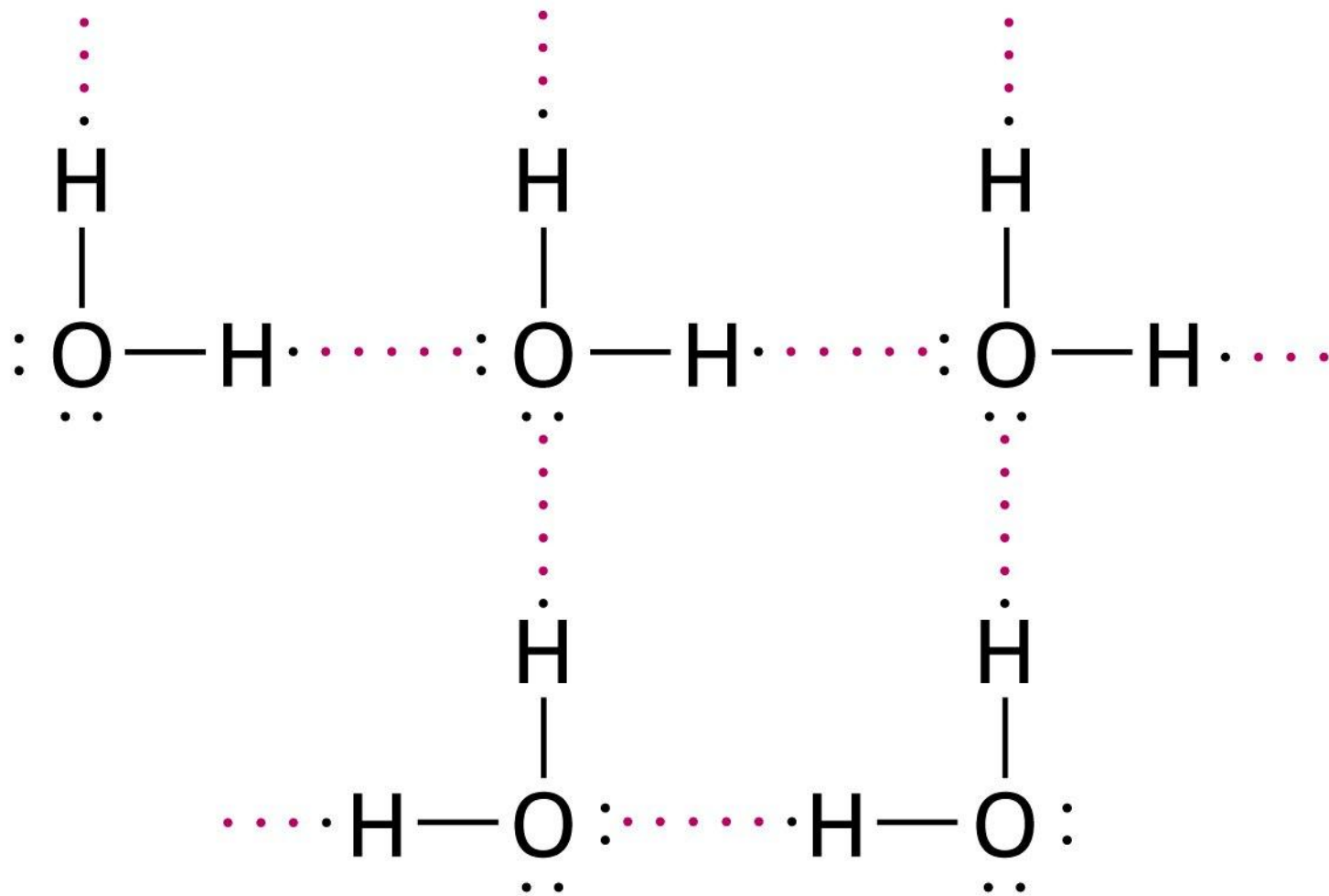
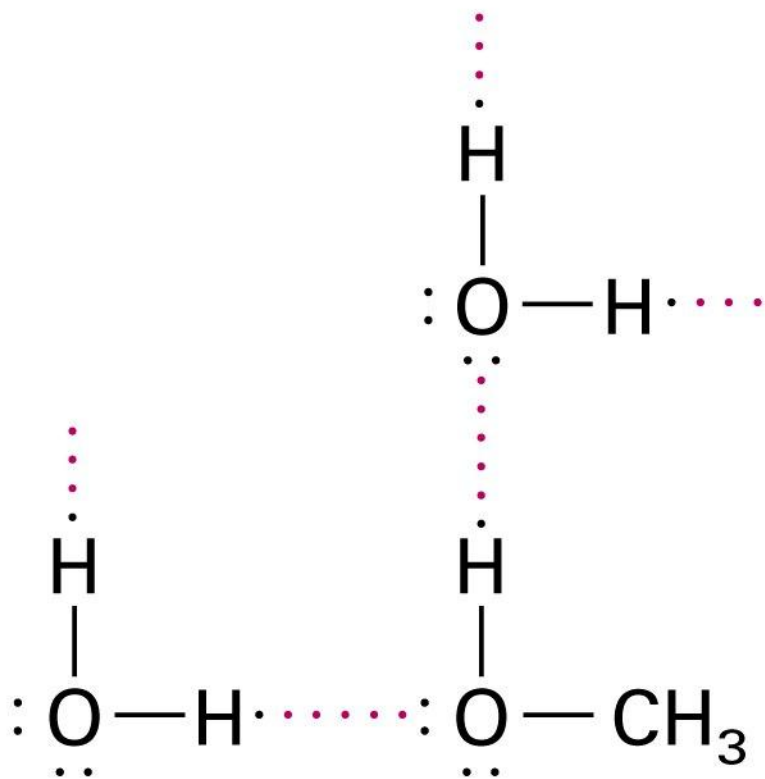


