(24) **Today**

Chap 7: Carbohydrates

Next Class (25)

Chap 13: Glycolysis

(26) **Second Class from Today**

Chap 7: Glycolysis

Third Class from Today (27)

Chap 13: Glycolysis

Citric Acid Cycle

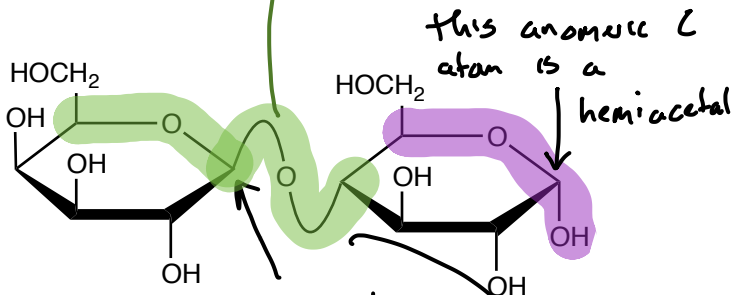
Guest Lecturer! Fun in-class activity!!

No Zoom session :)

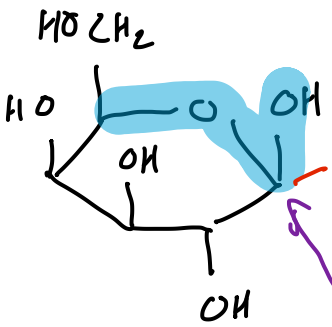
Disaccharides: Hemiacetals and Acetals

Section 7.1

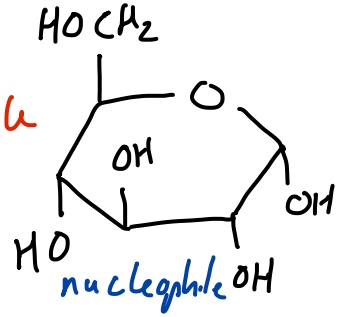
glycosidic link/bond



lactose
(galactose-β-1,4-glucose)



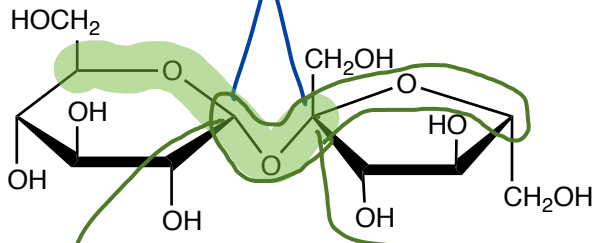
hemiacetal



hemiacetals react with alcohols to make acetals

squiggles are so we can still draw easily recognizable Haworth projections and indicate the direction of the C to O bonds

both anomeric C atoms

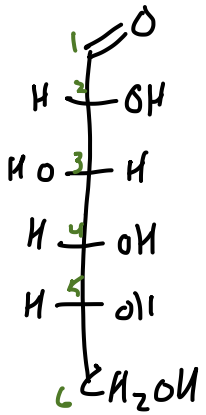


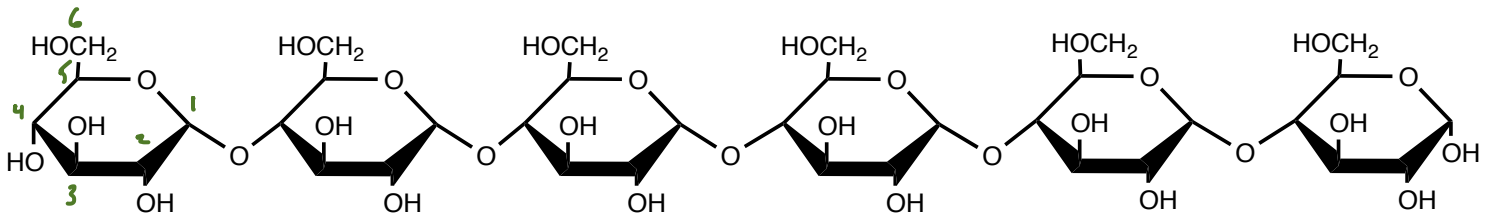
sucrose
(glucose-α-1,2-β-fructose)

acetal on glucose side

also a di-ether acetal (new school)
ketal (old school)

sucrose is a diacetal both ends of the sugar are stable in the absence of water. lactose is less stable. one end is a hemiacetal... it can be opened and derivatized

