AP BIOLOGY
BIOCHEMISTRY
ACTIVITY #4

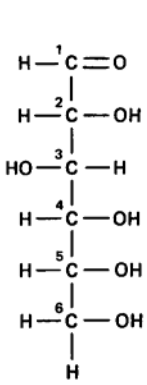
NAME_____

DATE_____HOUR_____

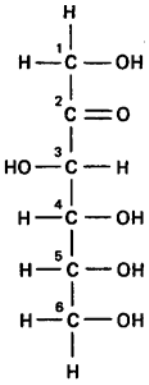
CARBOHYDRATES

GENERAL CHARACTERISTICS:

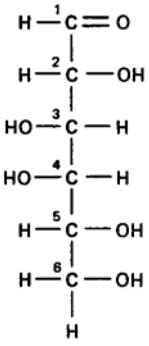
- Polymers of simple sugars
- Classified according to numb of simple sugars
- Sugars
  - 3 to 7 carbons
  - -OH attached to each carb except one
  - Aldehydes or ketones



Glucose



Fructose



Galactos

$C_6H_{12}O_6$

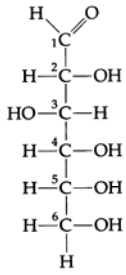
MONOSACCHARIDES:

Simple sugars
Monomers of di- and polysaccharides
Store energy in chemical bonds

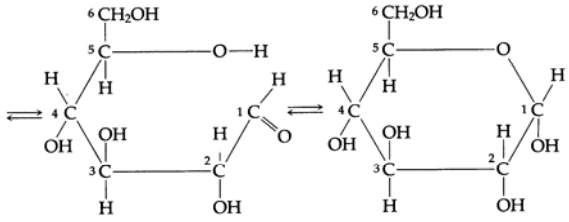
Trioses
- 3 carbon sugar
- glycerahdehyde

Pentose
- 5 carbon sugar
- Ribose
- Deoxyribose

Hexose
- 6 carbon sugar
- Glucose
- Fructose



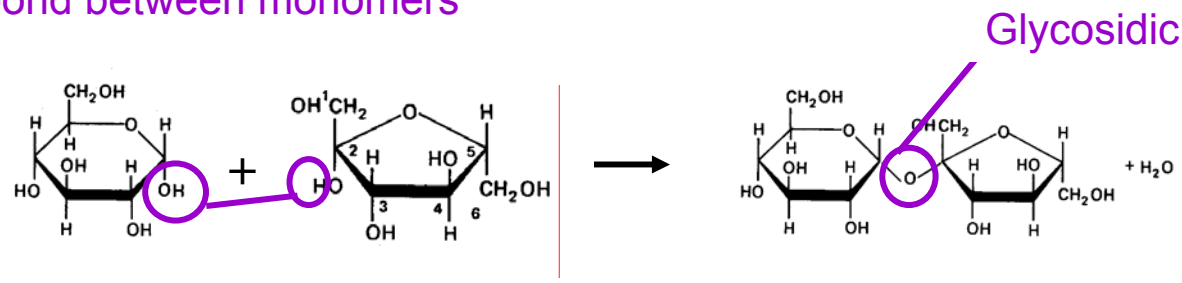
Glucose
Linear form (dry)



Glucose
Ring form (in sol'n)

DISACCHARIDES: Double Sugars

Condensation Synthesis: Removal of water molecule to form bond between monomers



Glucose + water	+	Fructose	→	Sucrose
Glucose + water	+	Glucose	→	Maltose
Glucose + water	+	Galactose	→	Lactose

POLYSACCHARIDES:

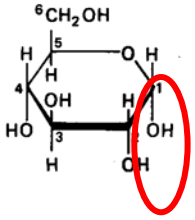
Many monosaccharides covalently bonded together

FUNCTIONS:

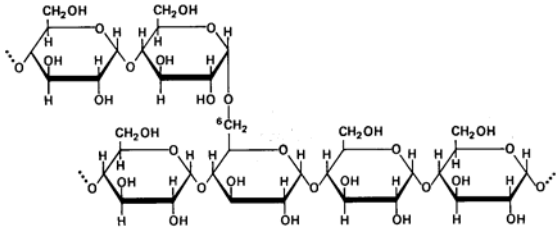
Storage Starch: storage carb. in plants Glycogen: storage carb. in animals	Structural Cellulose: plant cell wall component Chitin: polymer of amino sugar Building block of exoskeletons

STARCH VS CELLULOSE

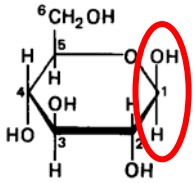
Starch



Polymer of α-gluco
Branched
α 1-4 linkages



Cellulose



Polymer of β-glucos
Linear
Unbranched
β 1-4 Linkages
Most animals lack enzyme to break
β 1-4 Linkages