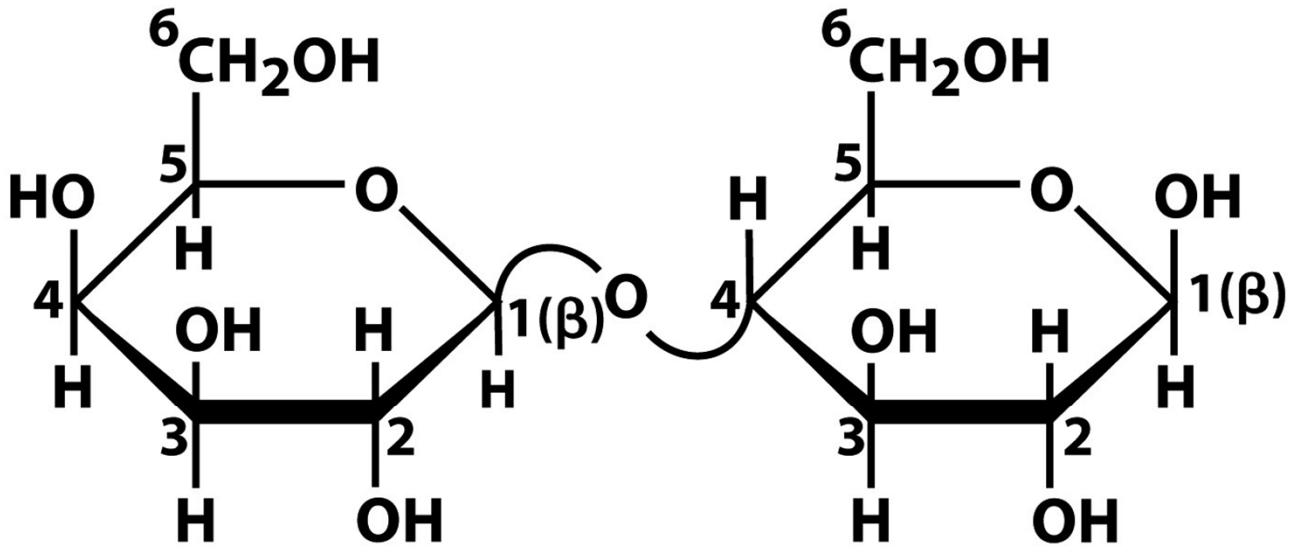
Glycosidic bonds link monosaccharides into disaccharides (and polysaccharides)