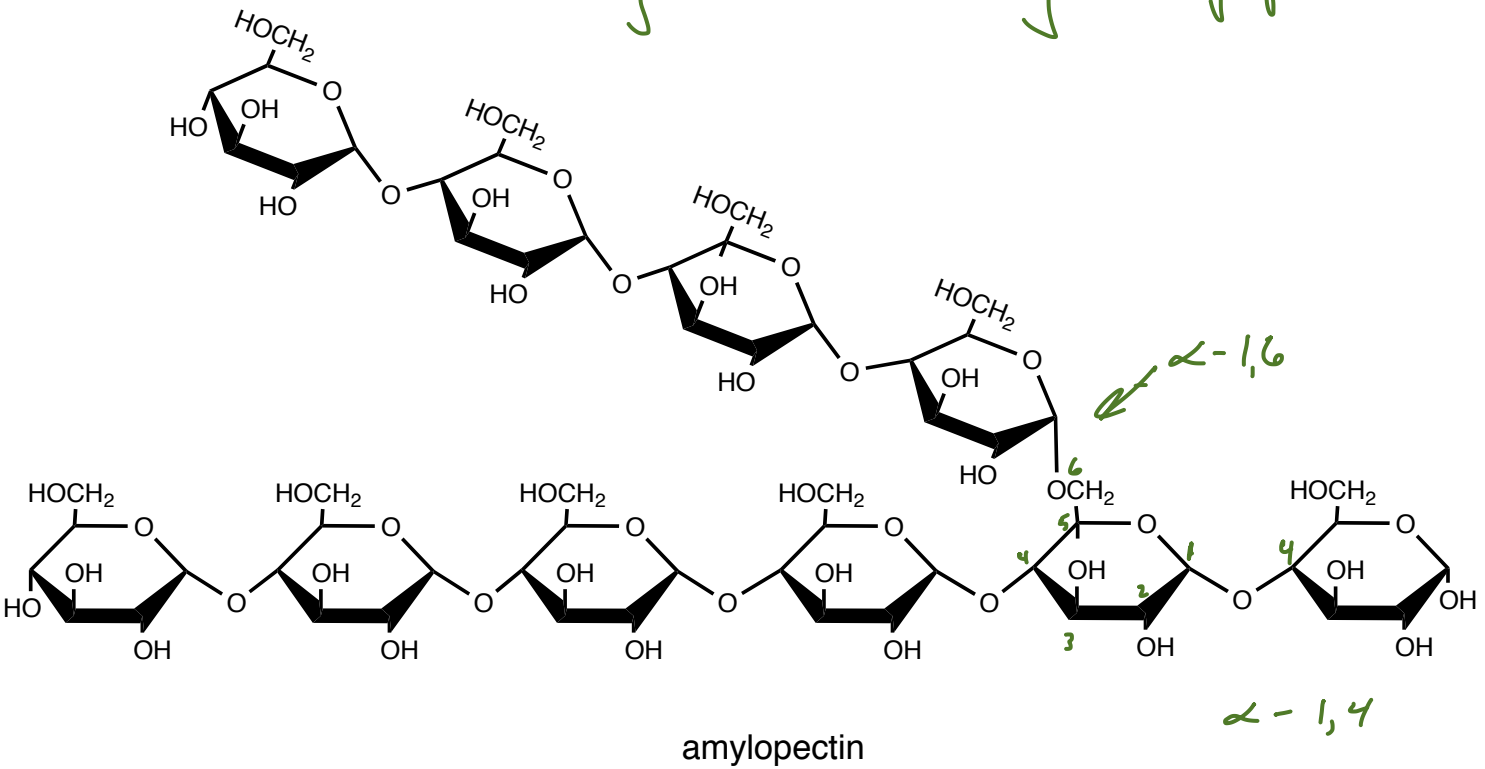




α-1,4

amylose

