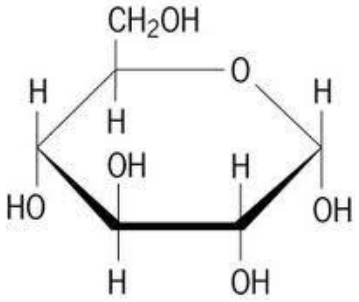
Building & Breaking Macromolecules

Carbohydrates
Lipids
Proteins
Nucleic Acids

Building Macromolecules

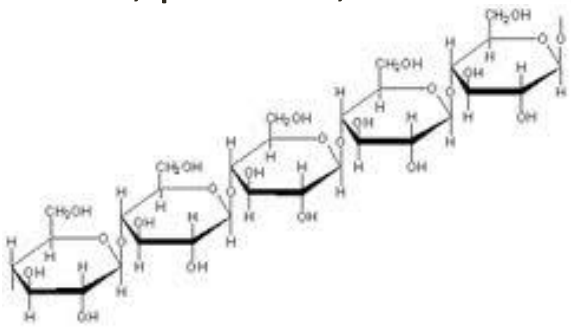
Monomer

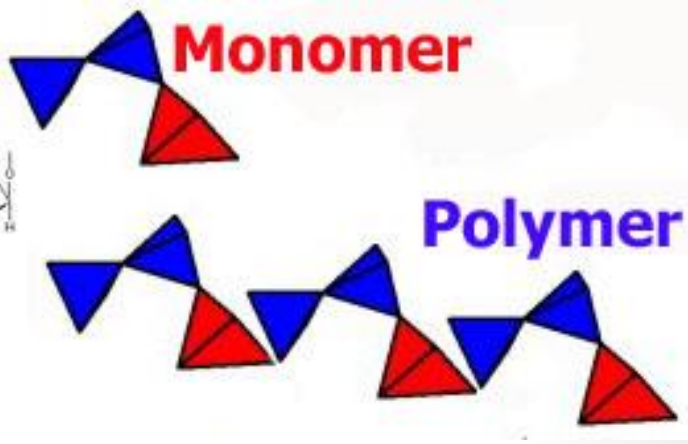
- Ex. glucose, amino acids, nucleic acids