Carbohydrates

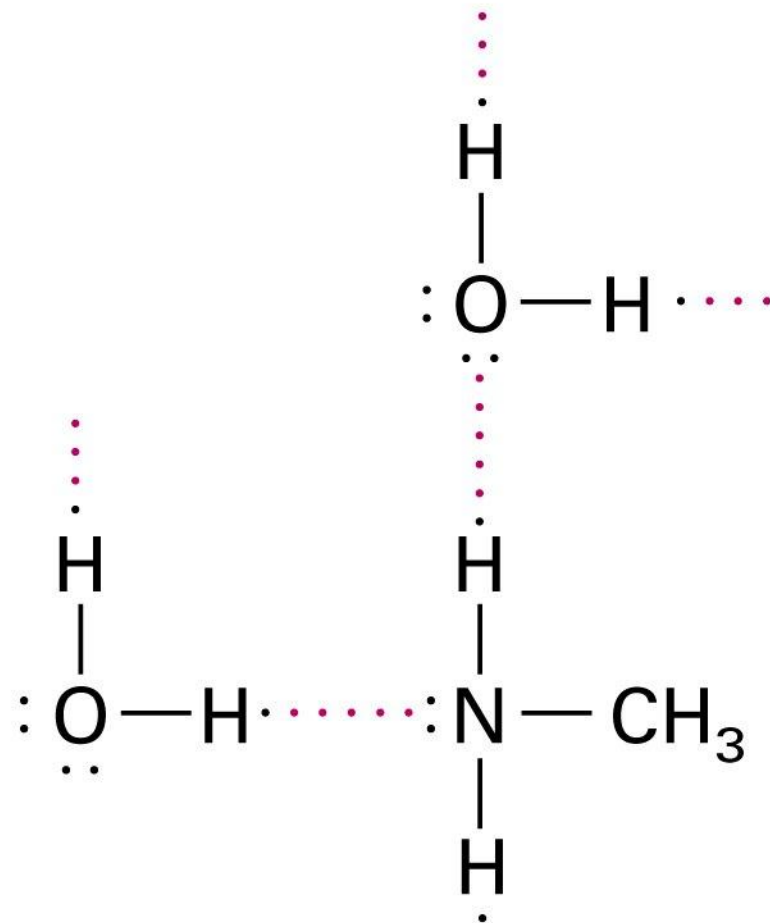
Dr. Hadiansarihadipour



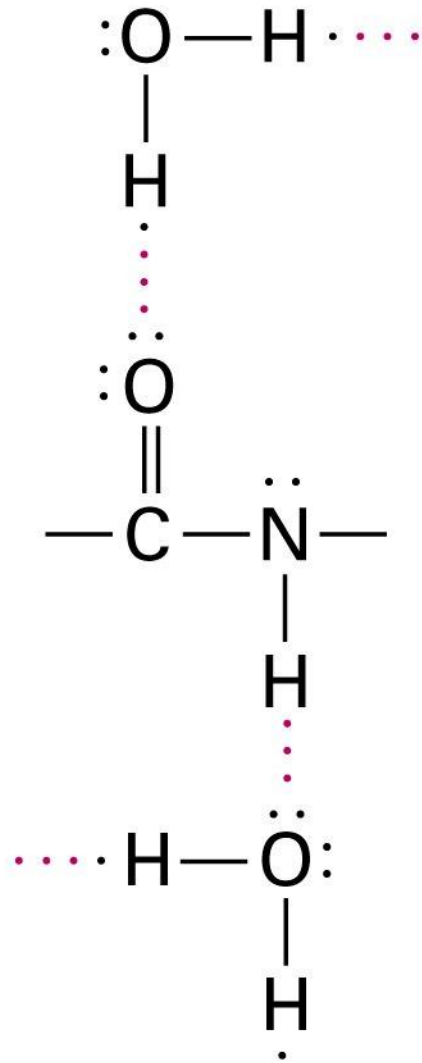
Water-water



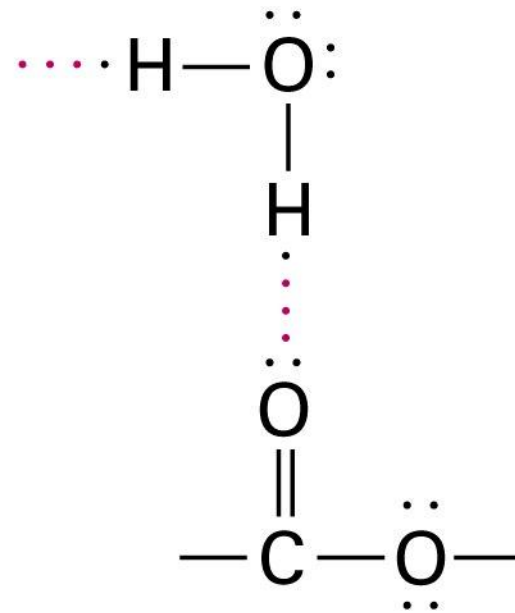
Methanol-water



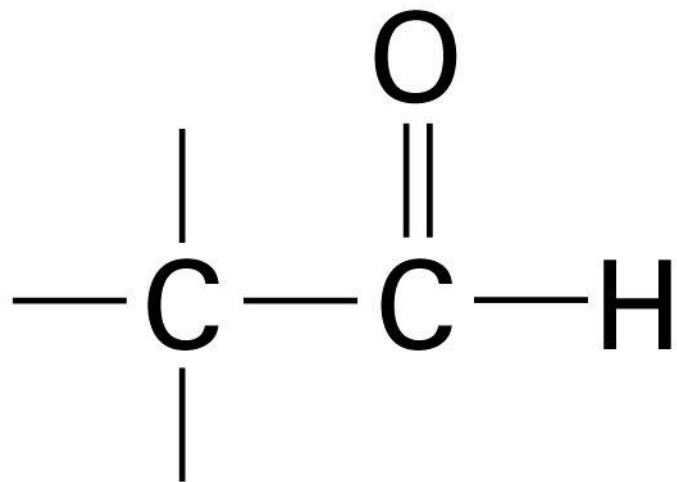
Methylamine-water



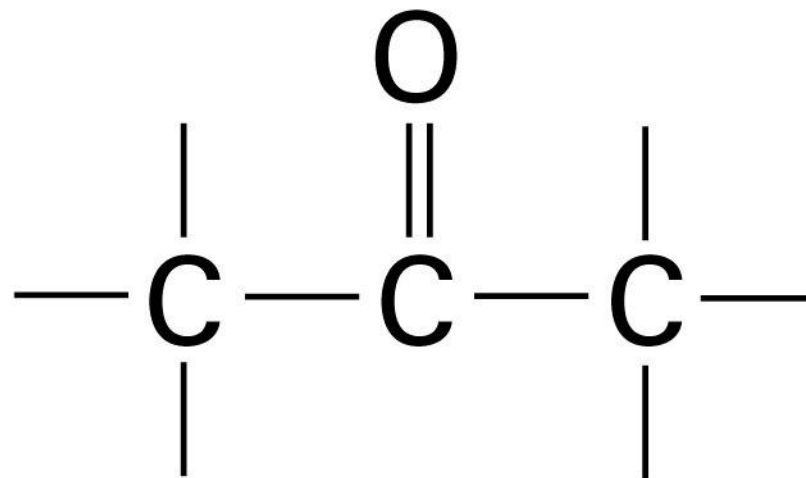
