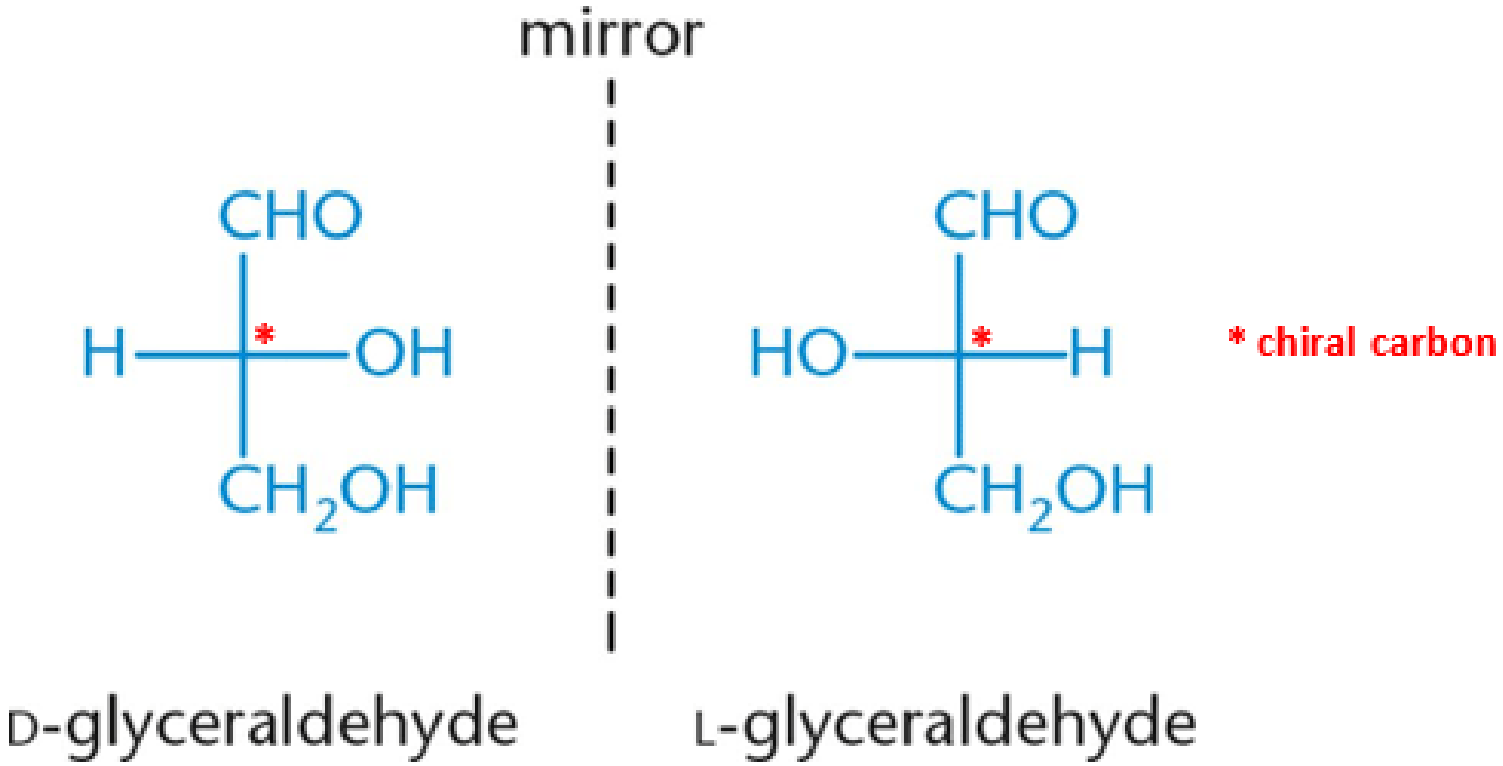
