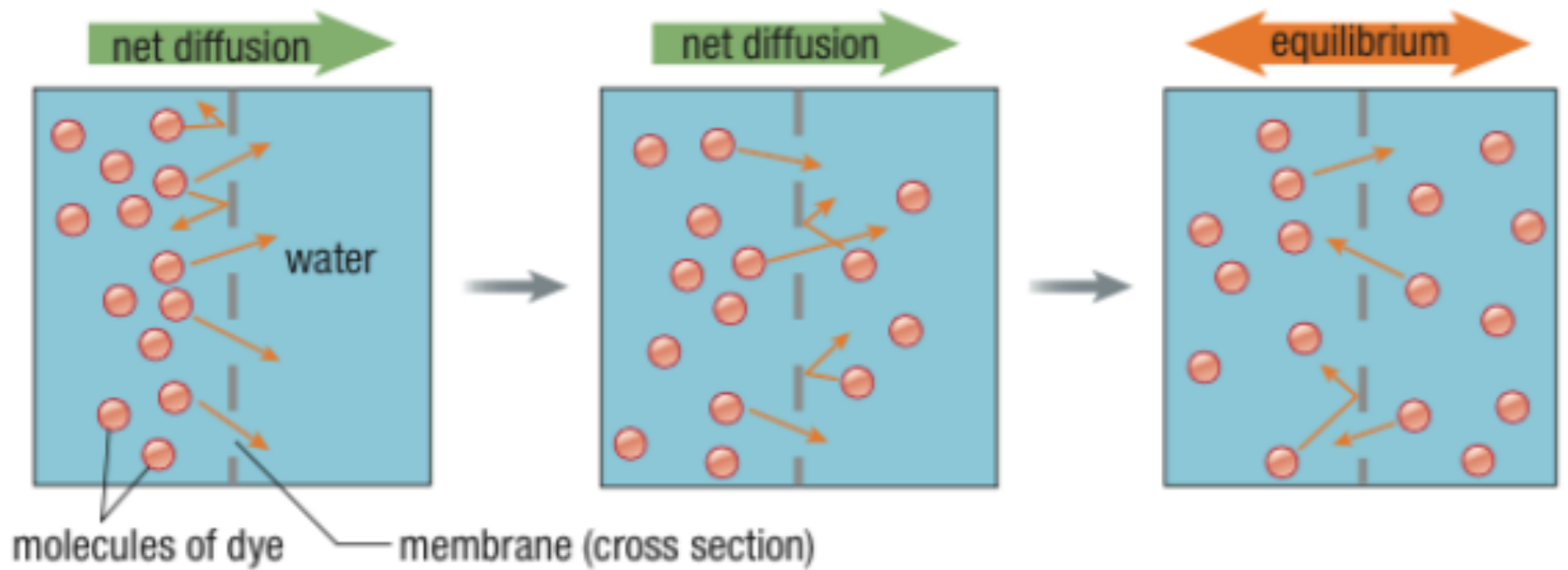


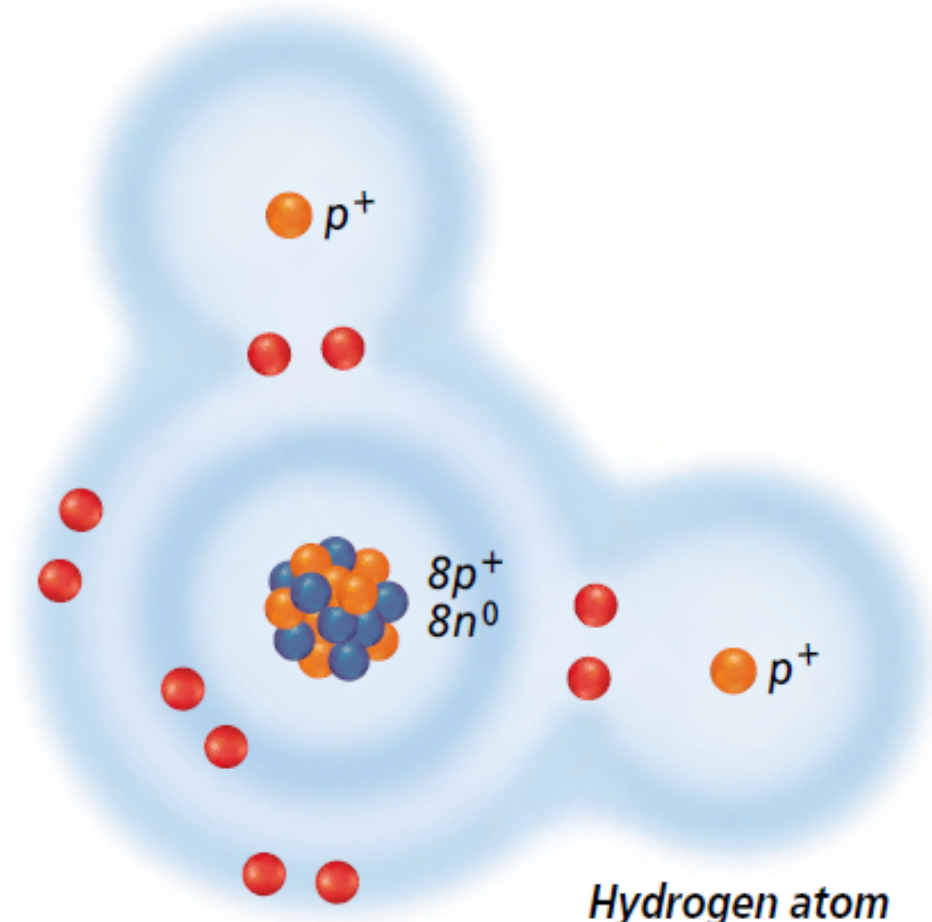
Warm Up (9/4-9/5)

