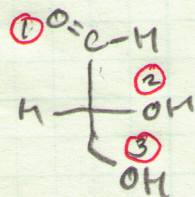


Fischer Projections of sugars: Revisited



Three "tri" O's } in the triose sugar family
more specifically it is in the aldotriose family

See previous pages of Ch 24 for structures

Sugar
Glucose

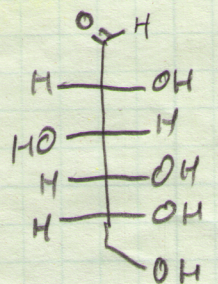
Family
aldohexose
6-O's
aldolase

Fructose

ketohexose
6-O's
ketose

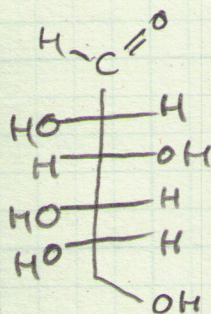
only 1!

<Stereoisomerism>



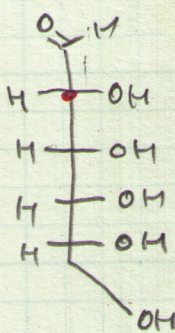
D-Glucose

mirror image

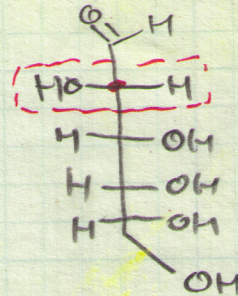


Enantiomer
L-Glucose

Epimer: 1 stereocenter is switched



D-allose



D-Altrose
(an epimer of D-Allose)

what is the stereoisomeric relationship between D-Allose and D-Glucose

D I C E N ?

☐

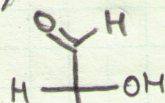
Also, is D-allose an epimer of glucose?

☐

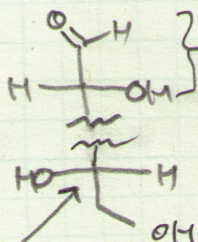
Stereoisomerism

D/L is based on the stereoconfiguration of the highest numbered stereo center of the sugar

more oxidized
C at TOP



vs



Regardless of the stereoconfiguration at the lower #d carbon centers

highest #
OH is at the **R**

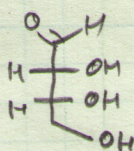
HO is to the Left (levo - Latin: laevus $\Rightarrow$ left)
L-sugar

D-sugar

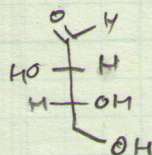
$\hookrightarrow$ dextro: Latin - Right

Rotating the Plane-of-Polarized Light (POPPL)*
Chiral molecules rotate a plane of polarized light
but note that designating a sugar as 'D' or 'L'
DOES NOT predict (or tell) which way the
sugar will rotate a plane of polarized light.

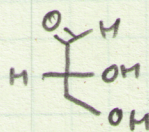
For example it would seem there is predictive character
based on



D-Erythrose
(-)



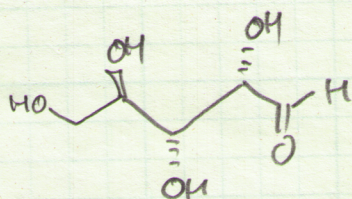
D-Threose
(-)



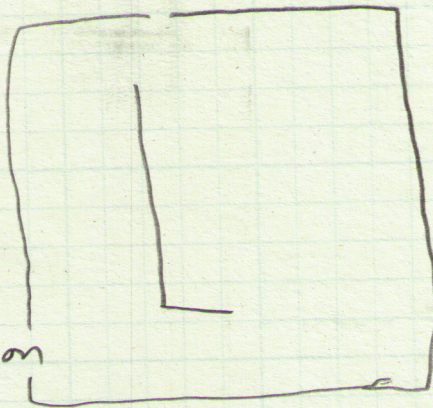
D-Glyceraldehyde
(+)

* POPPL

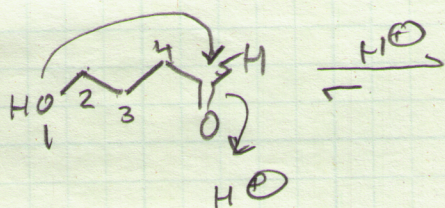
Redraw



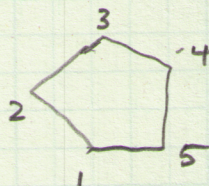
As a Fischer Projection
using the template.



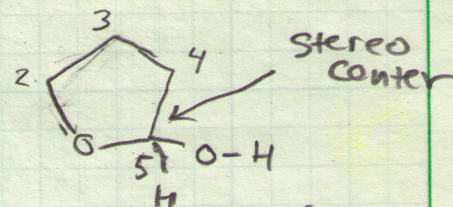
Cyclization (Intramolecular)



- ① what cyclic template needs to be drawn
- ② Arbitrarily count atoms contained within the ring using the structure at the right.
- ③ I count 5 atoms; draw a pentagon and number it 1 → 5



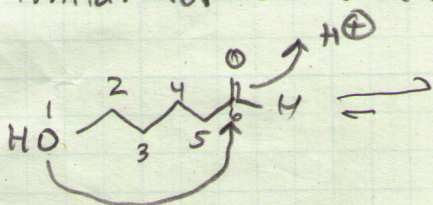
1 is 'O'



Furanose ring

base on furan

Similar for 6-membered ring



Pyranose ring

from Pyran

Mechanism: Recall