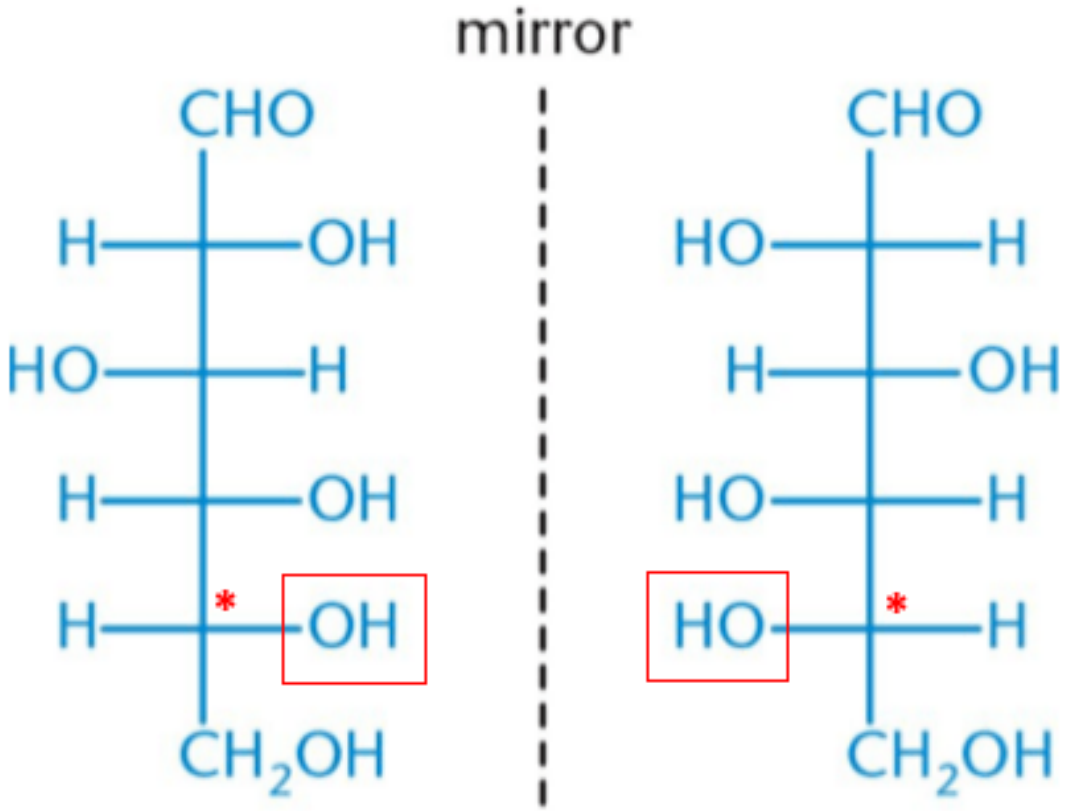