****Turn in your lab to the black tray****

1. In your own words, describe the difference between diffusion and dynamic equilibrium.
2. What factors affect the rate of diffusion?
3. Why is water considered a “polar” molecule?

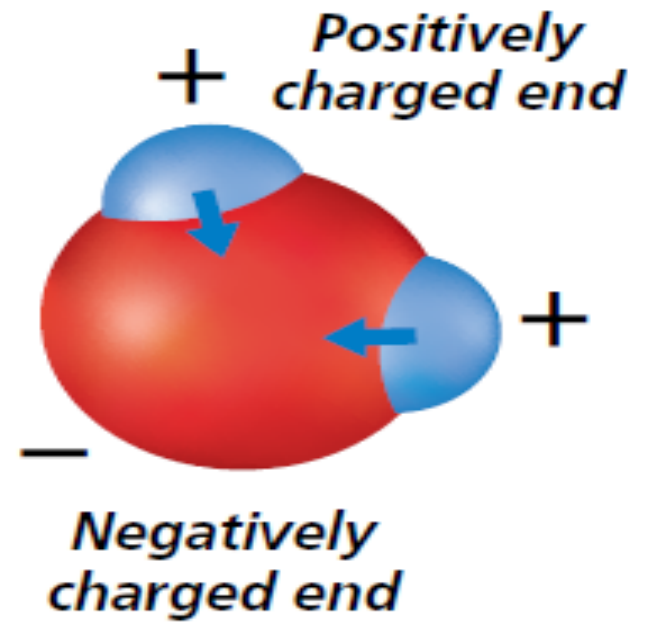


Hydrogen atom



Oxygen atom

Hydrogen atom



Agenda

- Warm up
- 6.3 Notes: Life Substances
- Macromolecule comparison table

Homework (Due Thurs/Fri):

6.3 Section Assessment (pg 163, #s 1-5)

6.3- Life Substances

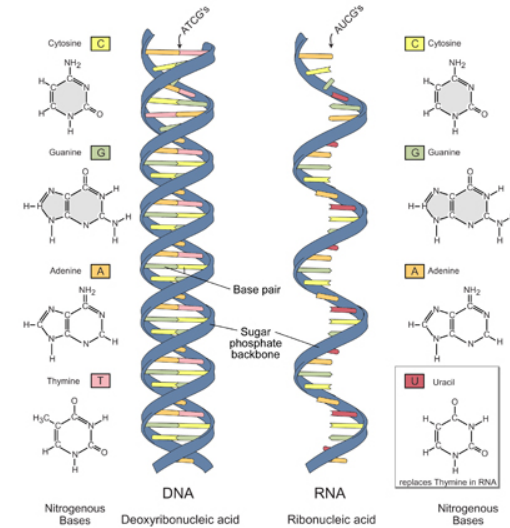
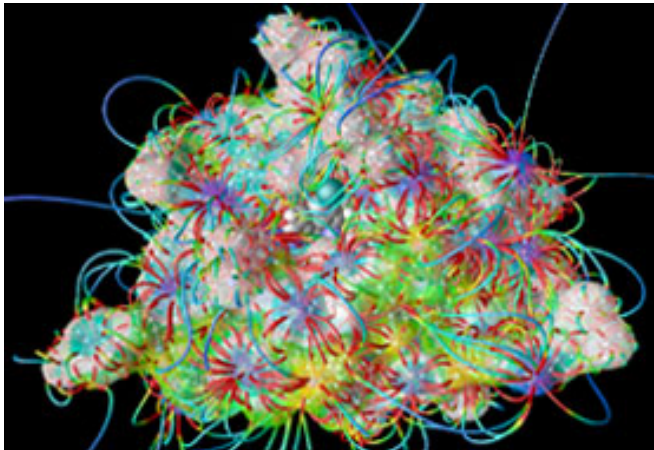
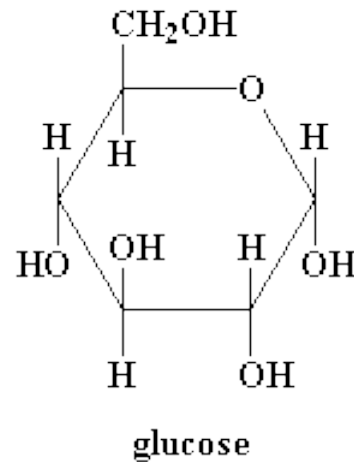