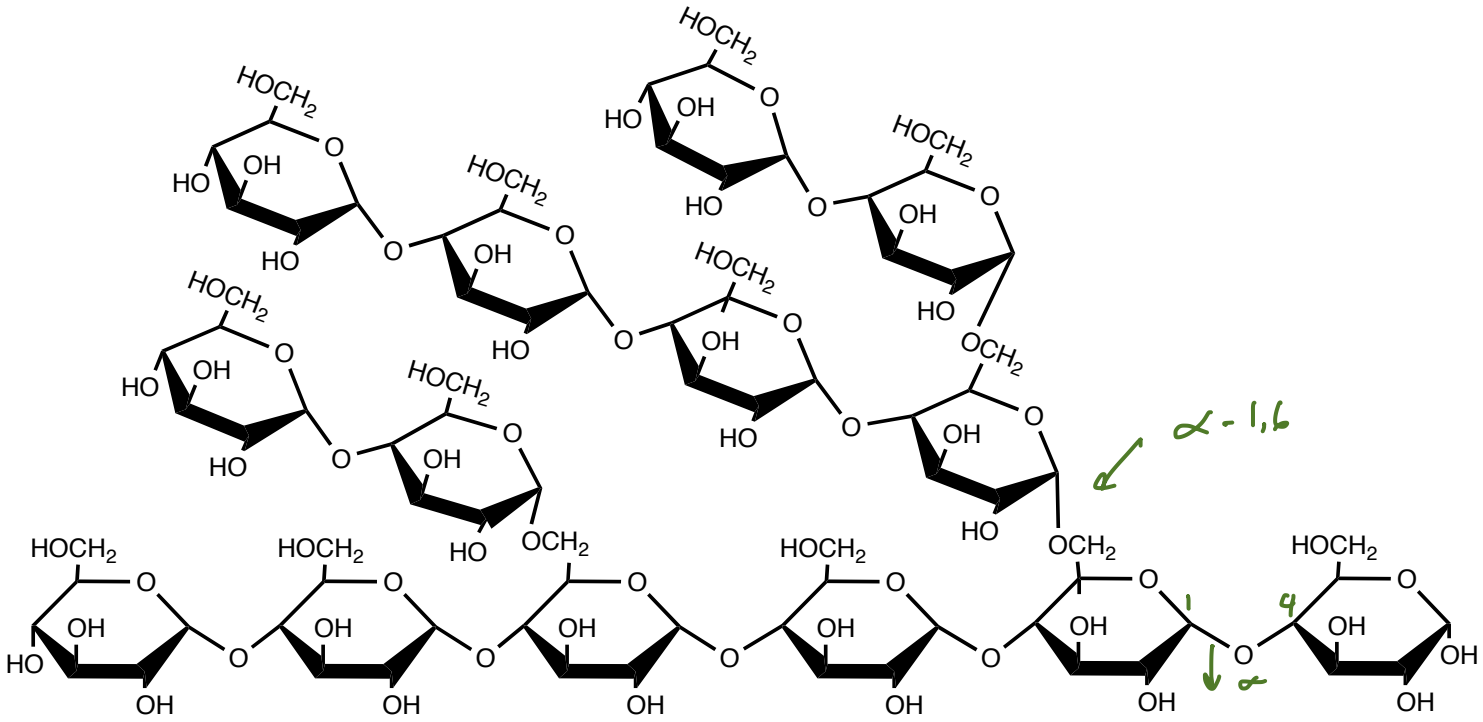
glucose linked by α 1,4 glycosidic bonds