mirror
CHO
H
*
OH
CH2OH
CHO
HO
*
H
CH2OH
* chiral carbon
D-glyceraldehyde
L-glyceraldehyde



D-glucose

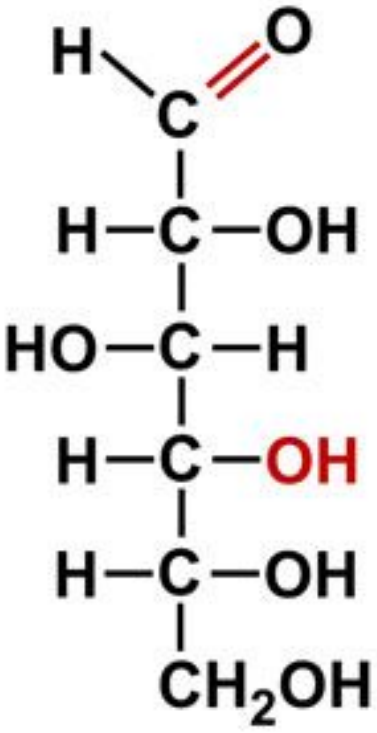
-OH on the right

L-glucose

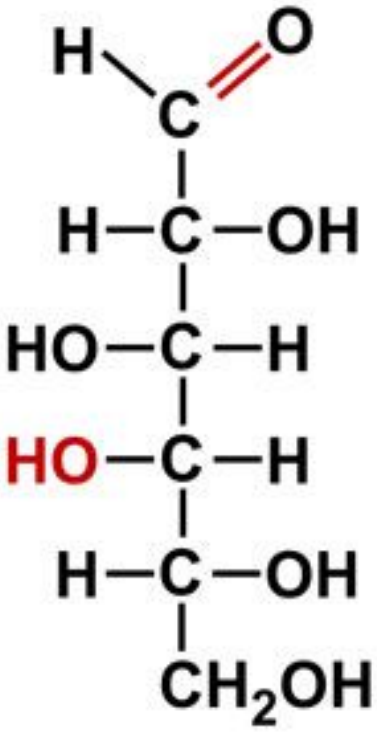
-OH on the left

*** chiral carbon**

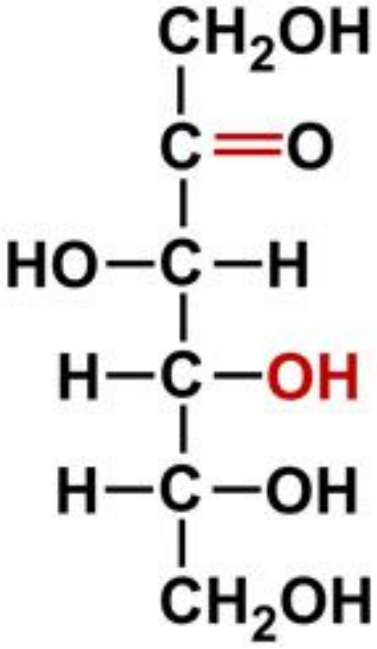
Carbohydrate Isomers



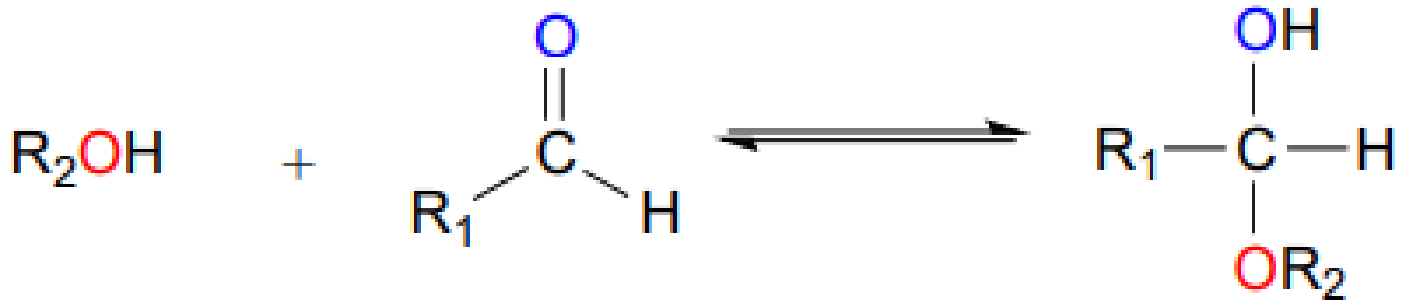
Glucose



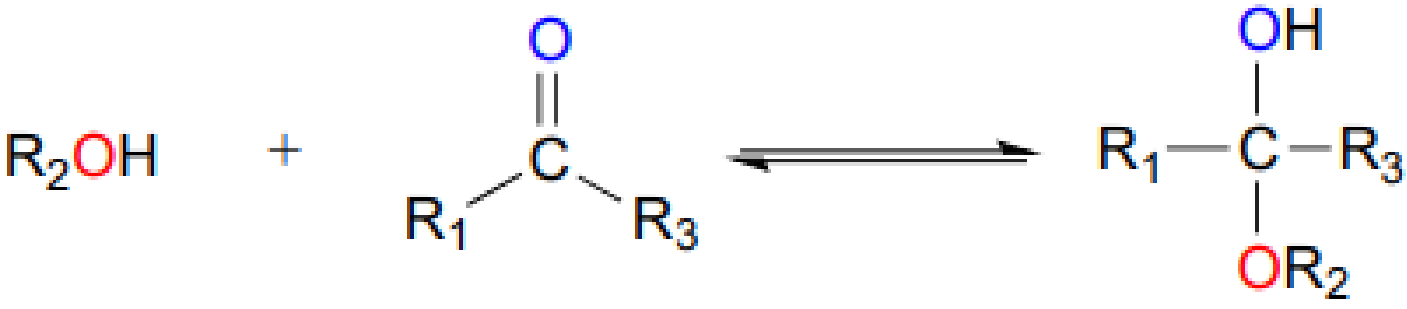
Galactose



Fructose



alcohol aldehyde hemiacetal



alcohol ketone hemiketal

Mutarotation

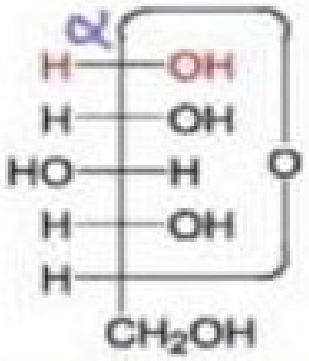
α-D-glucose
specific rotation:
$[\alpha]_D = +112°$