Image adapted from: National Human Genome Research Institute.



What are living things made of?

- 50-90% Water
- About 1 % elements such as K, Na, Ca
- The rest of the organism is composed of organic molecules!

What are organic molecules?

Organic Molecules:

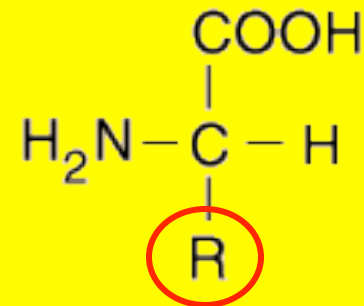
- Contain Carbon

Biomolecules:

- Important *organic molecules* that serve as building blocks for living things
 - 4 types: proteins, carbohydrates, lipids, nucleic acids
 - These are polymers. Made from many monomers (subunits)

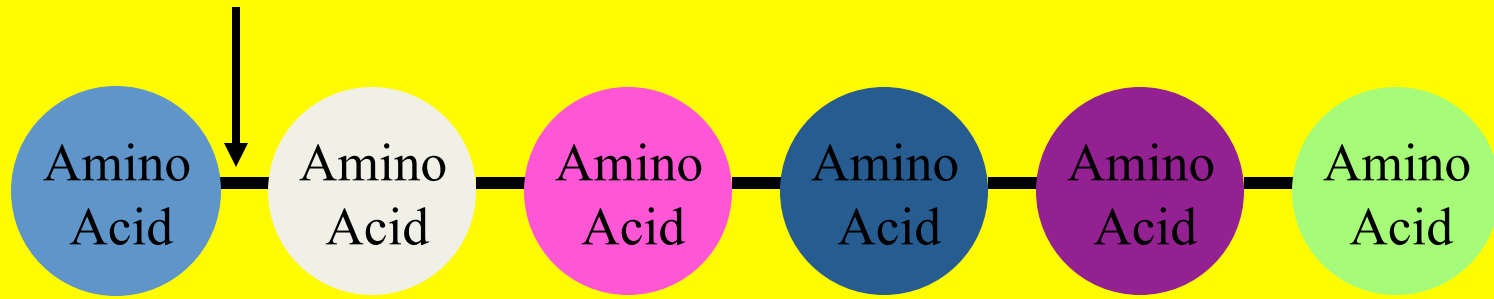
Proteins

- Made of (subunits):
 - Amino Acids
 - Many different “R” groups exist. A different “R” group gives a different amino acid. We know of 20 amino acids important for living things.



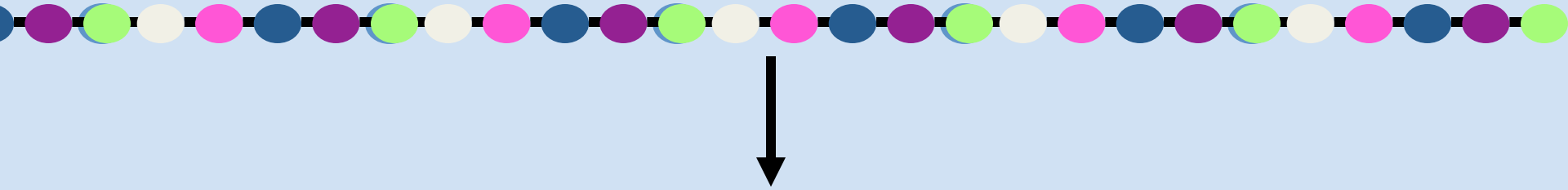
Proteins

Peptide Bond (holds amino acids together)