α-1,6

α-1,4

amylopectin



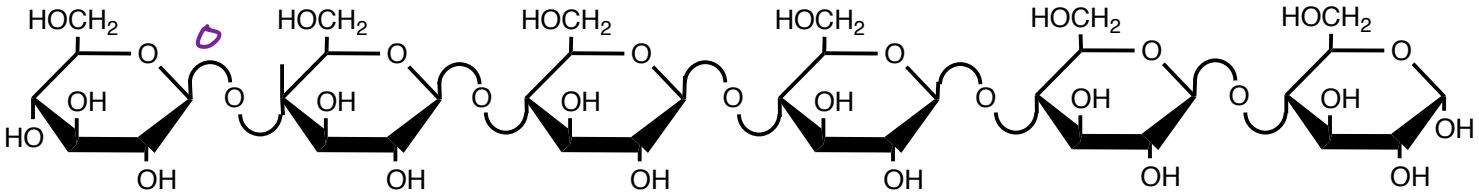
glycogen

α-1,4 plants

starch α-1,4 links between glucose molecules with some α-1,6 branching

glycogen α-1,4 link between glucose molecules with a lot of α-1,6 branching

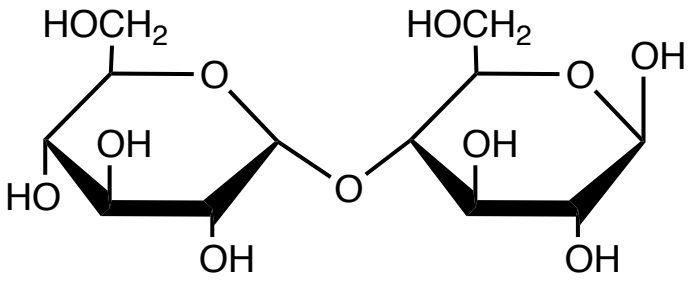
animals more densely packed



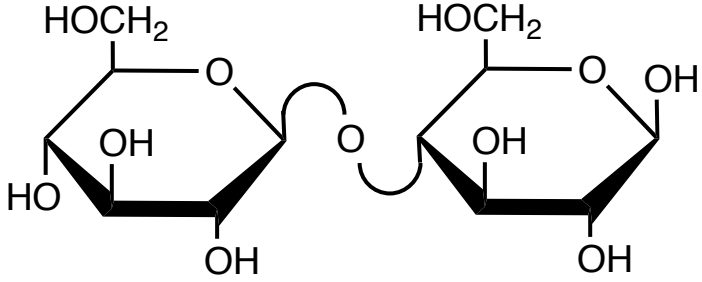
cellulose

β - 1,4 glycosidic bonds

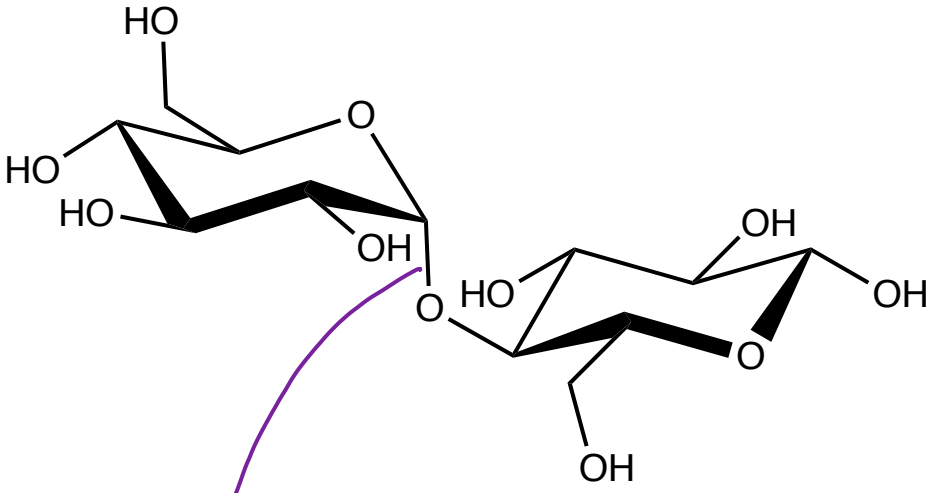
Structural



glycogen / starch



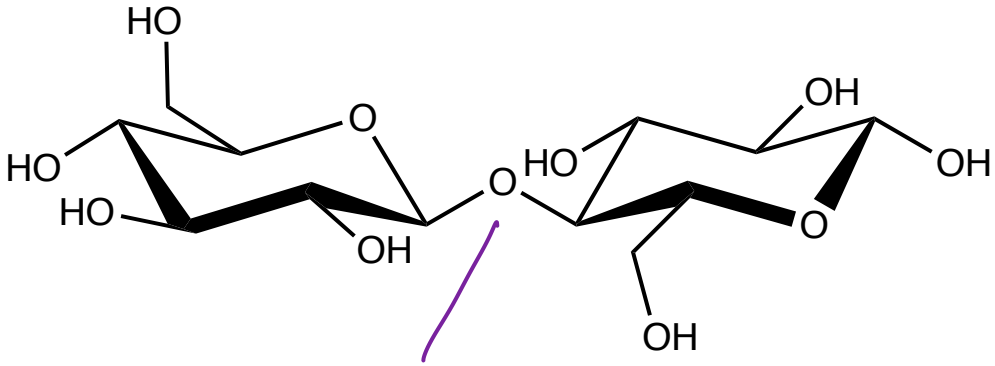
cellulose



down...

