D-glyceraldehyde

The relative configuration of sugars and derivatives (D or L) is determined by the stereocenter further from the anomeric carbon (the carbonyl carbon).

D-glucose  L-glucose

enantiomers—non-identical mirror-image stereoisomers — all stereocenters are inverted
diastereomers—non-identical non-mirror-image stereoisomers — some, not all, stereocenters are inverted

epimer—type of diastereomer in which only one stereocenter (out of two or more) is different

D-allose  D-altrose  D-glucose  D-mannose  D-galactose  D-idose  D-talose
When a sugar cyclizes, a new stereocenter is formed at the carbon that was part of the carbonyl. This cyclization produces two epimers.

\[ \text{trans} \rightarrow \text{cis} \quad \beta \quad \text{Haworth Projection} \quad \text{anomers} \quad \text{side} \]