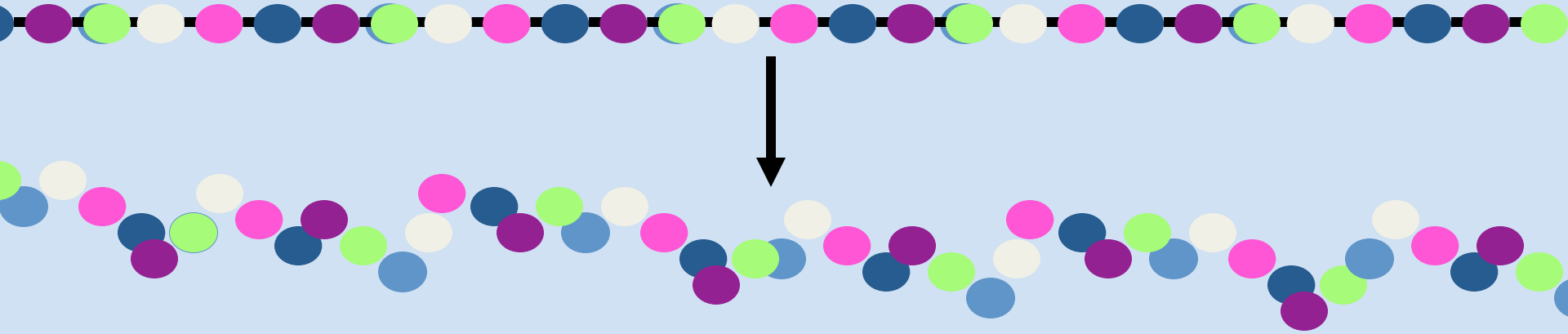
Proteins

- Proteins don't stay as long straight chains



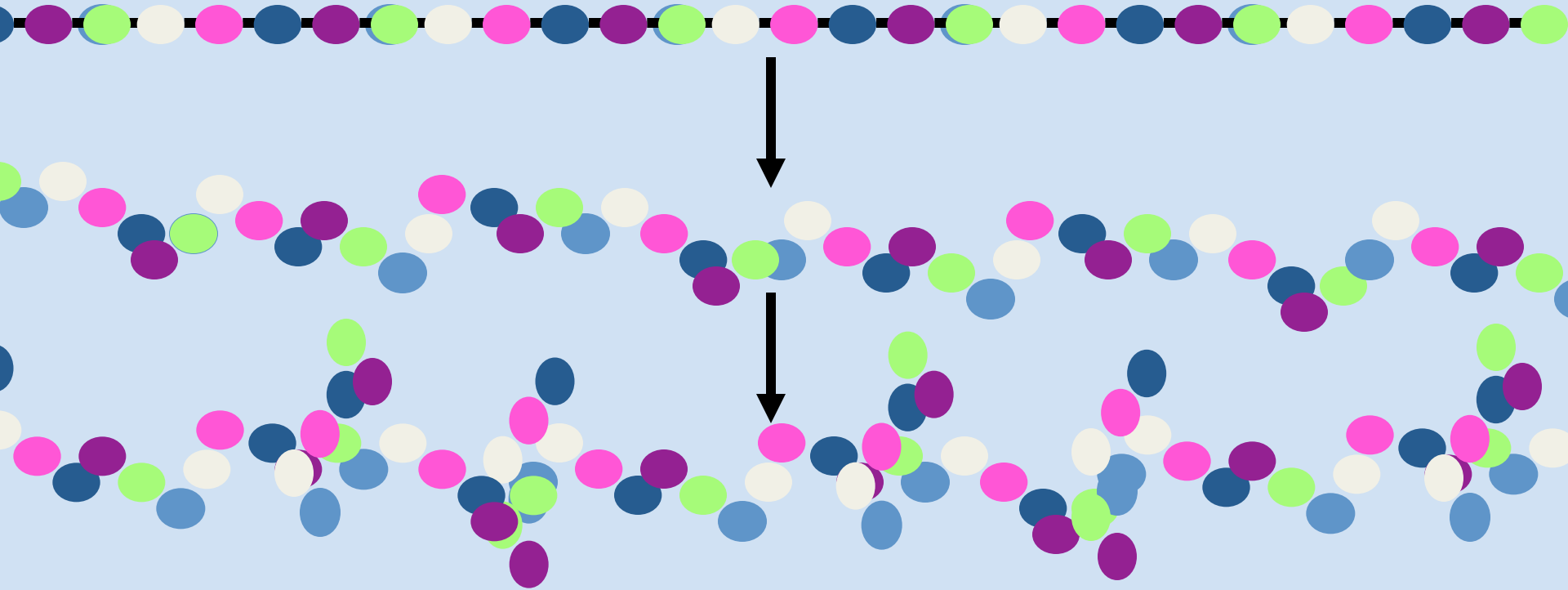
Proteins