Polymer

- Ex. carbohydrates, proteins, DNA

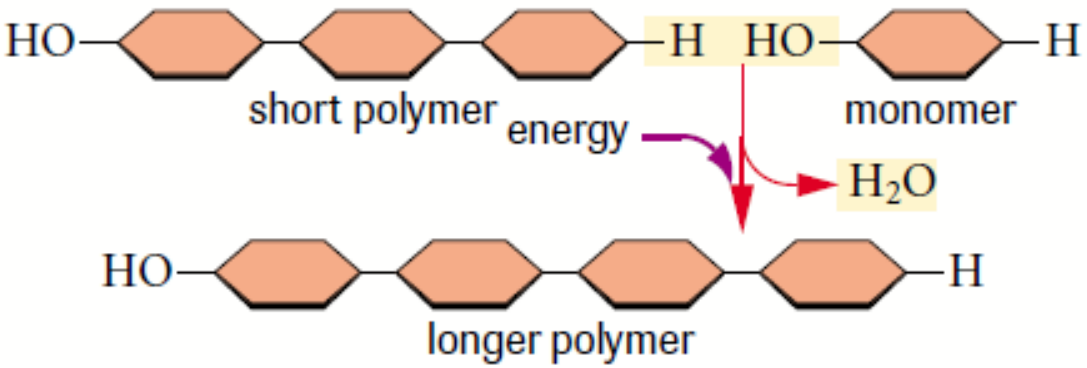




Anabolic Reactions

* Reactions that produce large molecules from smaller subunits

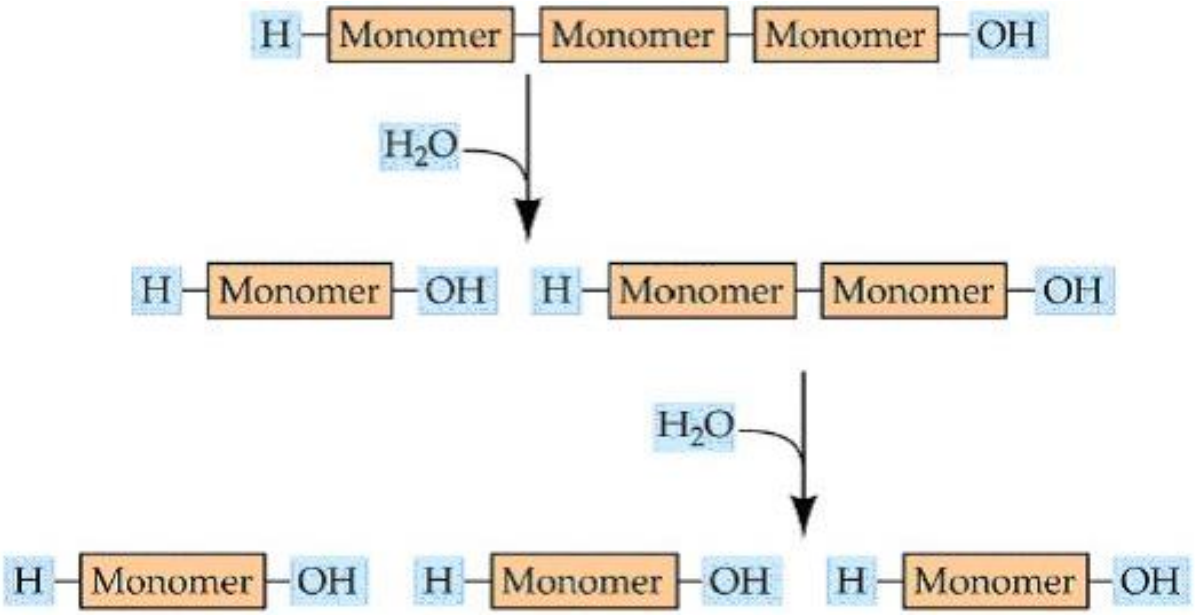
Dehydration Synthesis (condensation)



Catabolic Reactions

*The breakdown of complex molecules into simpler ones

Hydrolysis



Biological Macromolecules

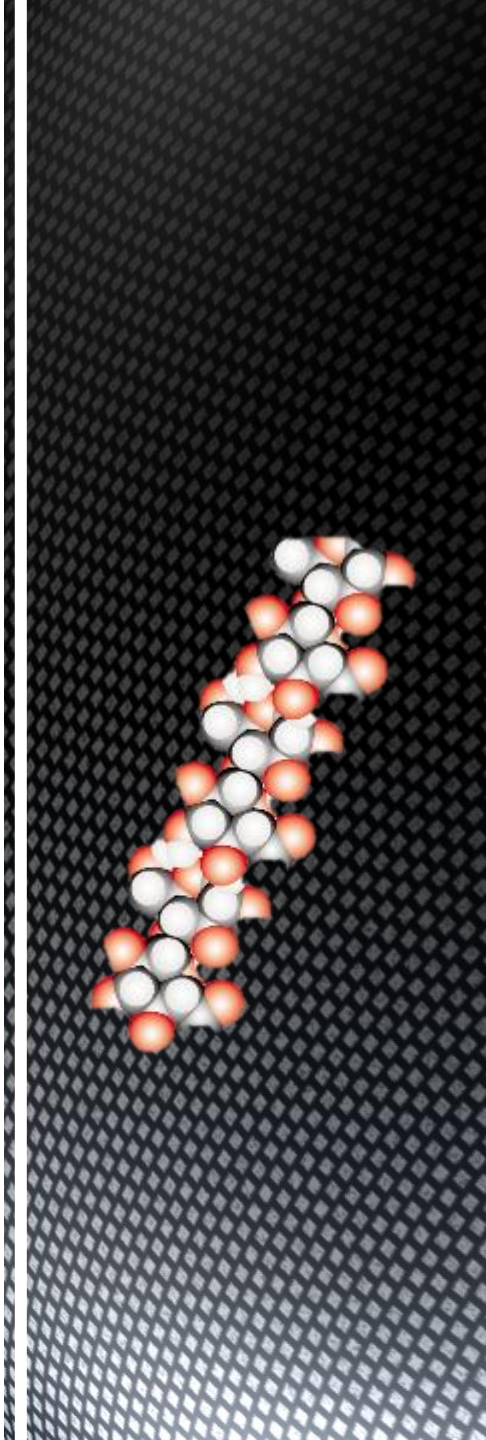
Carbohydrates

Understand:

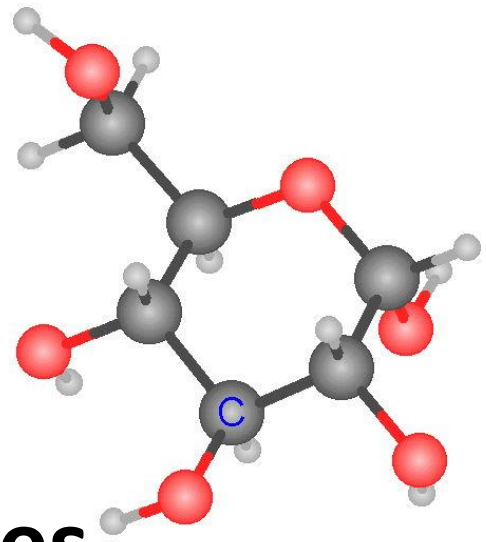
- Structure & function of carbohydrates

Be able to:

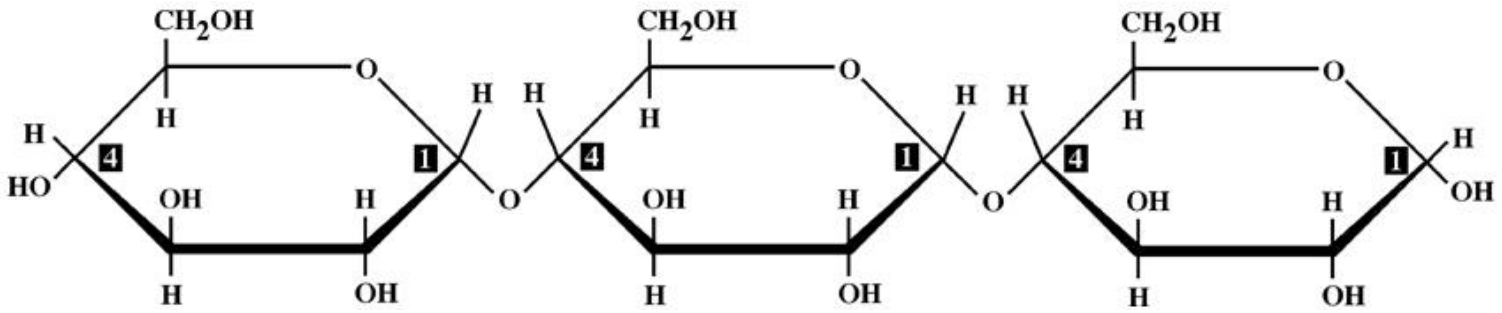
- Draw monomers & polymers