axial ... causes strain, higher E

easier to break apart an break down into CO_2 + H_2O and release E

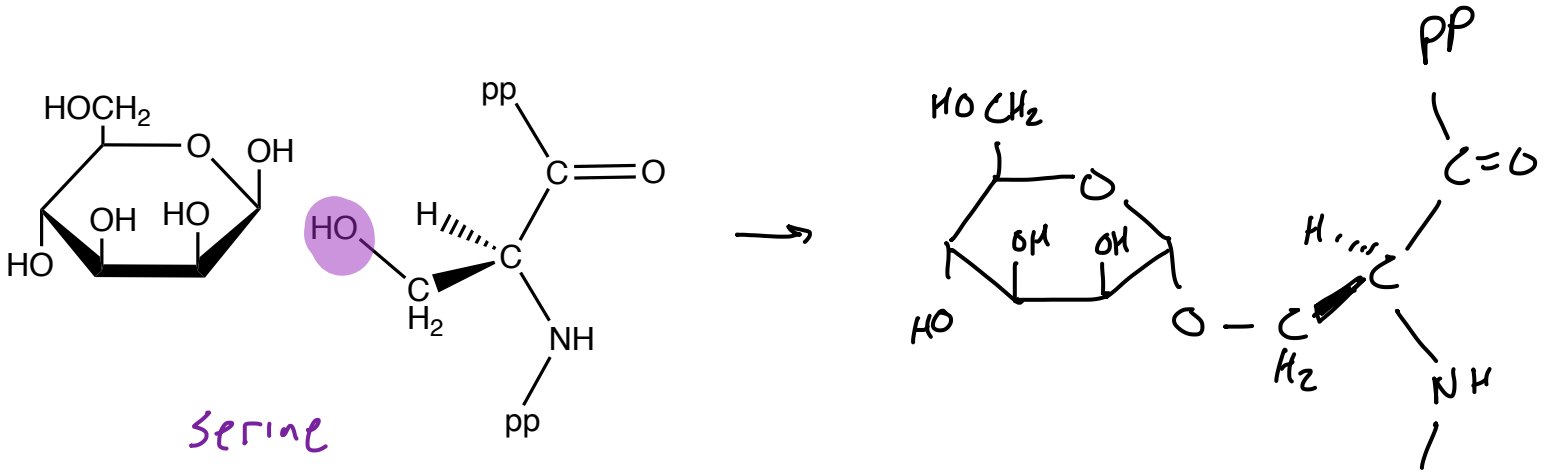


equitarial ... less strain

lower in E