- Proteins don't stay as long straight chains



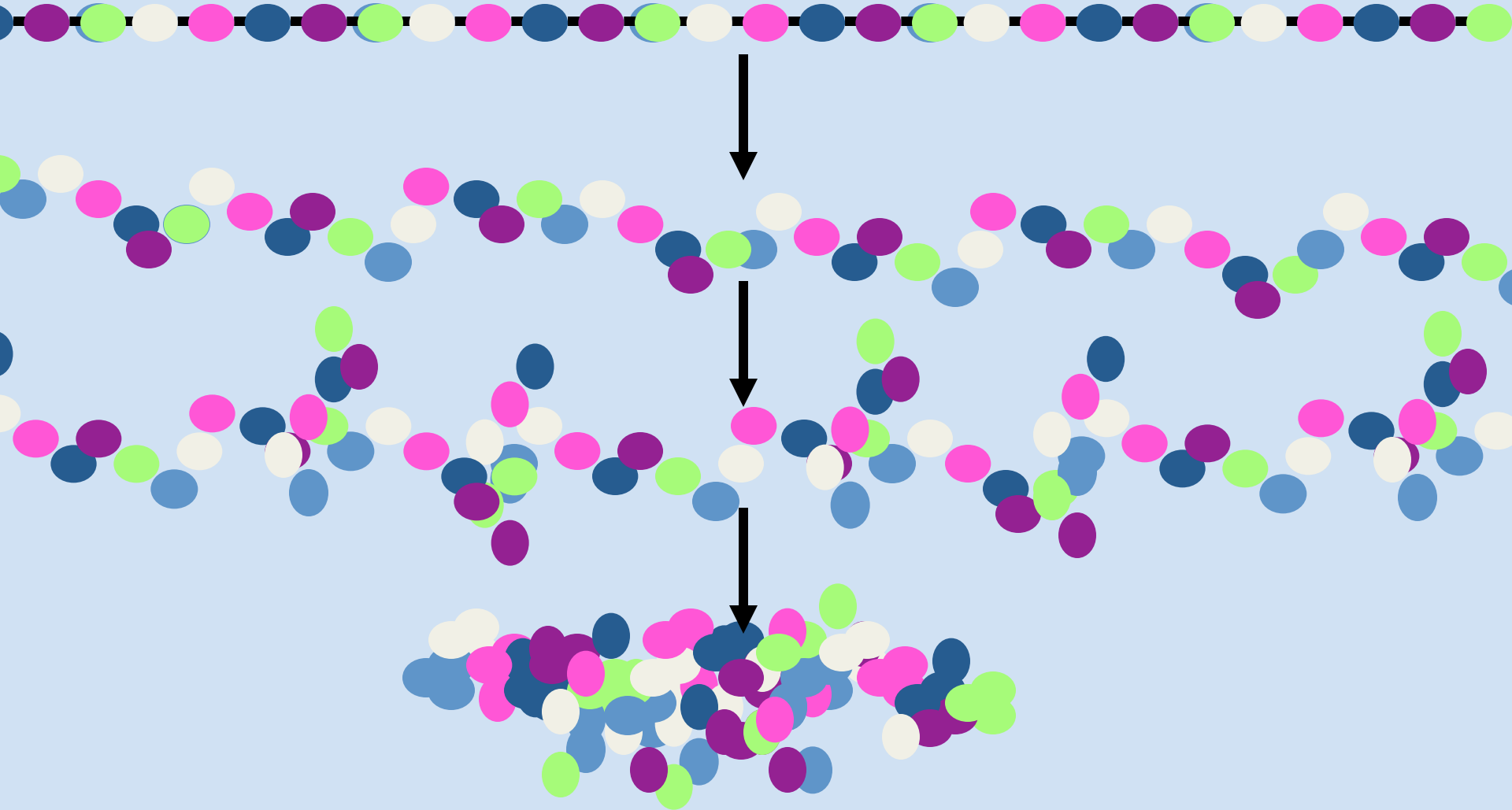
Proteins

- Proteins don't stay as long straight chains
 - Instead, they fold.