Structures & Functions

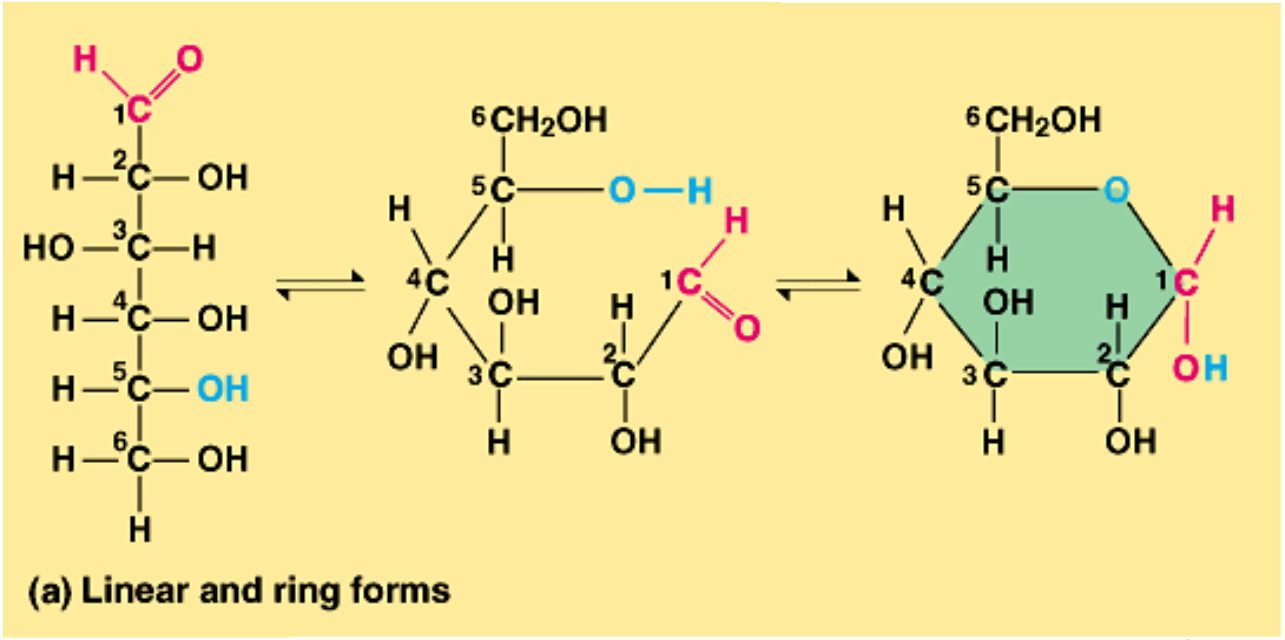


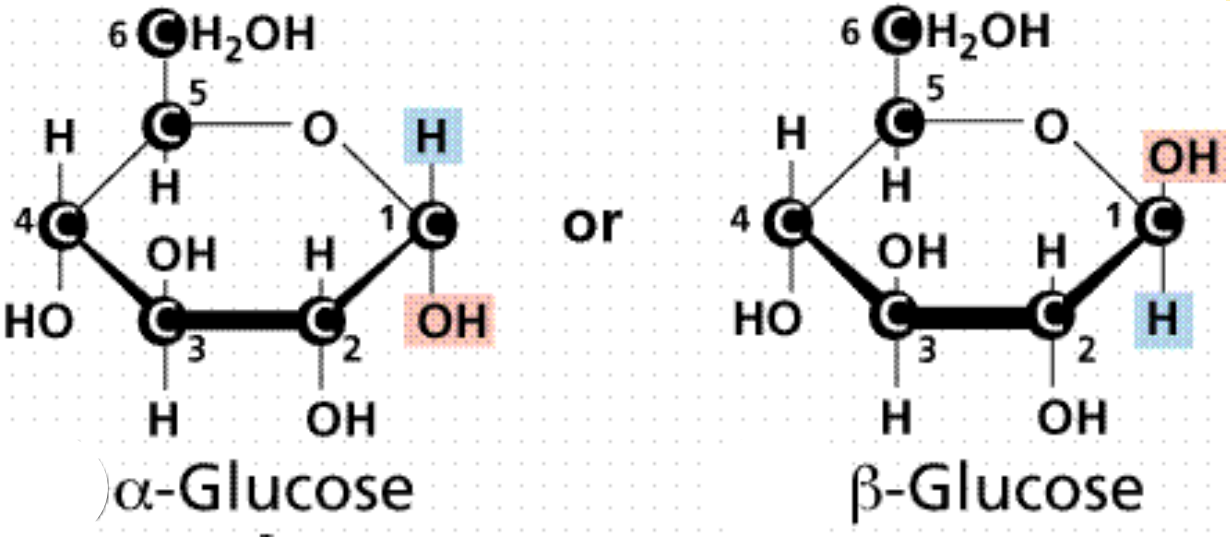
- Monosaccharides
- Disaccharide/Oligosaccharides
- Polysaccharides