Peptide group–water



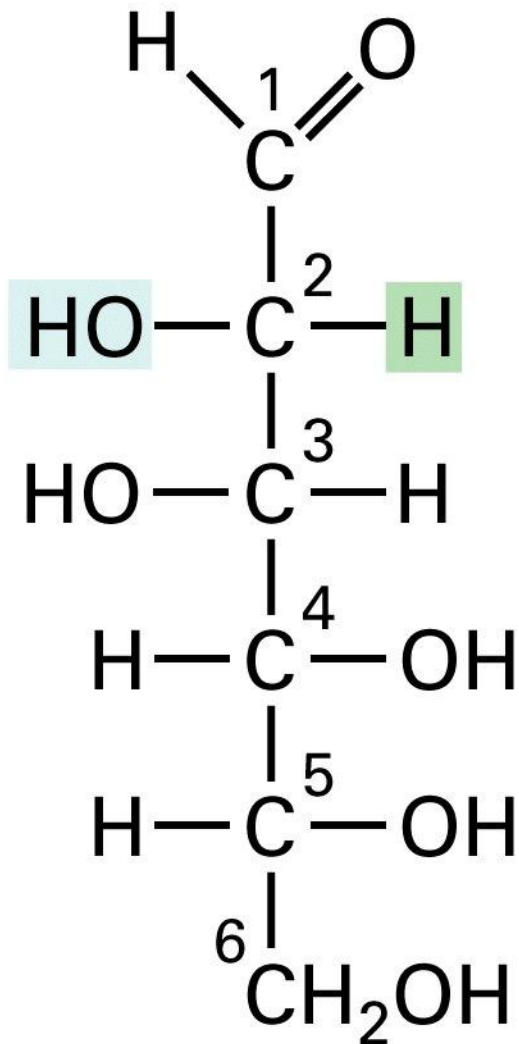
Ester group–water



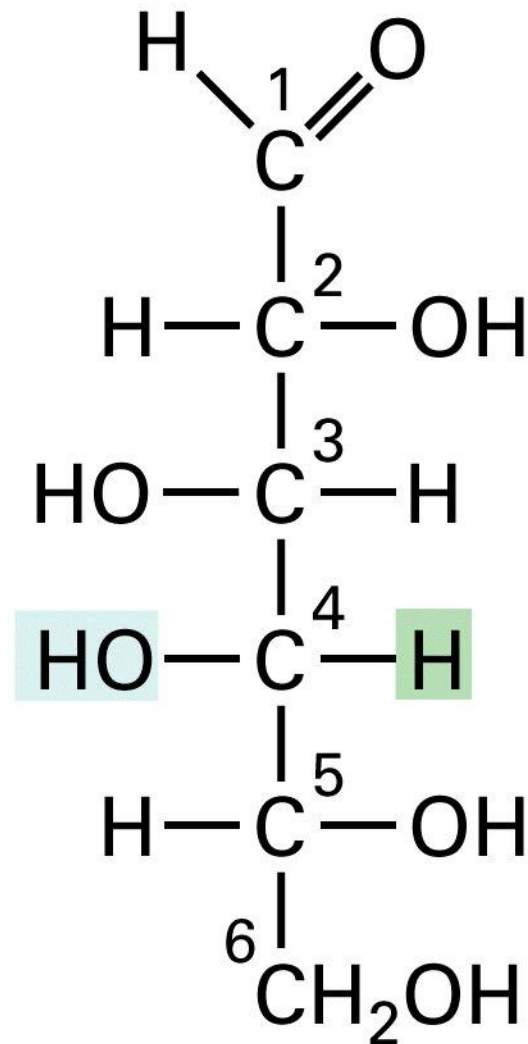
Aldehyde



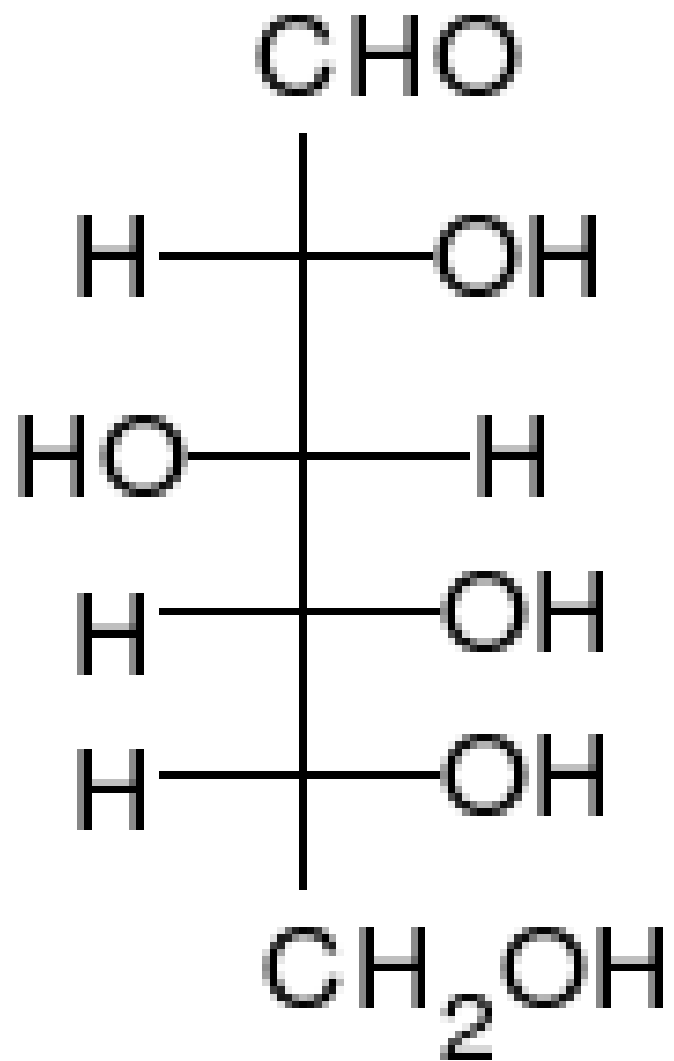
Keto

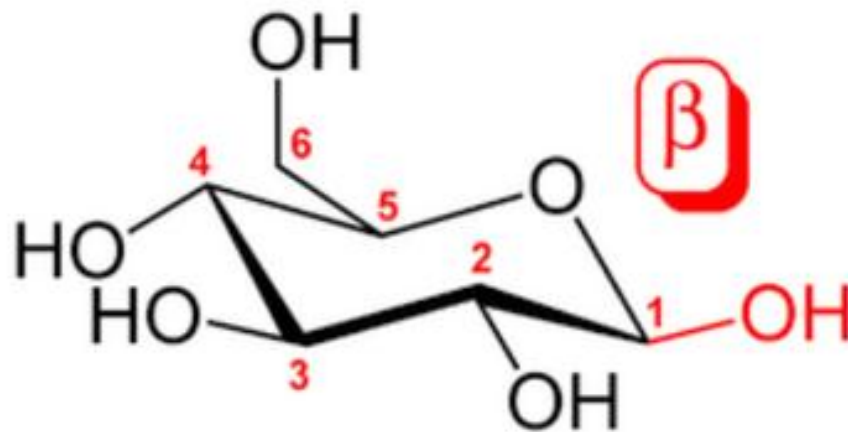
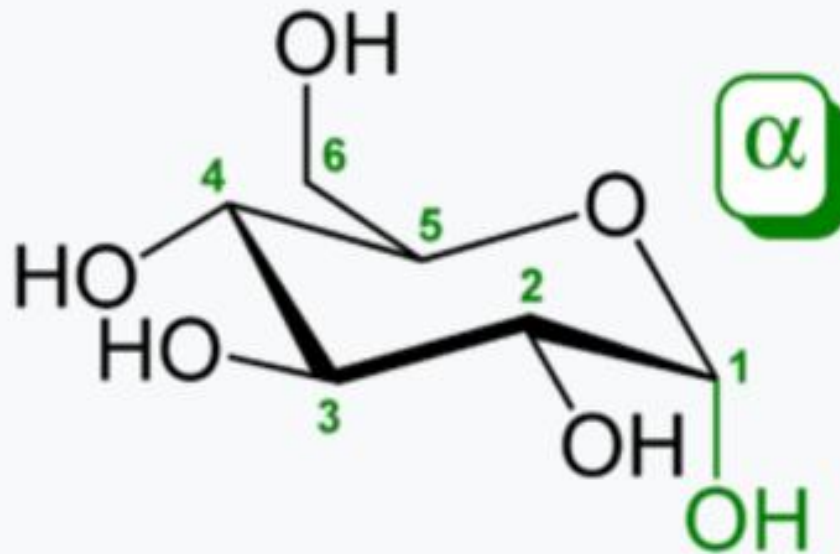