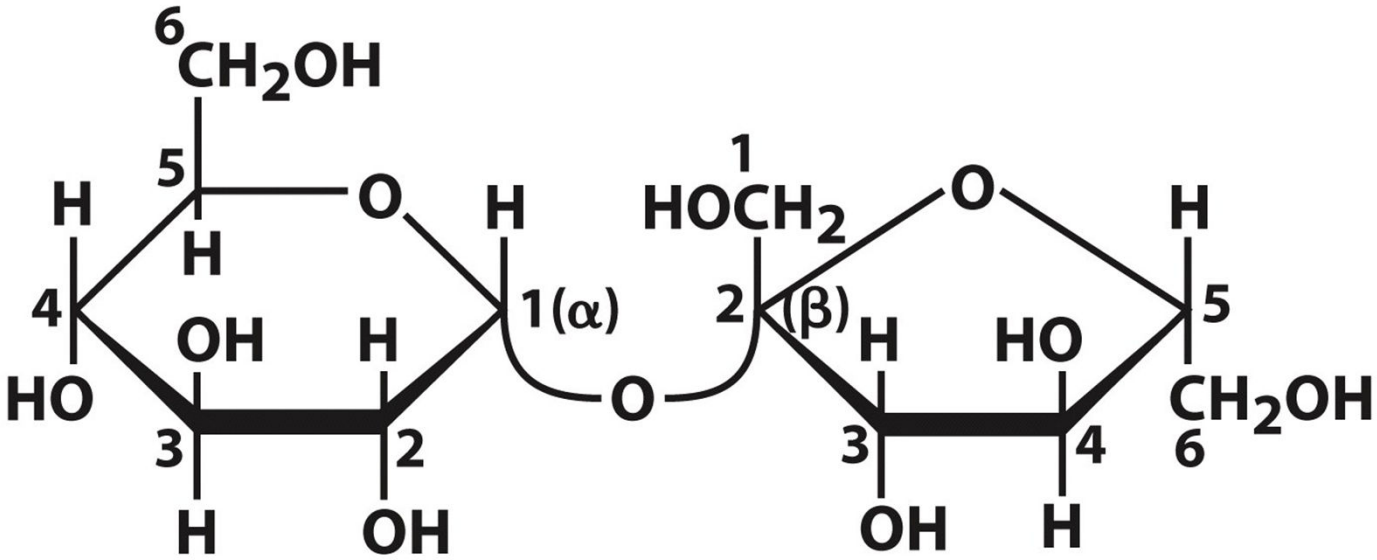


Galactose **Glucose**

Lactose

β-D-galactopyranosyl-(1→4)-β-D-glucopyranose

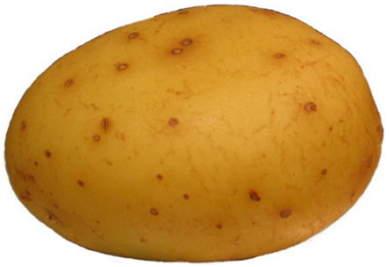
(non-reducing end) *(reducing end)*



Sucrose

α-D-glucopyranosyl β-D-fructofuranoside
(α-D-glucopyranosyl-(1→2)-β-D-fructofuranoside)
(non-reducing end) *(non-reducing end)*
β-D-fructofuranosyl α-D-glucopyranoside
(β-D-fructofuranosyl-(2→1)-α-D-glucopyranoside)

Carbohydrates serve a variety of functions

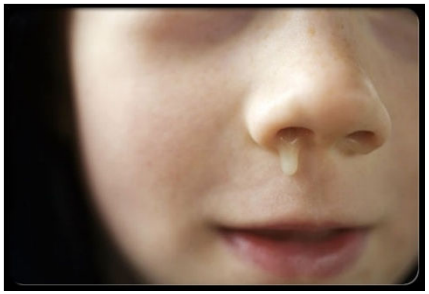


starch

Energy storage and food

Structure and support

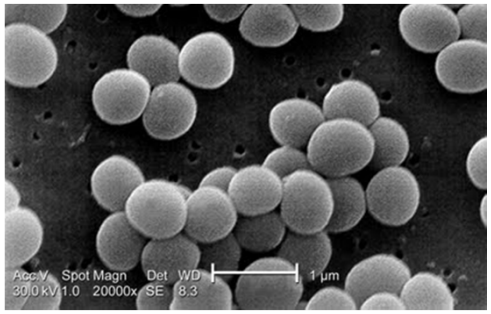
chitin and cellulose



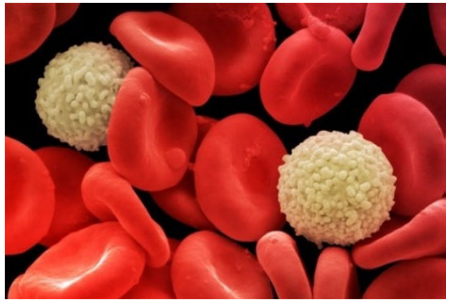
mucin (glycoprotein)