Structure

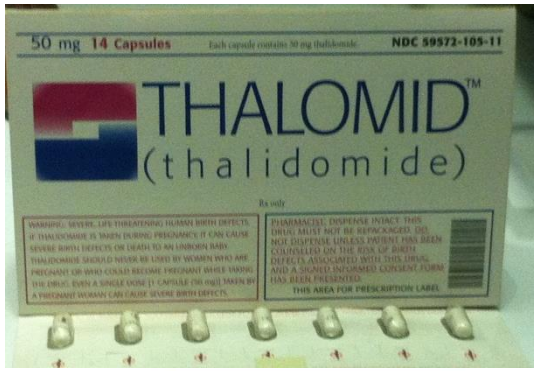
- General formula: $(CH_2O)_n$



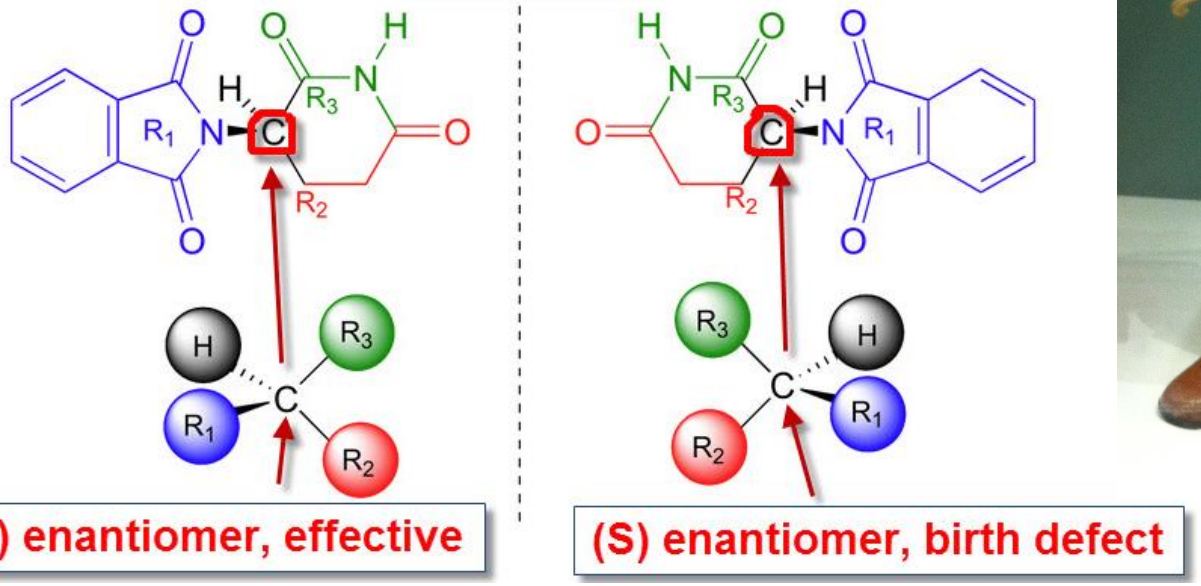


Isomers:

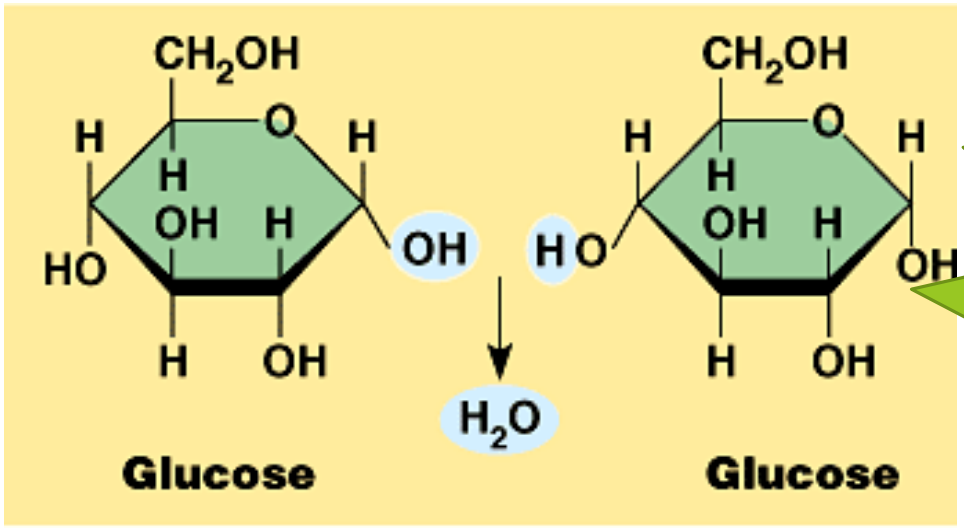
- Same formula, different structure



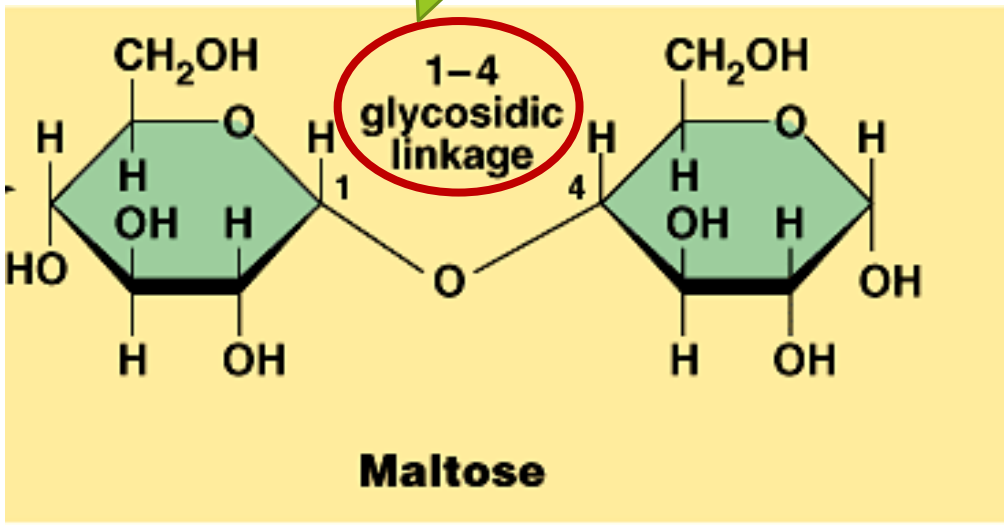
Mirror Image



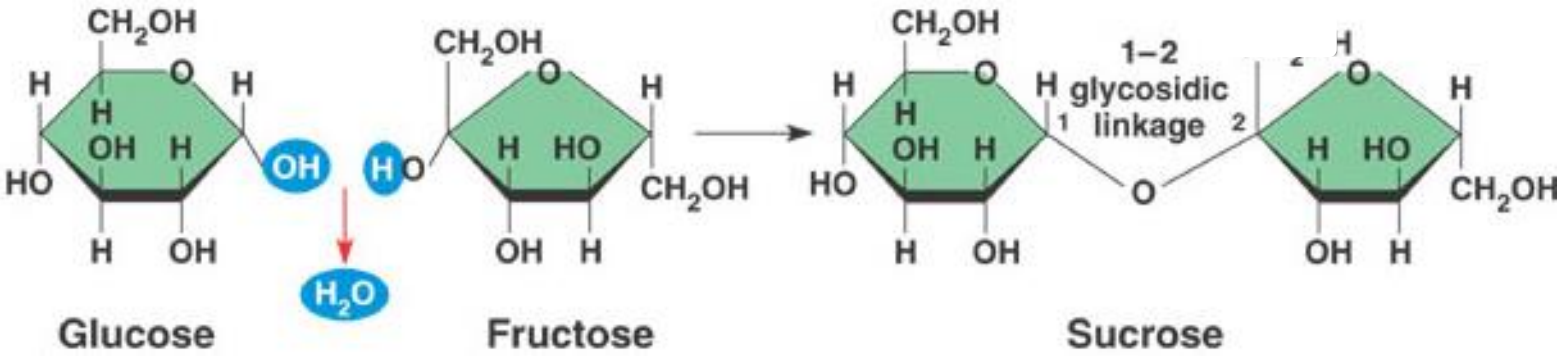
Formation of a Disaccharide

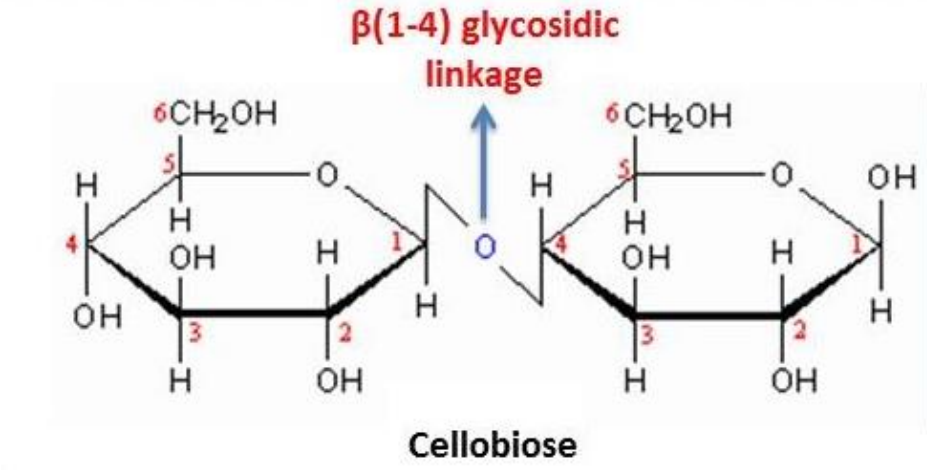


You need to be able to DRAW this!