D-Mannose

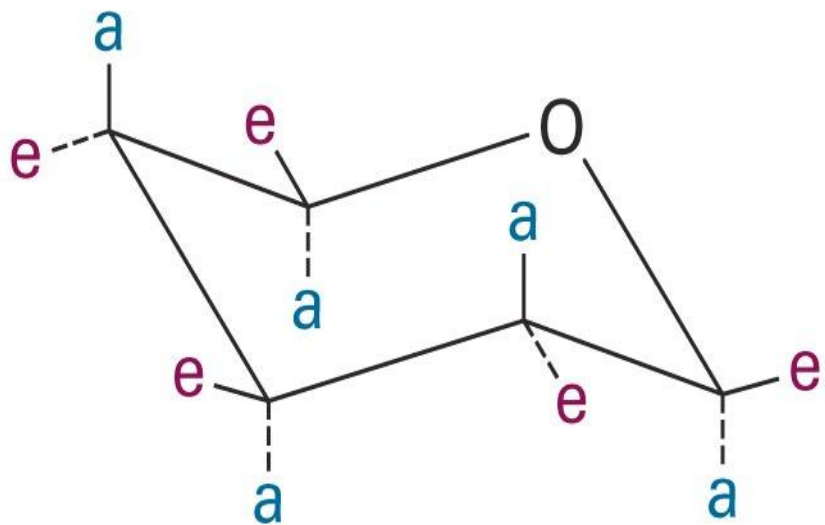


D-Galactose

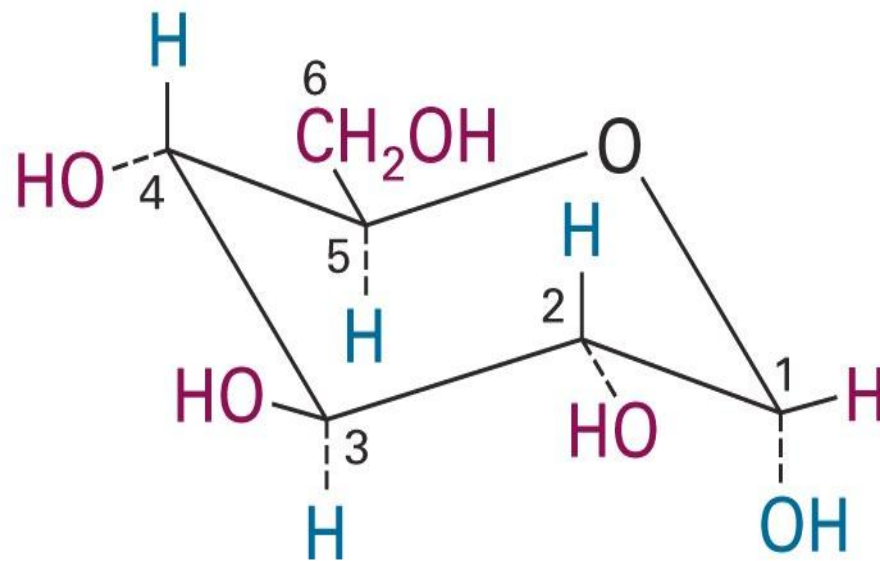




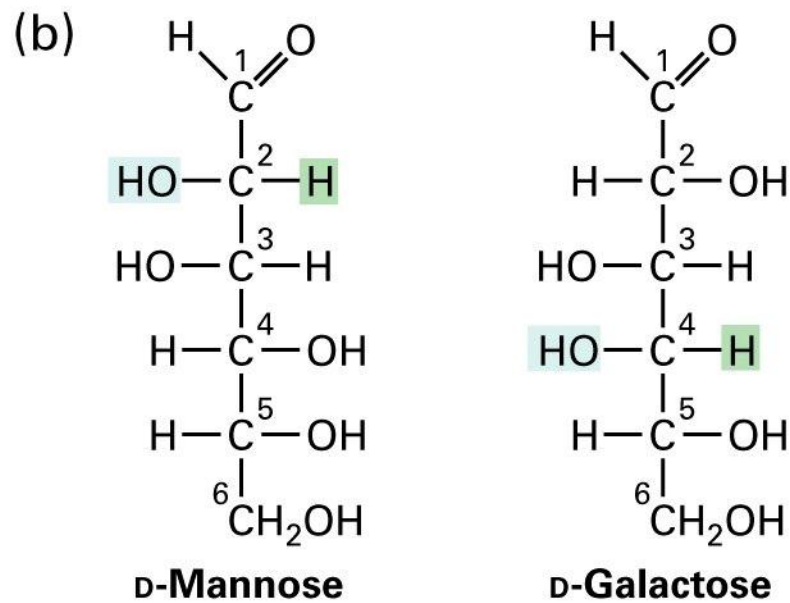
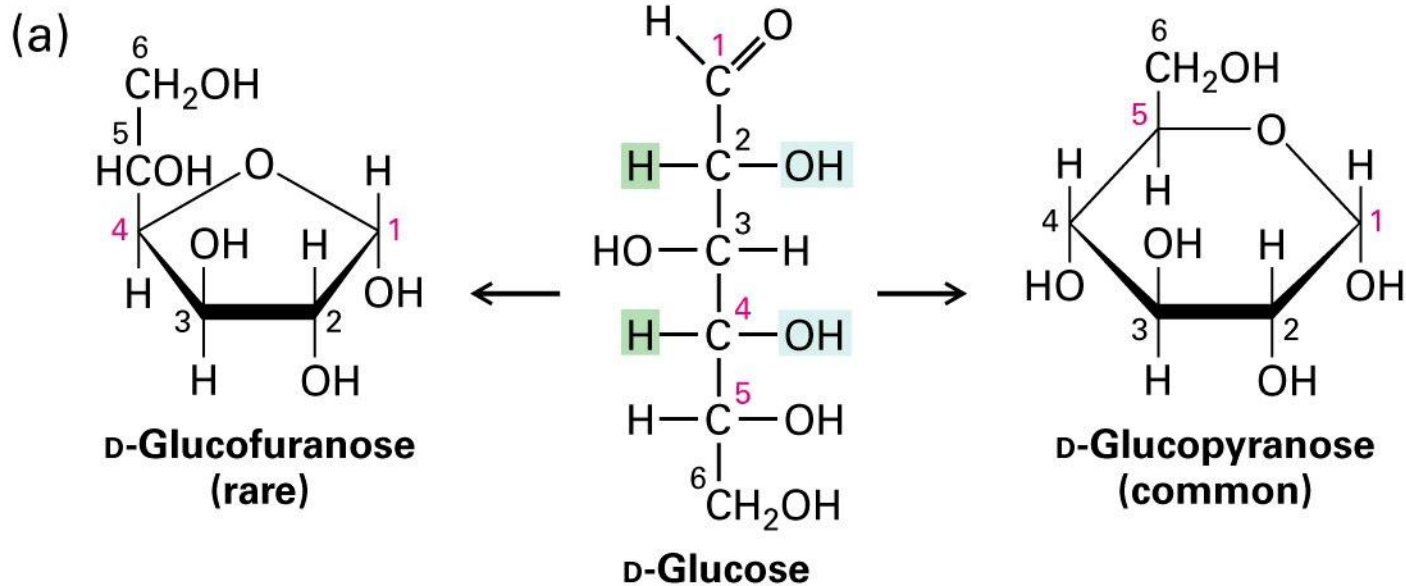
The α and β anomers of glucose. Note the position of the hydroxyl group (red or green) on the anomeric carbon relative to the CH₂OH group bound to carbon 5: they either have identical absolute configurations (R,R or S,S) (α), or opposite absolute configurations (R,S or S,R) (β).

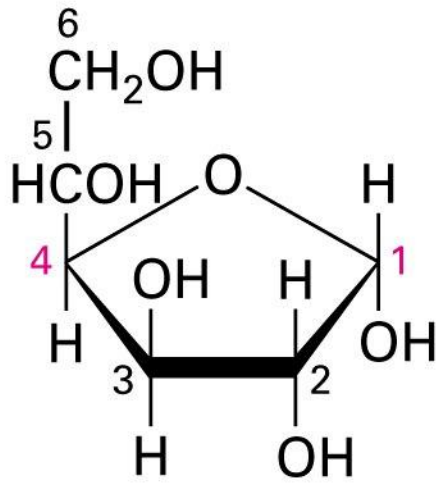


Pyranoses

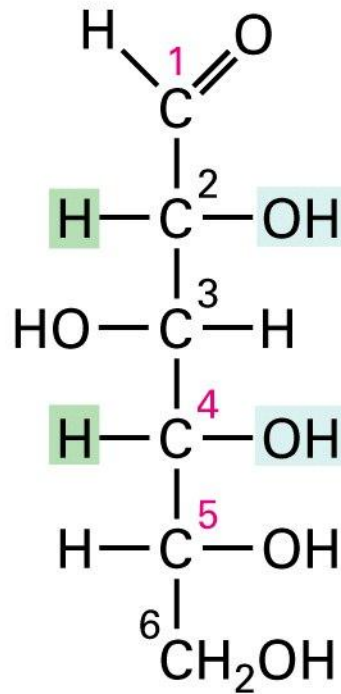


α -D-Glucopyranose

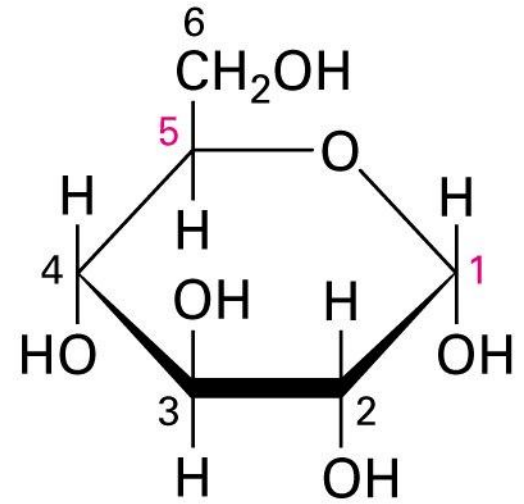




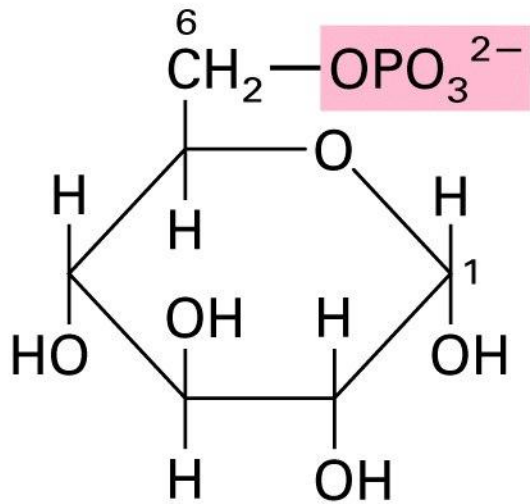
D-Glucofuranose
(rare)



