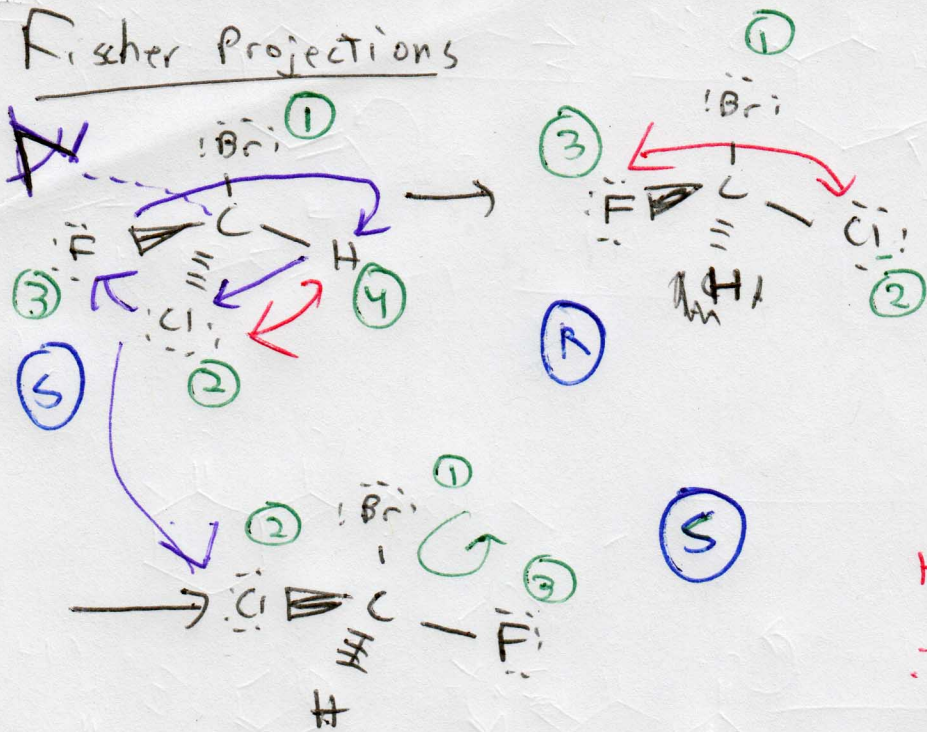
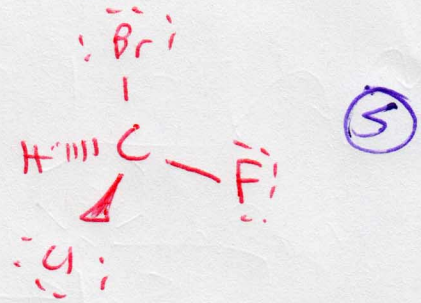


Fischer Projections



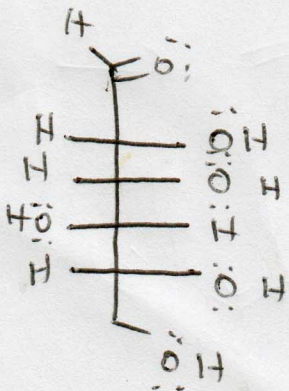
When two groups on a stereo center are exchanged, it inverts the configuration of that stereo center



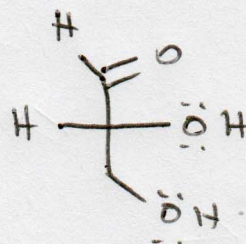
~~Double rotation of~~

Swapping any two substituents on a tetrahedral center twice (does not have to be the same two substituents) causes the same result as rotation around one bond once - which can also be accomplished by rotation of 3 substituents.