Formation of a Disaccharide

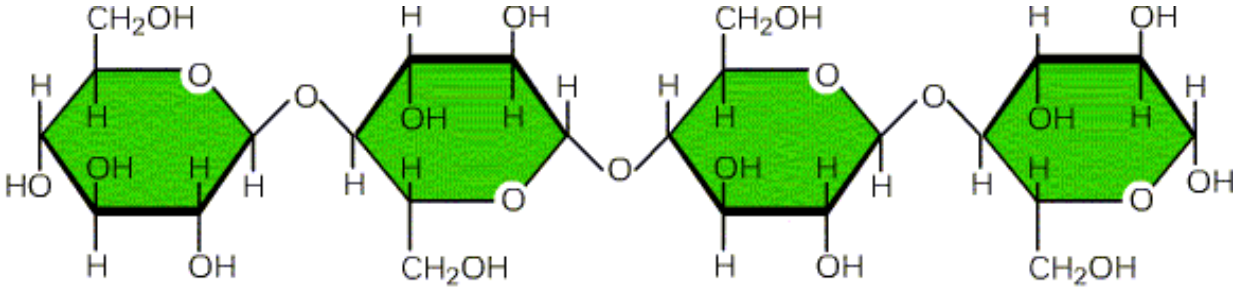




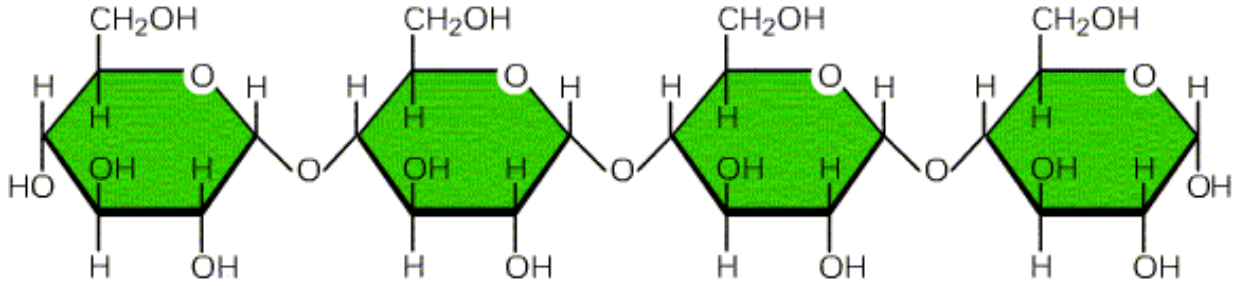
α- and β-Glycosidic Linkages in Disaccharides