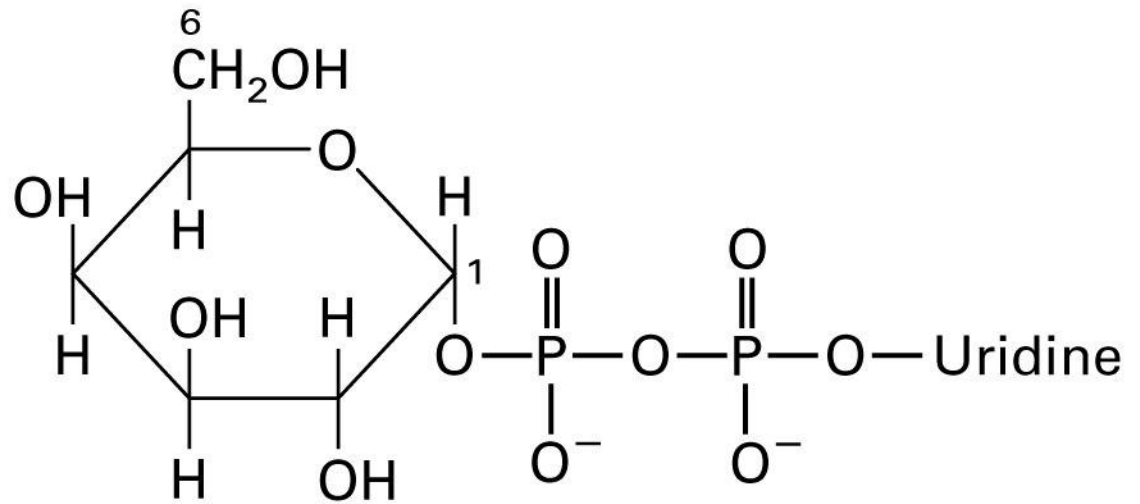
D-Glucose



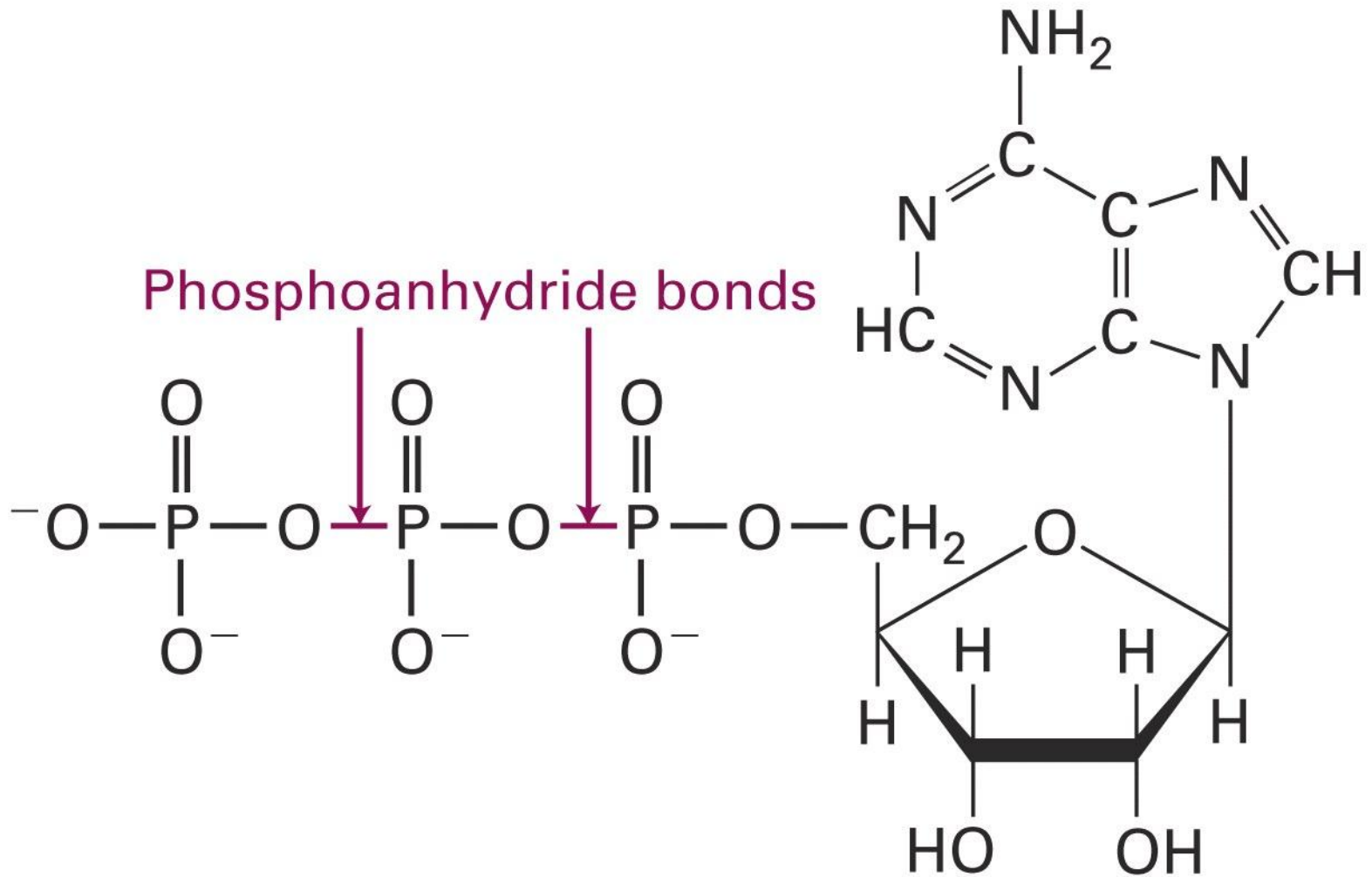
D-Glucopyranose
(common)



Glucose 6-phosphate



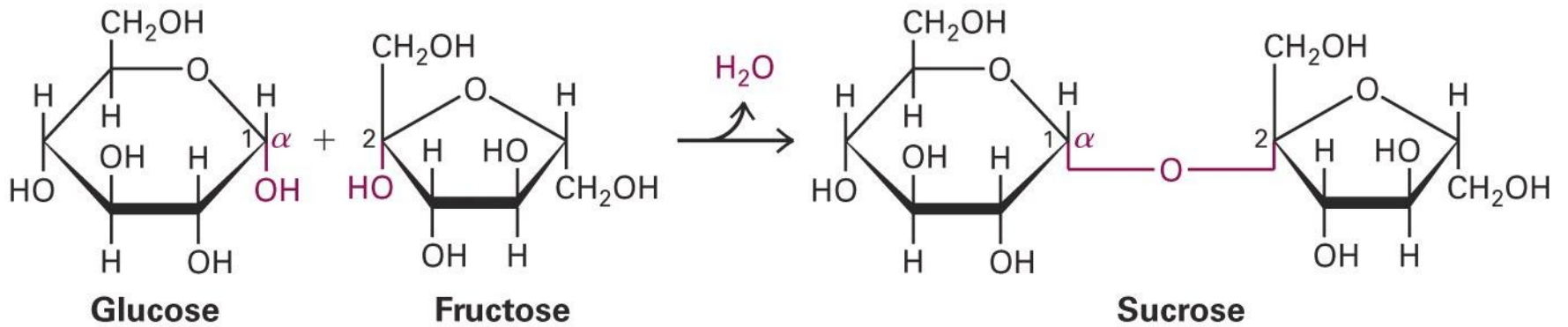
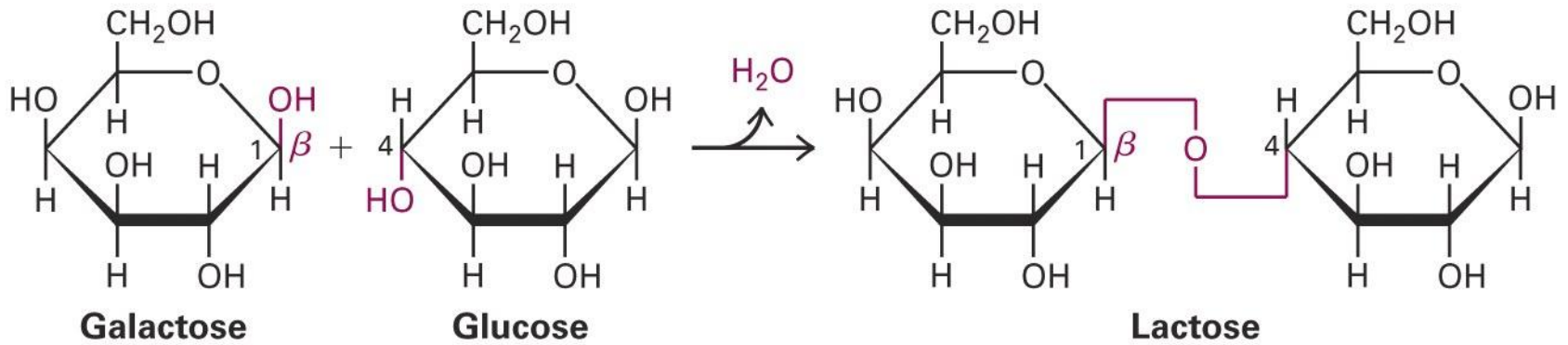
UDP-galactose

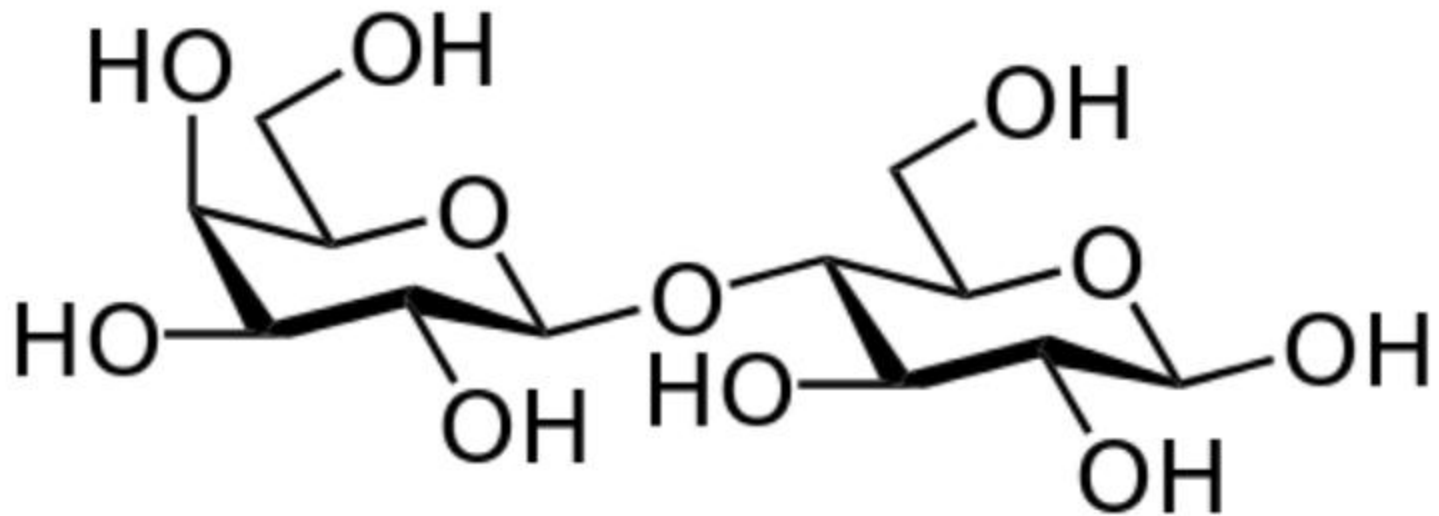


Adenosine triphosphate (ATP)