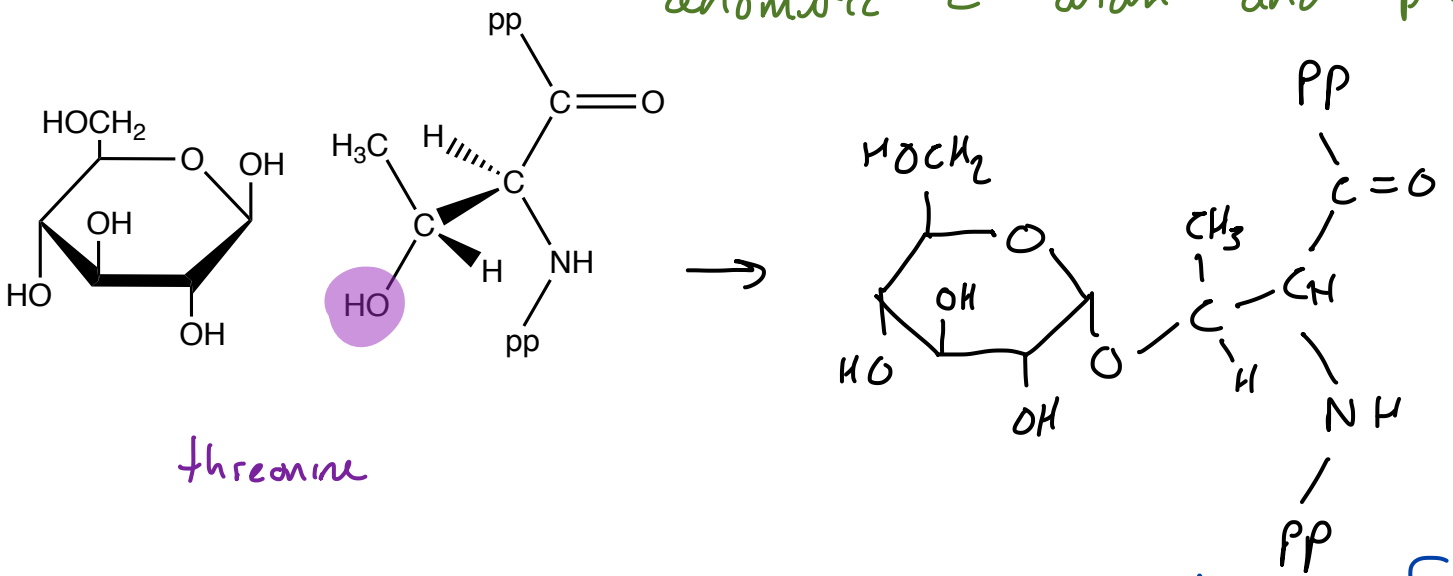
harder to break apart

more structural



serine

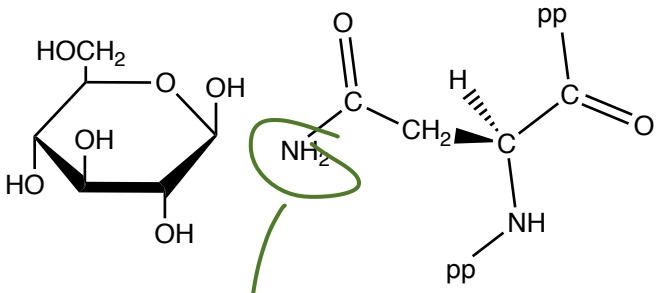
nucleophilic amino acid side chains can react at anomeric C atom and proteoglycans result