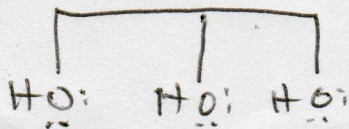
Carbohydrate - $[CH_2O]_x$



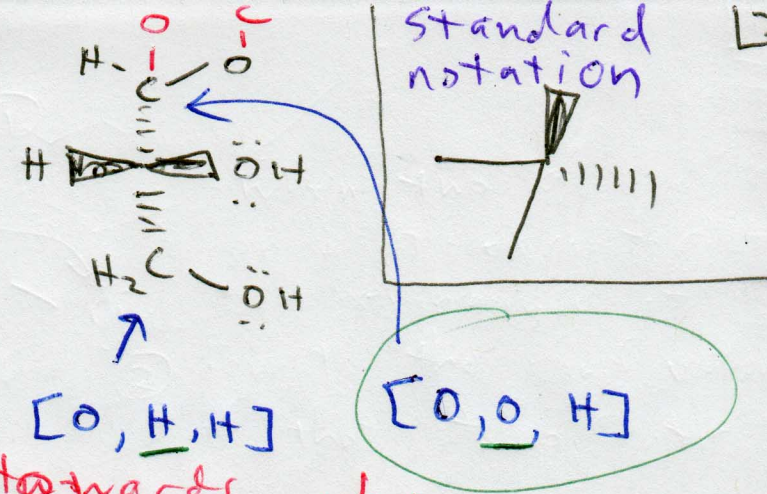
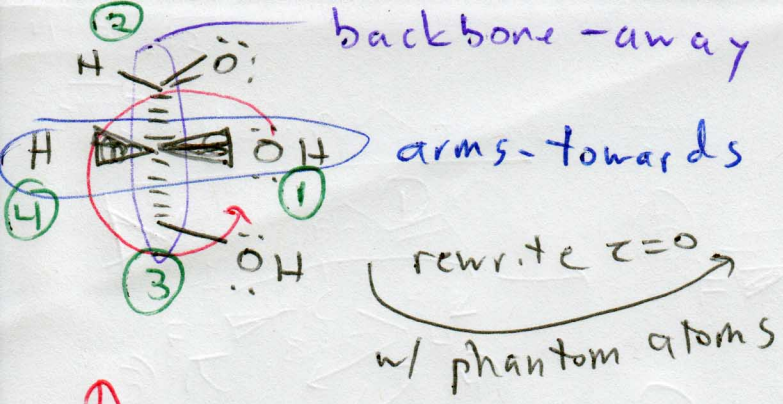
D-glucose



D-glyceraldehyde
glycerol



By definition, any group written on the "backbone" (vertical) is oriented away from the view, and any group written on the "arms" (horizontal) is oriented ~~away~~ toward the viewer.

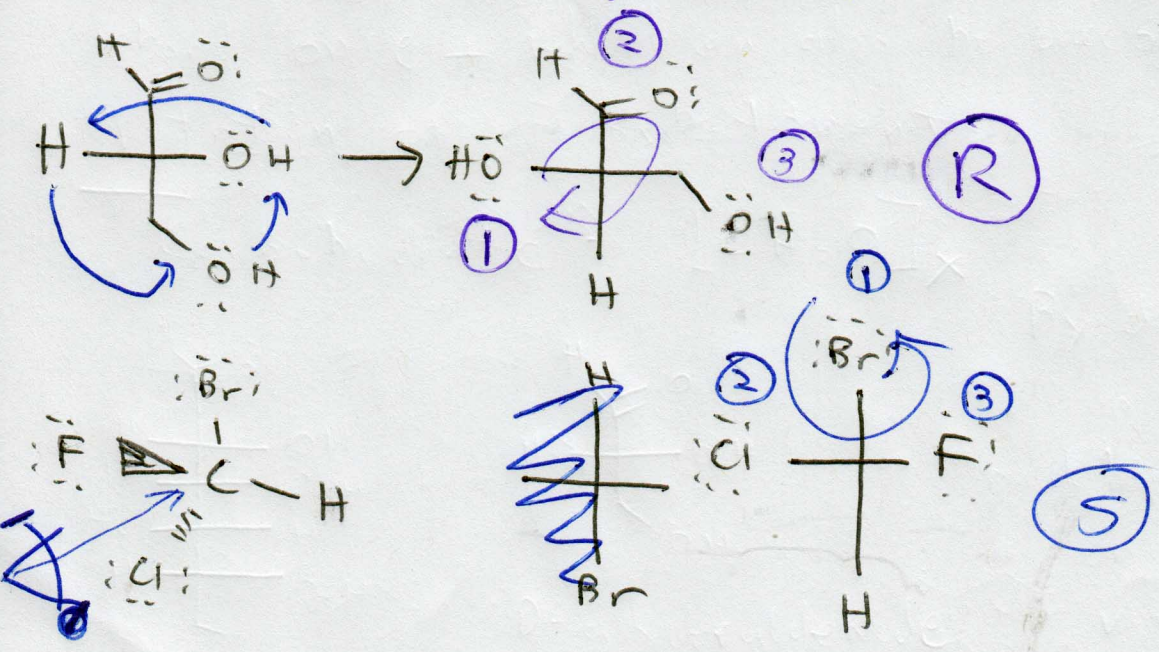


The hydrogen is pointed towards the viewer, so whatever apparent orientation the remaining groups have must be reversed,

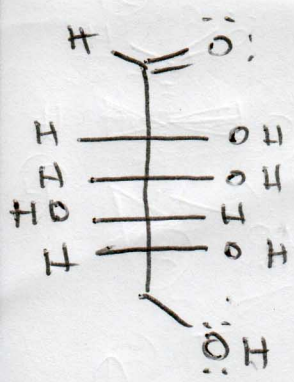
(looks counter clockwise, but is really R)

Fischer projections cannot be rotated, since there is a firm and immutable definition for what the vertical and horizontal positions represent. If a Fischer projection is rotated 90° , it inverts the configuration.