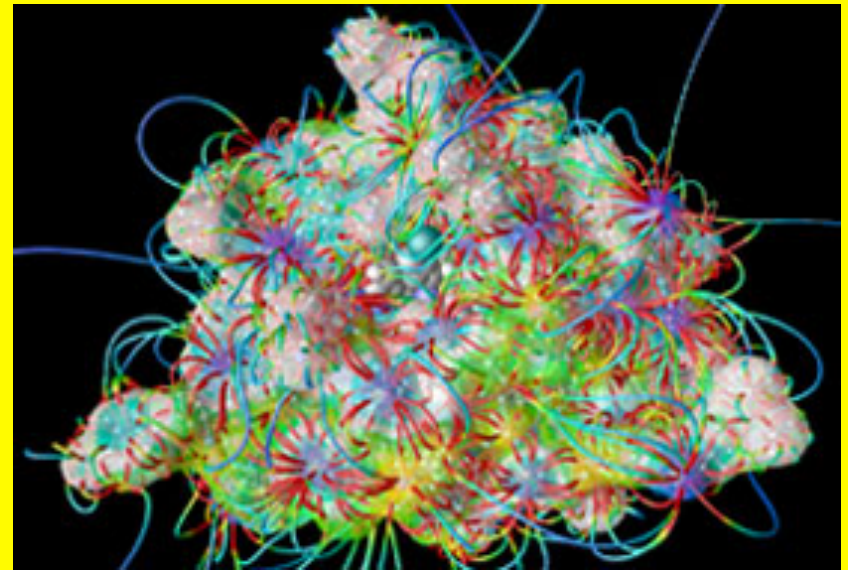
Proteins

- Proteins don't stay as long straight chains
 - Instead, they fold.

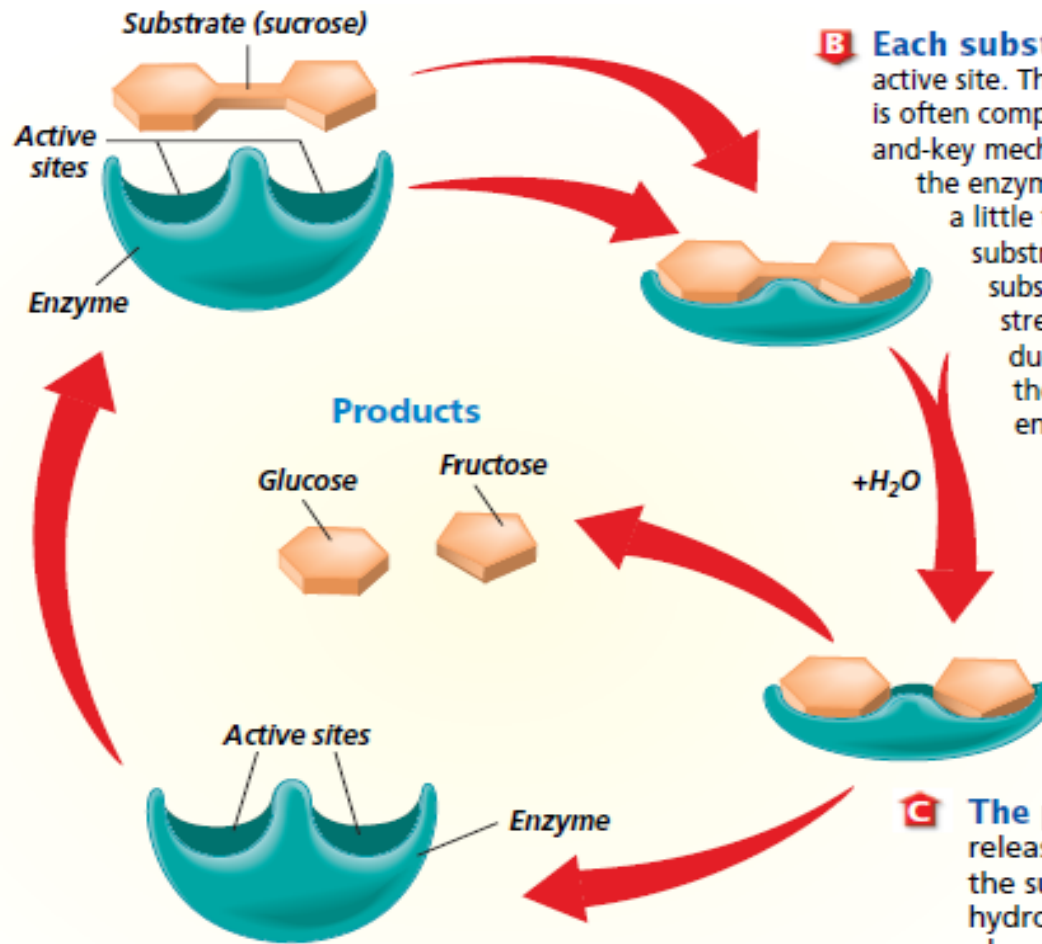


Proteins

- Example:
 - Enzymes
 - proteins that help speed up chemical reactions in living things.
 - Affected by temperature and pH



A Enzymes act on specific substrates, such as sucrose, a disaccharide made up of glucose and fructose bonded together.