threonine

viral protein coats

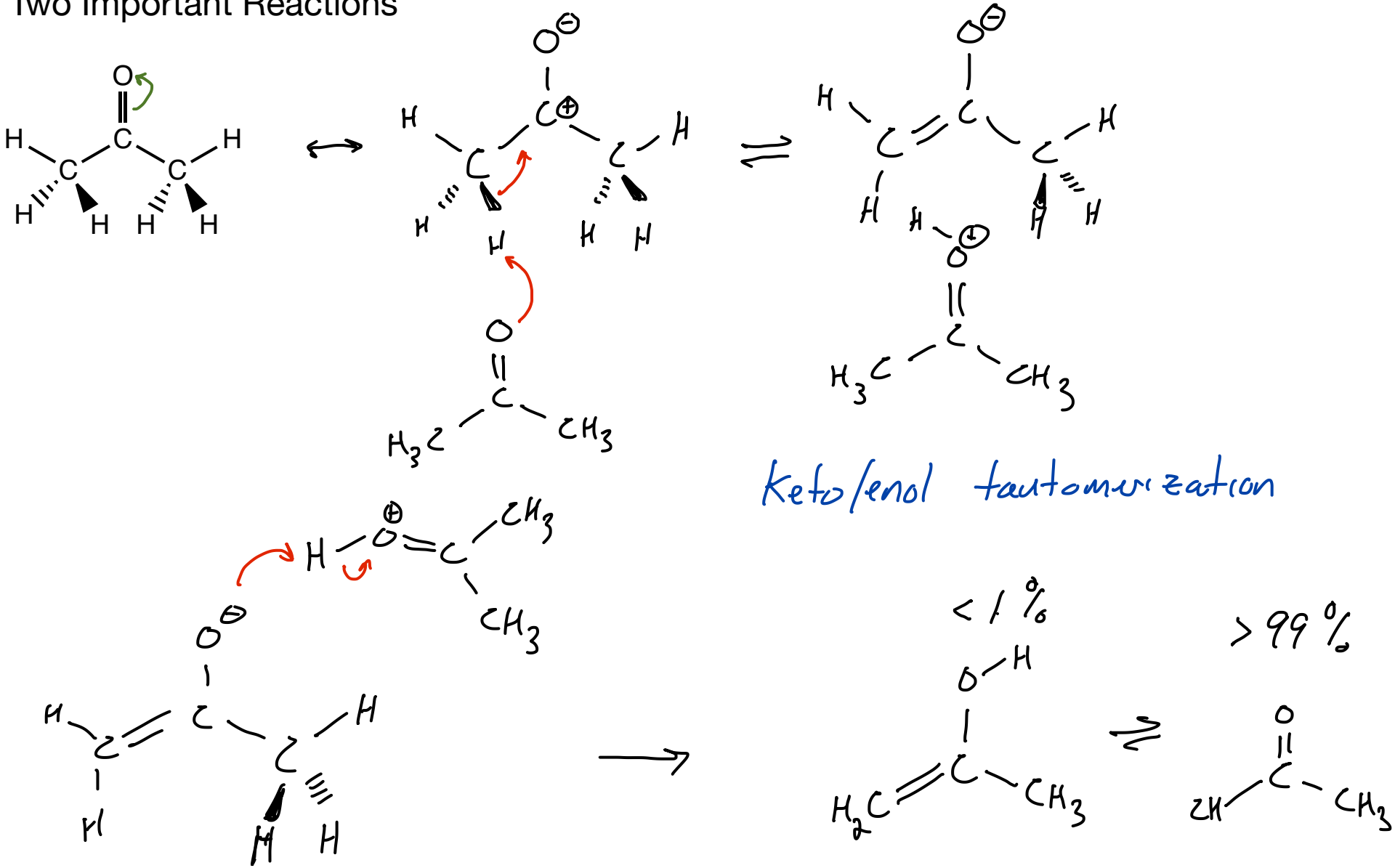
Involved in recognition... foreign vs native



asp

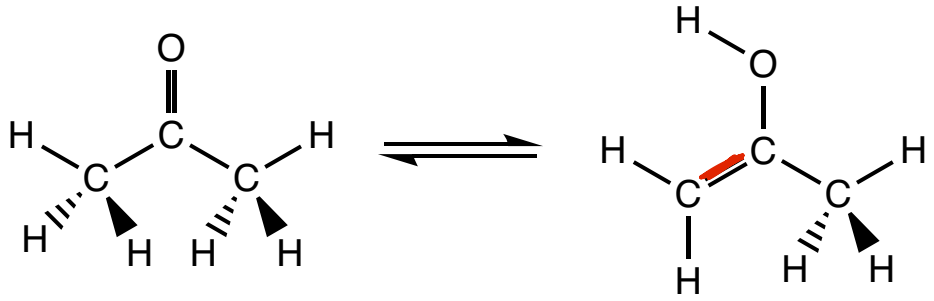
nucleophilic N can be used to make a bond with anomeric C.