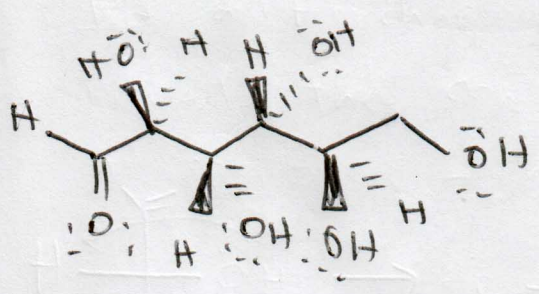
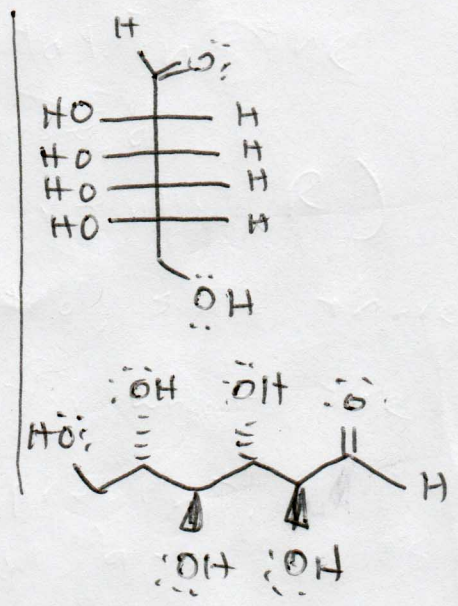
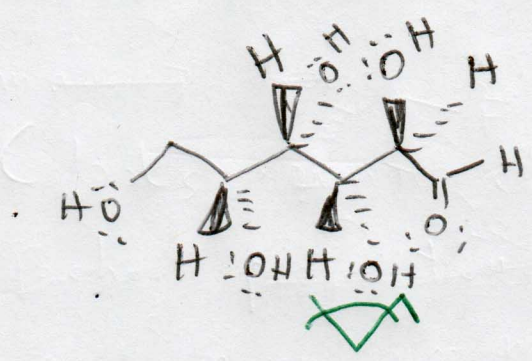
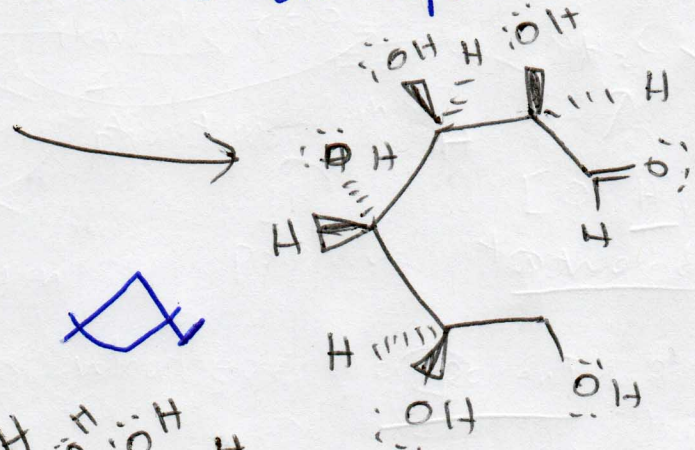
(pinwheel)



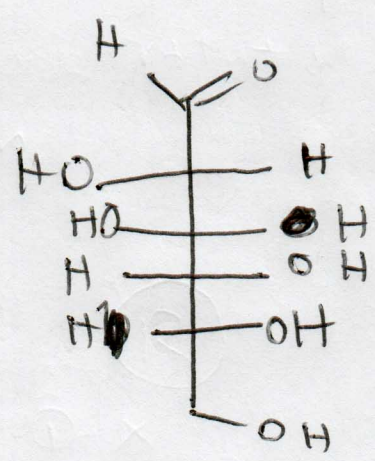
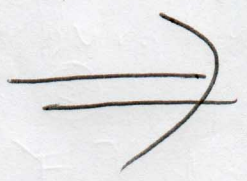
By convention, Fischer projections of carbohydrates are drawn so that the C=O is on top.



D-glucose



~~D-mannose~~



D-mannose