B Each substrate fits into the active site. This fitting together is often compared to a lock-and-key mechanism. However, the enzyme changes shape a little to fit with the substrate. The enzyme-substrate complex puts stress on the substrate due to the binding of the substrate to the enzyme.

C The products are released; in this case the sucrose bonds are hydrolyzed, releasing glucose and fructose.

D After the reaction, the enzyme released is in its original shape and can go on to carry out the same reaction again and again. In doing so, enzymes change the speed at which chemical reactions occur without being altered themselves by the reaction.

Comprehension Check

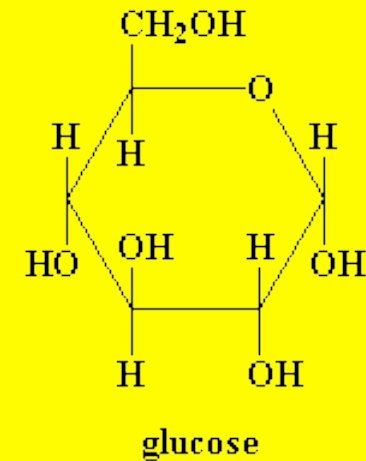
- What are **organic molecules**?
- What **sub-units** make up proteins?
- What is the difference between a **protein** and an **enzyme**?

Carbohydrates

- Subunits- monosaccharides

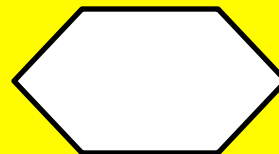
Simple sugars such as

Glucose or fructose : $C_6H_{12}O_6$



*Fructose and glucose are isomers: Same formula but different arrangement

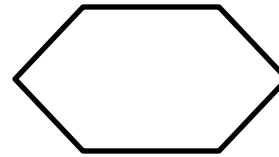
Can be drawn simply as:



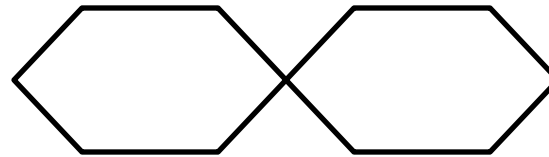
Function: Provide energy, support in cell walls, exoskeletons

Carbohydrates

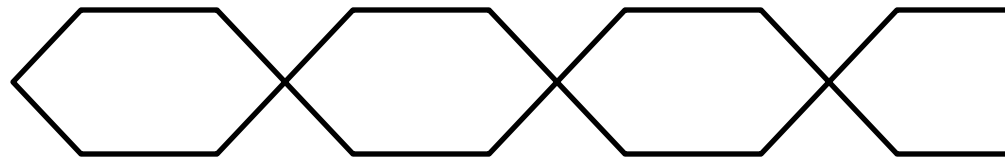
- One single sugar is known as a
MONOSACCHARIDE



- Two sugars linked is called a
DISACCHARIDE



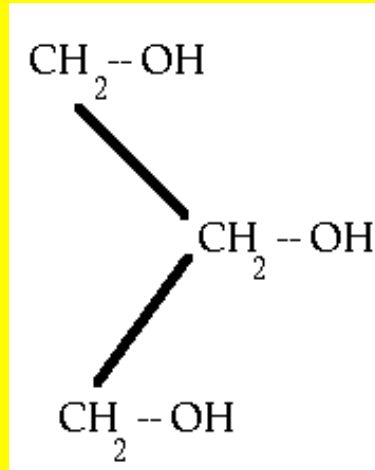
- More than two sugars linked is called a
POLYSACCHARIDE



Lipids

Subunits:

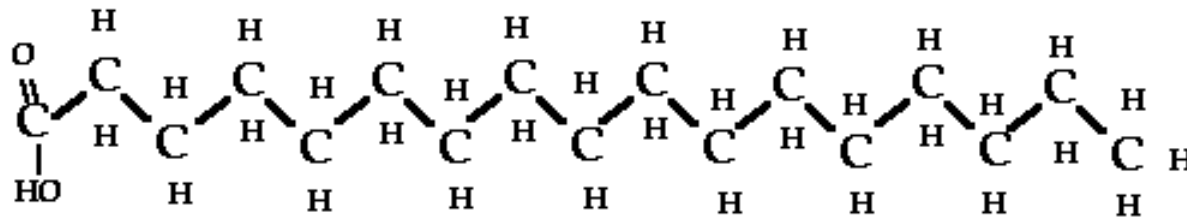
- Glycerol



Functions

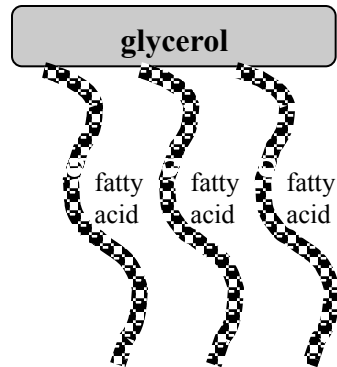
- Insulation
- Stores energy in bonds
- Steroids- messengers in body

- Fatty Acid



Lipids

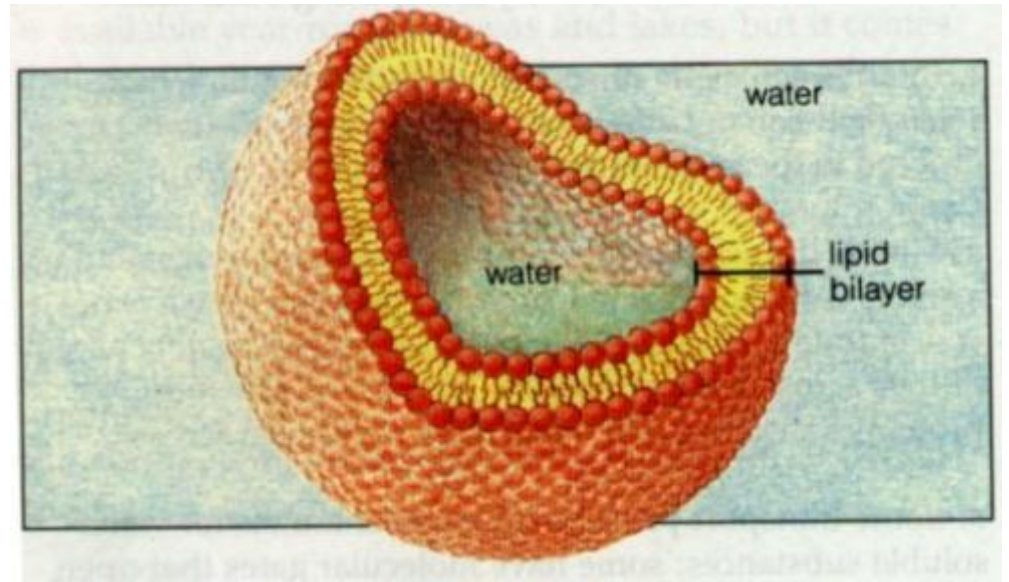
- Subunits can be drawn as:



Structure makes lipids **hydrophobic

Lipids

- Examples:



Phospholipids surround cells

Fats

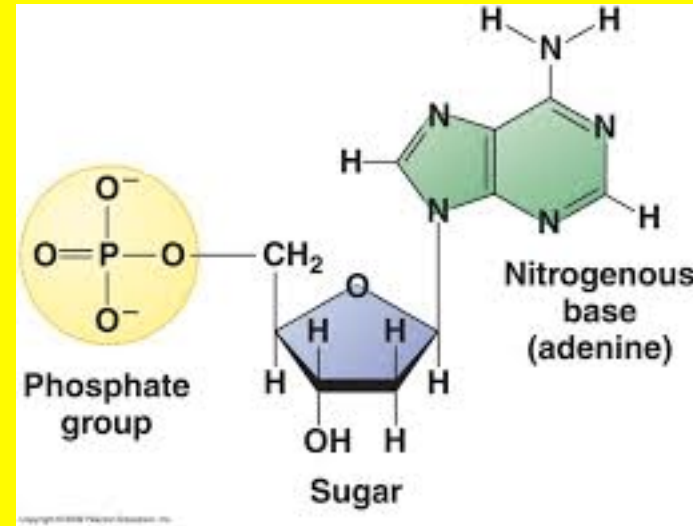
Waxes



Nucleic Acids

Subunits:

- Phosphate
- Sugar
- Base



Together called a “nucleotide”

Function: Genetic material of all living things.
Information for making proteins encoded in
nucleic acids.

Nucleic Acids

- DNA

- RNA