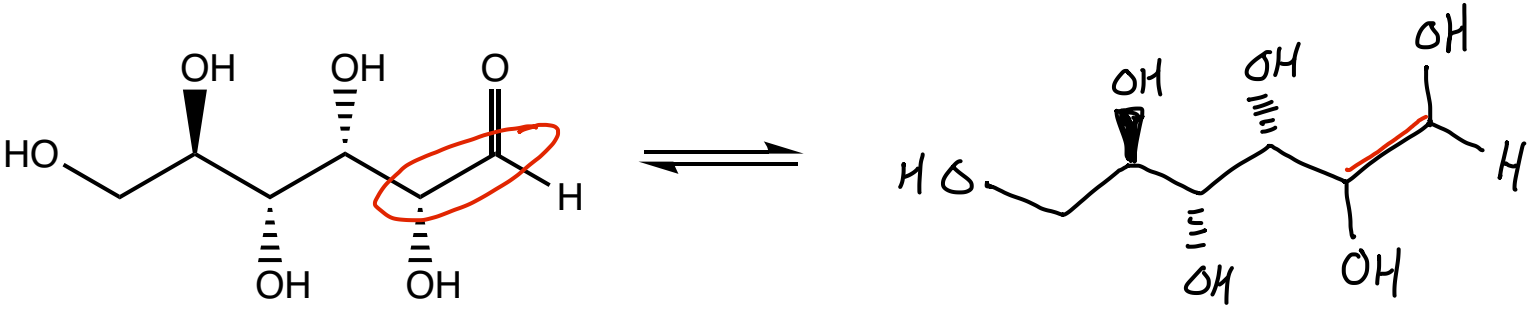
Two Important Reactions



aldehydes & ketones exist in equilibrium with their enol forms

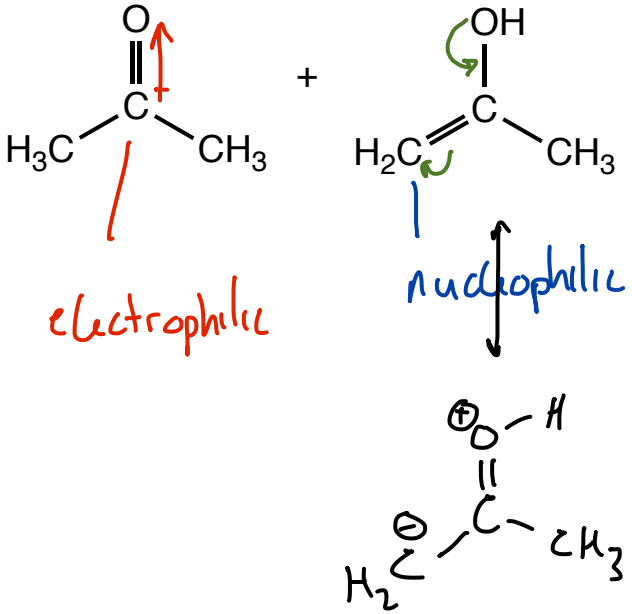
Two Important Reactions

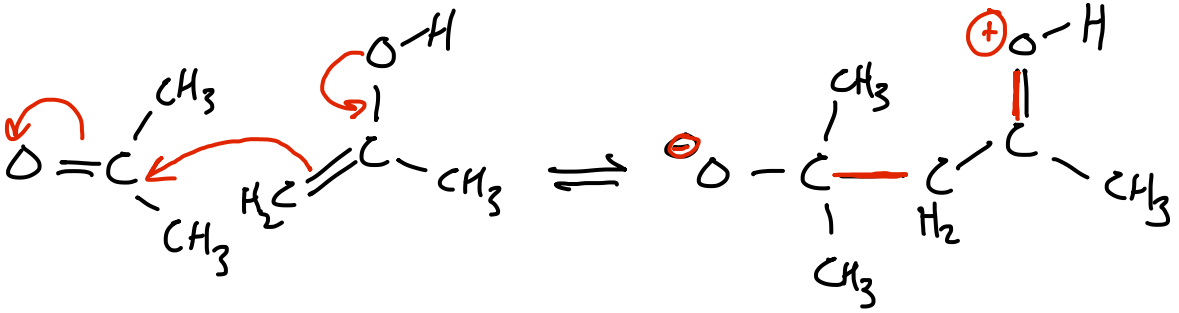




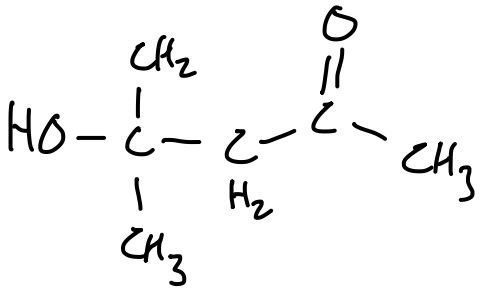
enediol

Two Important Reactions





aldol condensation



can be used to build or break down sugars