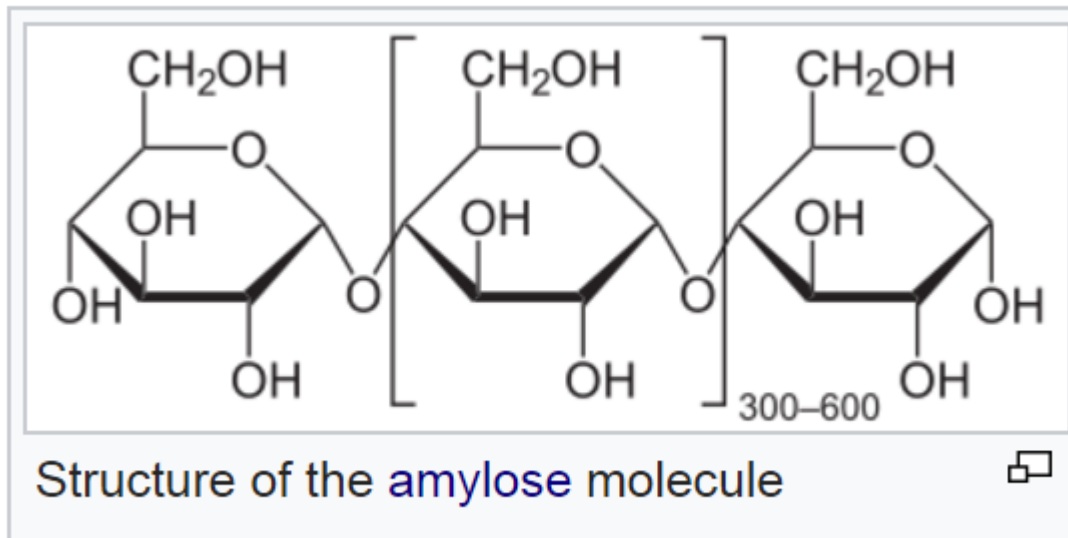
www.dezazma.com

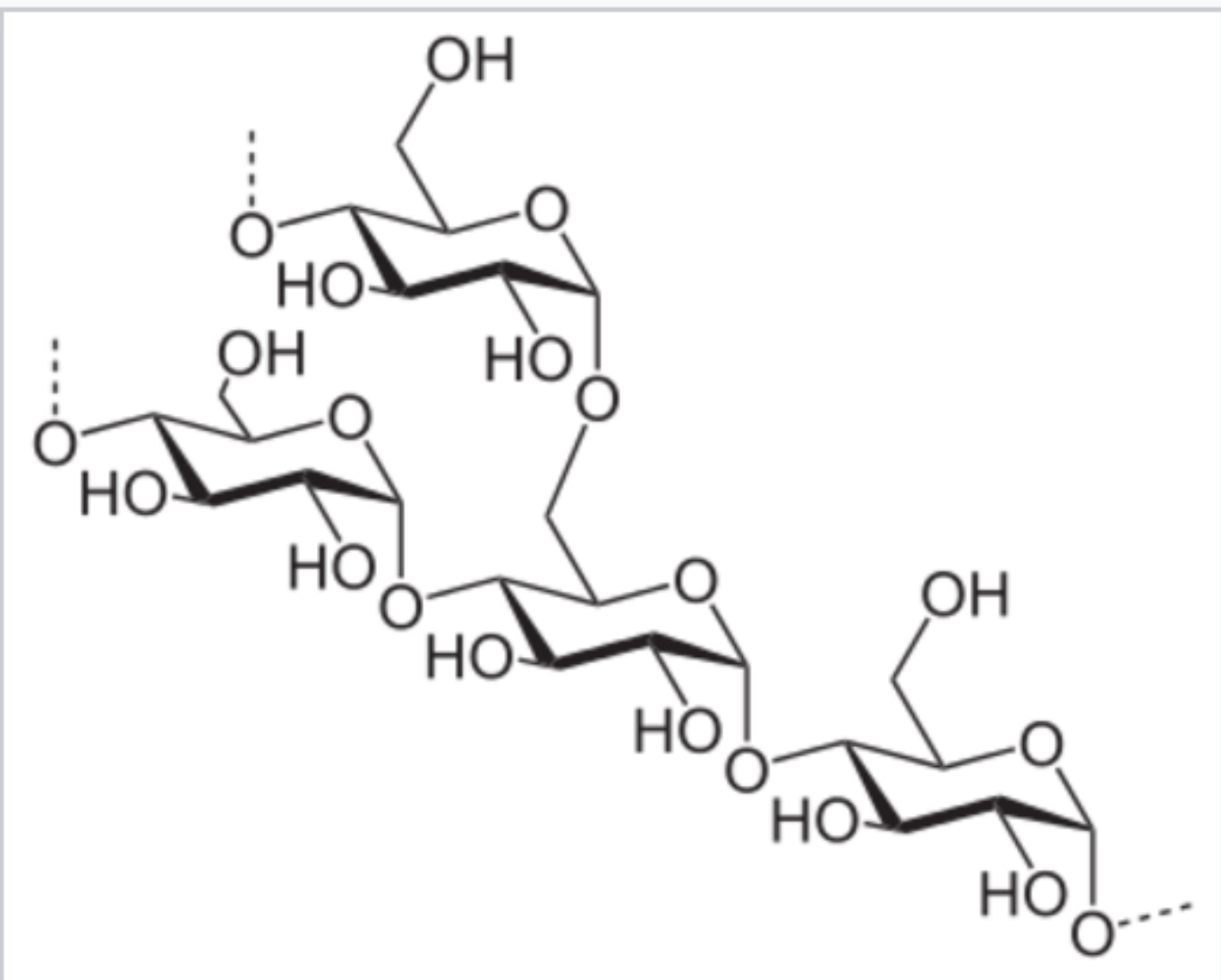
Hadi Ansarihadipour





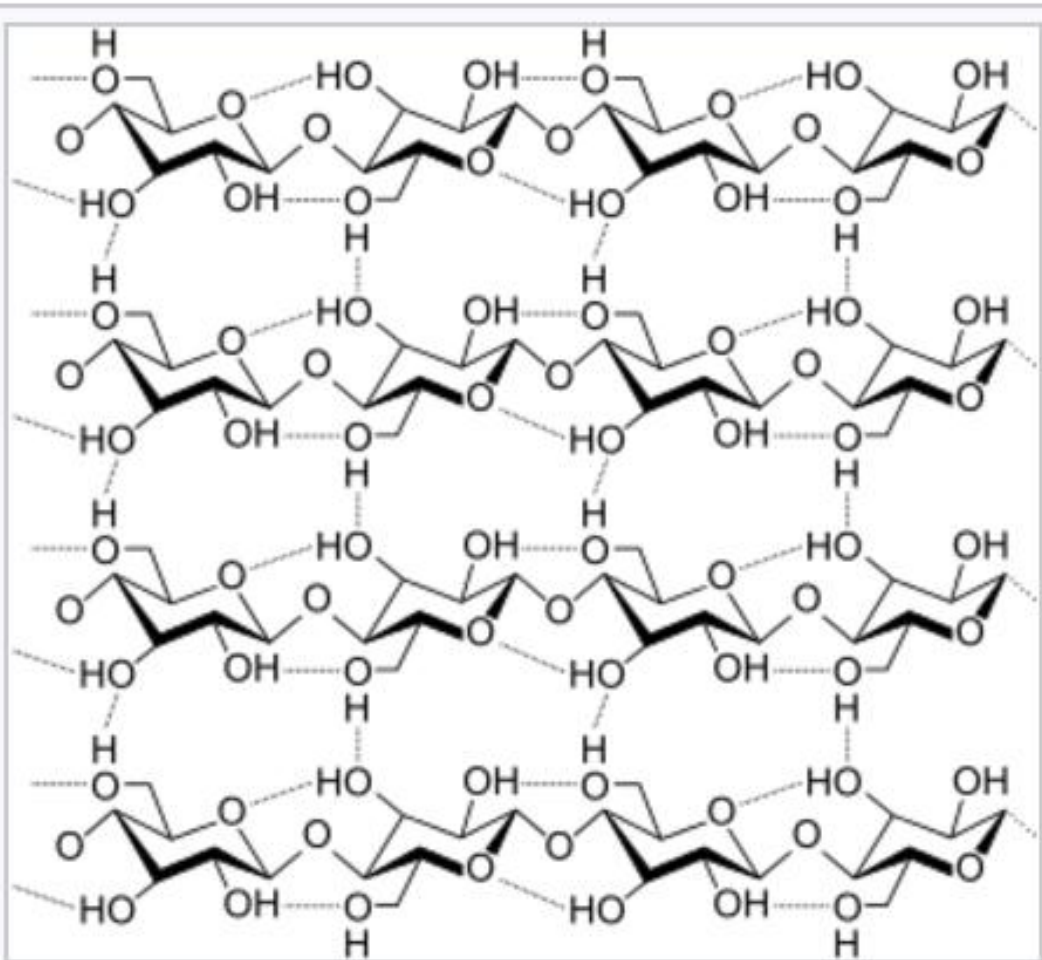
Lactose is a **disaccharide** found in milk. It consists of a molecule of **D-galactose** and a molecule of **D-glucose** bonded by beta-1-4 **glycosidic linkage**. It has a formula of $C_{12}H_{22}O_{11}$.