$\xrightarrow{H_2O}$

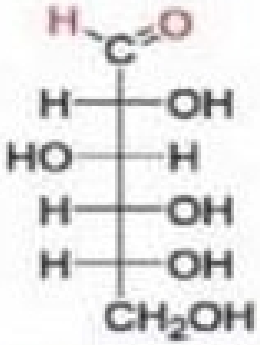
???
specific rotation:
$[\alpha]_D = +52.7°$

$\xleftarrow{H_2O}$

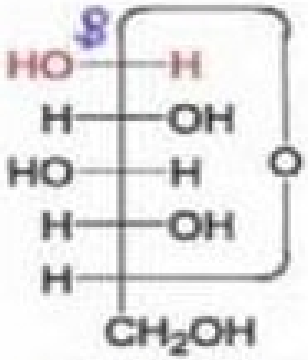
β-D-glucose
specific rotation:
$[\alpha]_D = +18.7°$



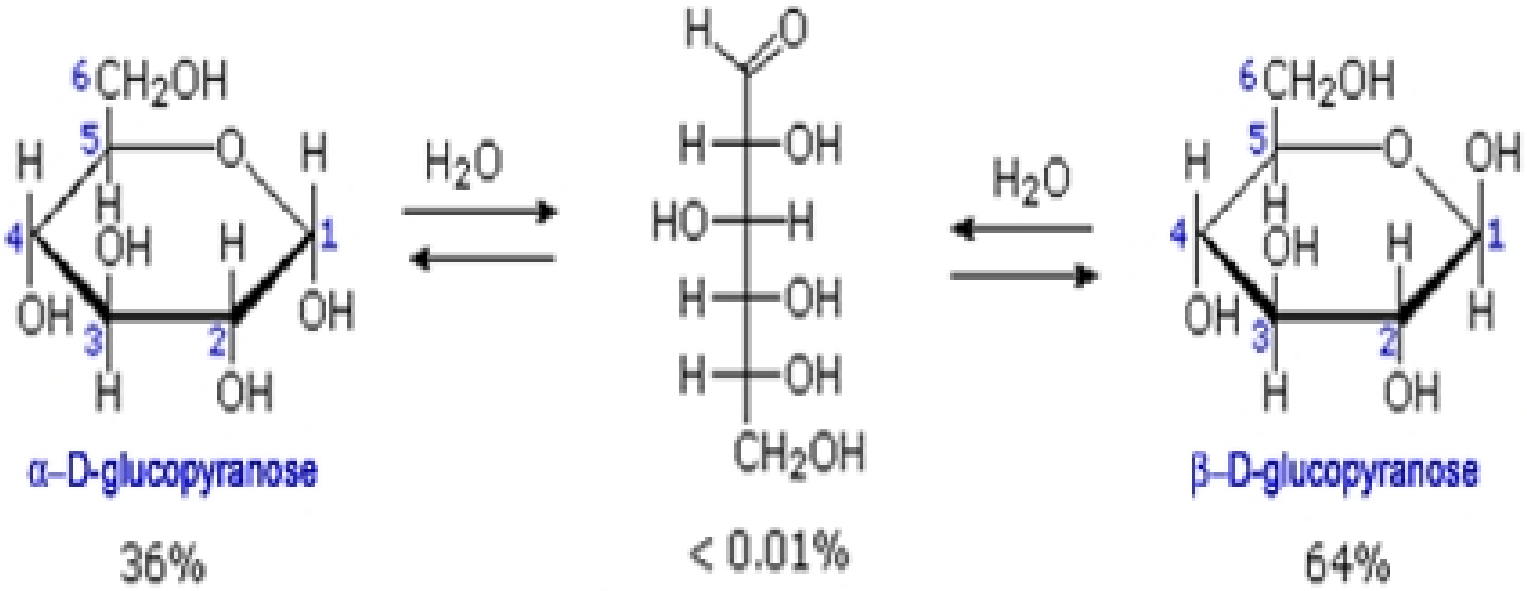
α-form (36%)



open chain
aldehyde (trace)



β-form (64%)



α–D-glucopyranose

36%

< 0.01%

β–D-glucopyranose

64%

Mutarotation Equilibrium