Polymers

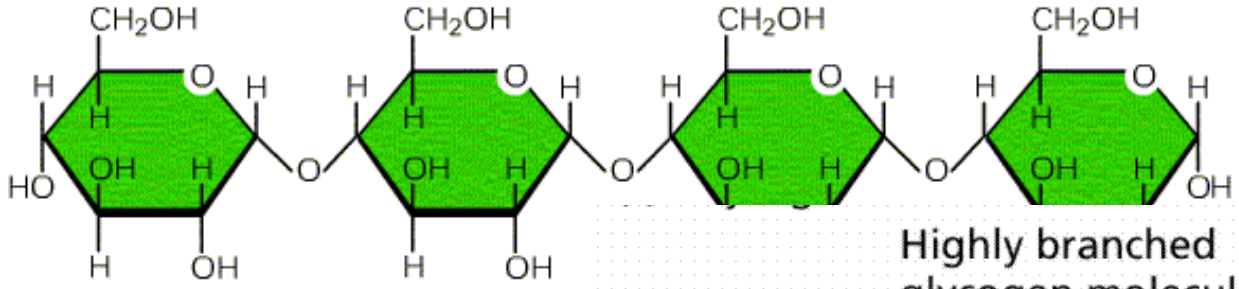
Cellulose

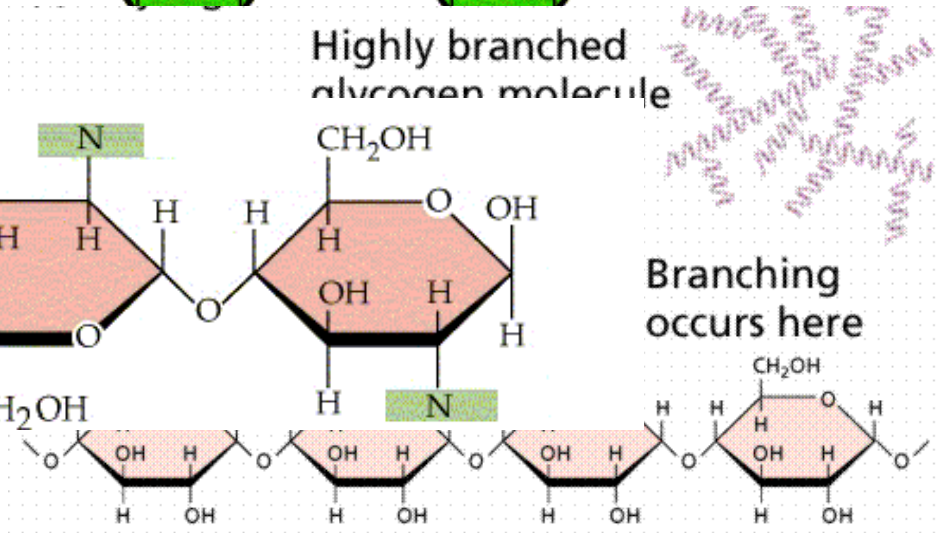


Starch



Glycogen





Chitin

Try These:

1. Name 2 functional groups found in the straight-chain form of glucose.
2. Which of the monosaccharides below are isomers?

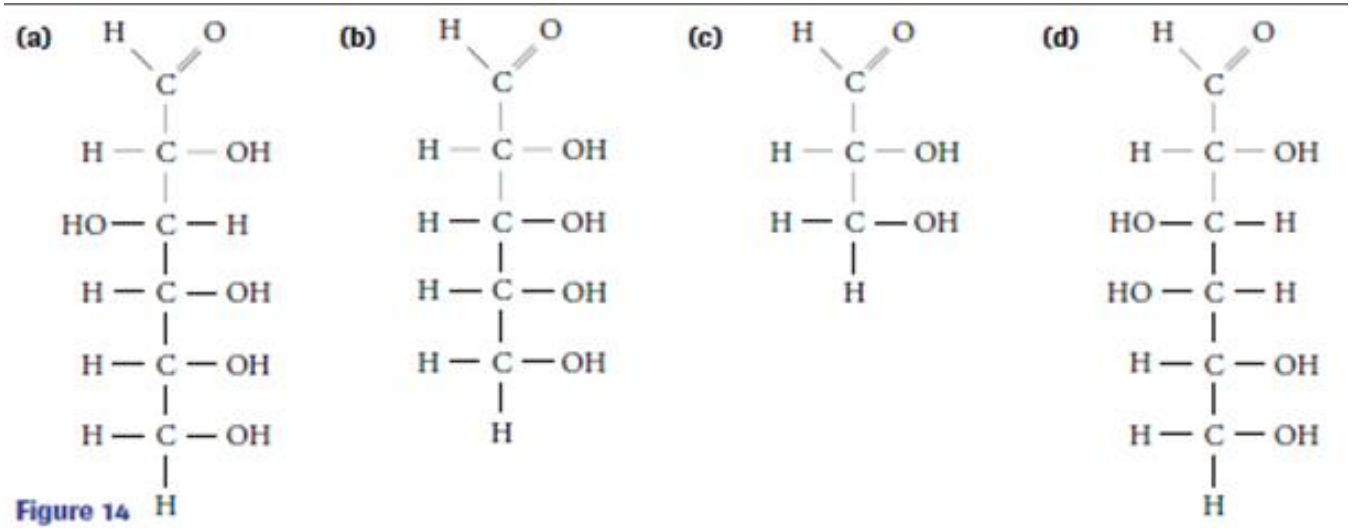


Figure 14

3. Why are most polysaccharides insoluble in water?
4. Distinguish between the glycosidic bonds in starch and cellulose.
5. Why can humans not obtain energy by eating grass?