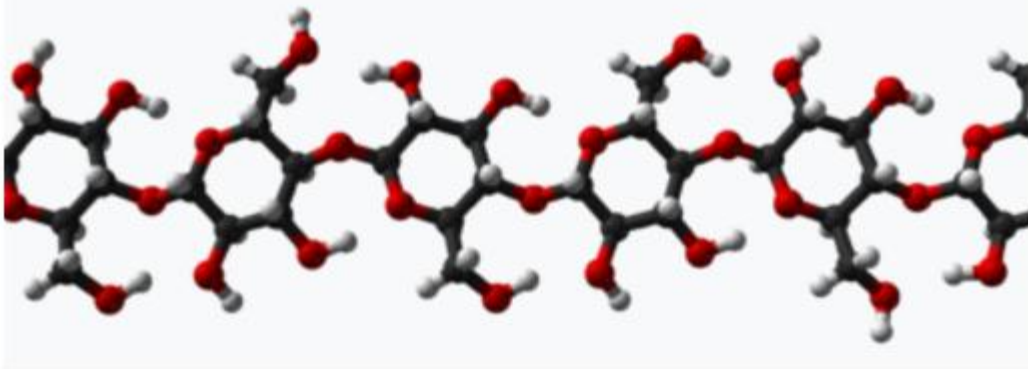
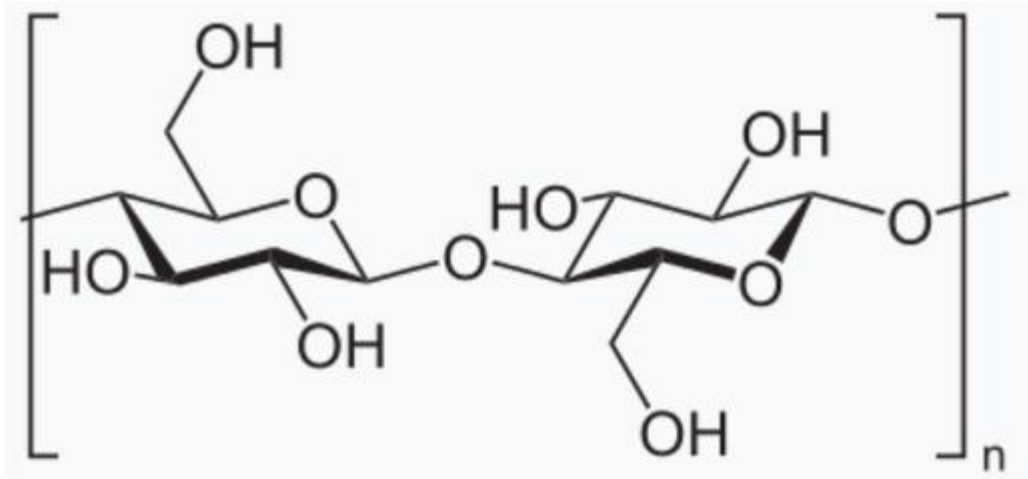
Structure of the amylopectin molecule






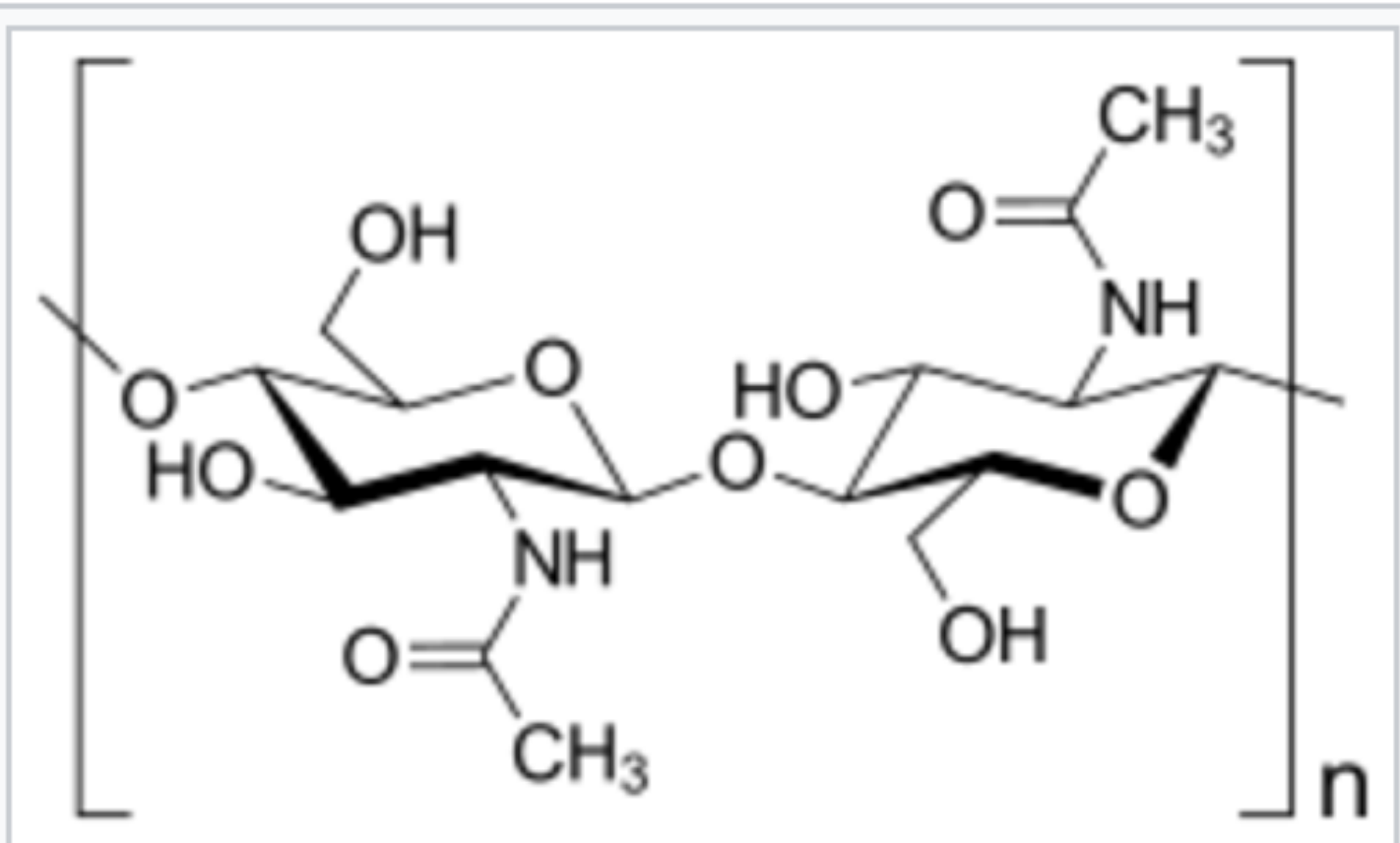
A strand of cellulose (conformation I_{α}), showing the **hydrogen bonds** (dashed) within and between cellulose molecules. 

Cellulose

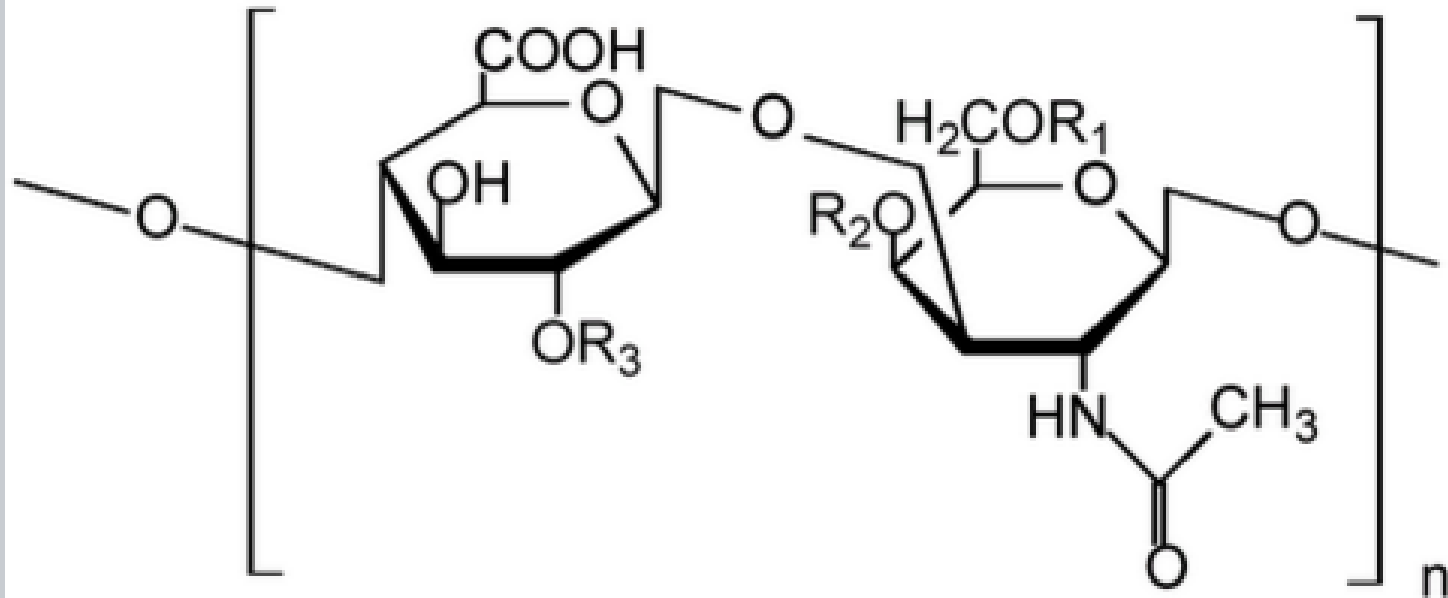




Cotton fibres represent the purest natural form of cellulose, containing more than 90% of this polysaccharide. 



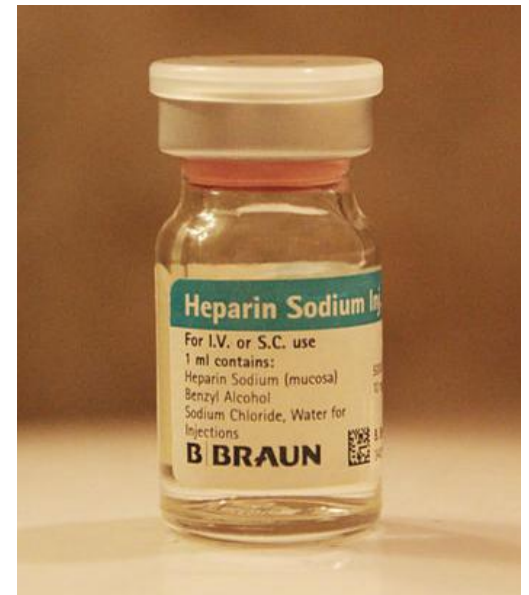
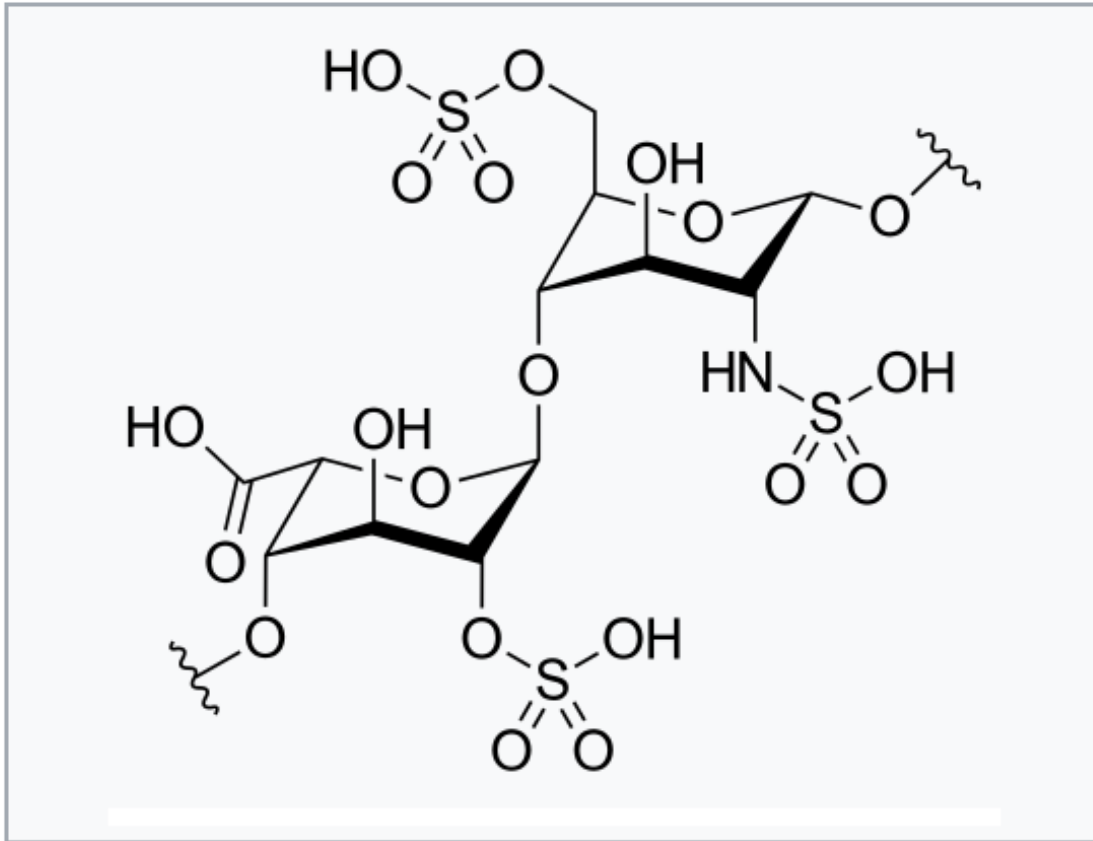
Structure of the chitin molecule, showing two of the *N*-acetylglucosamine units that repeat to form long chains in β -(1 \rightarrow 4)-linkage.



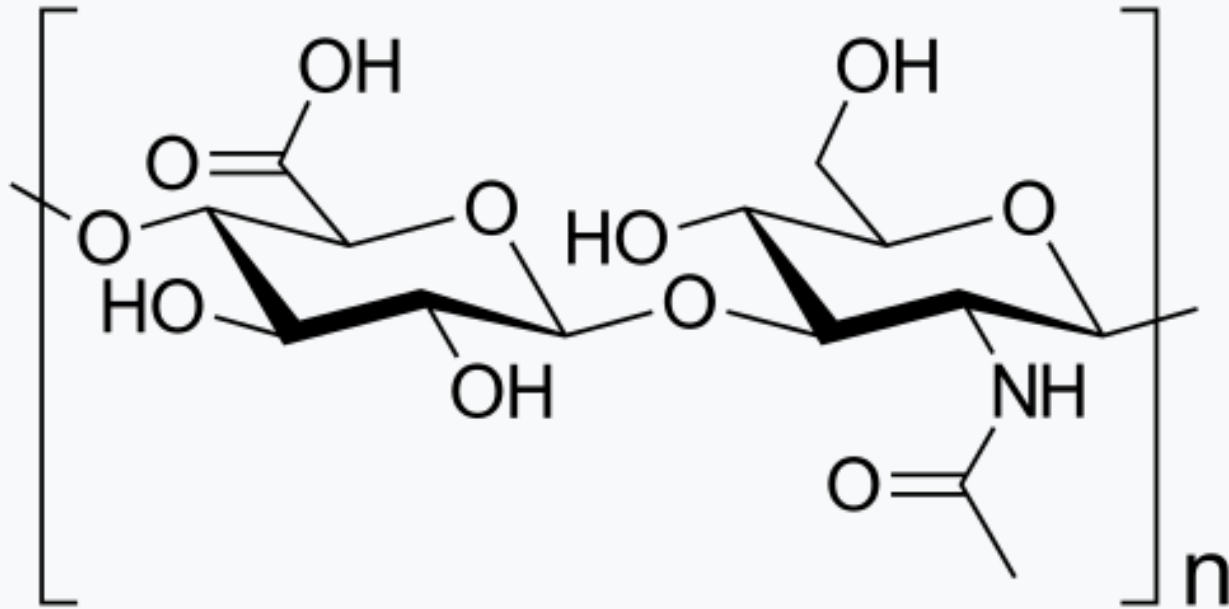
Chemical structure of one unit in a chondroitin sulfate chain. Chondroitin-4-sulfate: $R_1 = \text{H}$; $R_2 = \text{SO}_3\text{H}$; $R_3 = \text{H}$.

Chondroitin-6-sulfate: $R_1 = \text{SO}_3\text{H}$; $R_2, R_3 = \text{H}$.

Heparin



Hyaluronic acid





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