Lubrication

Protection



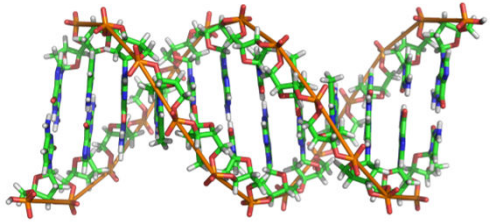
cell wall peptidoglycan



surface glycoproteins

Recognition and signaling

Component of nucleotides



2-deoxyribose

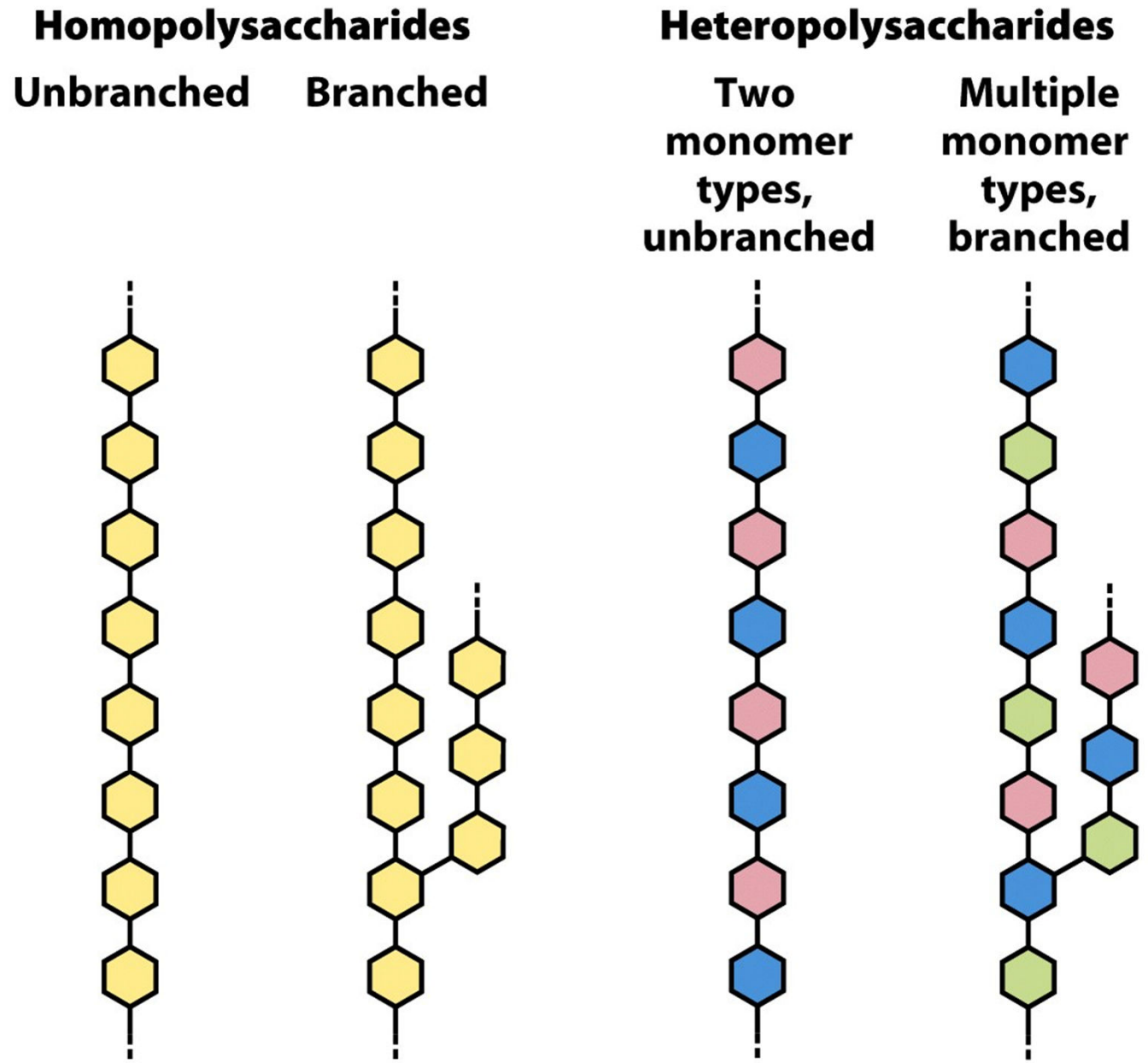


Figure 7-13
Lehninger Principles of Biochemistry, Fifth Edition

As for polypeptides, torsion angles describe the conformations of polysaccharides

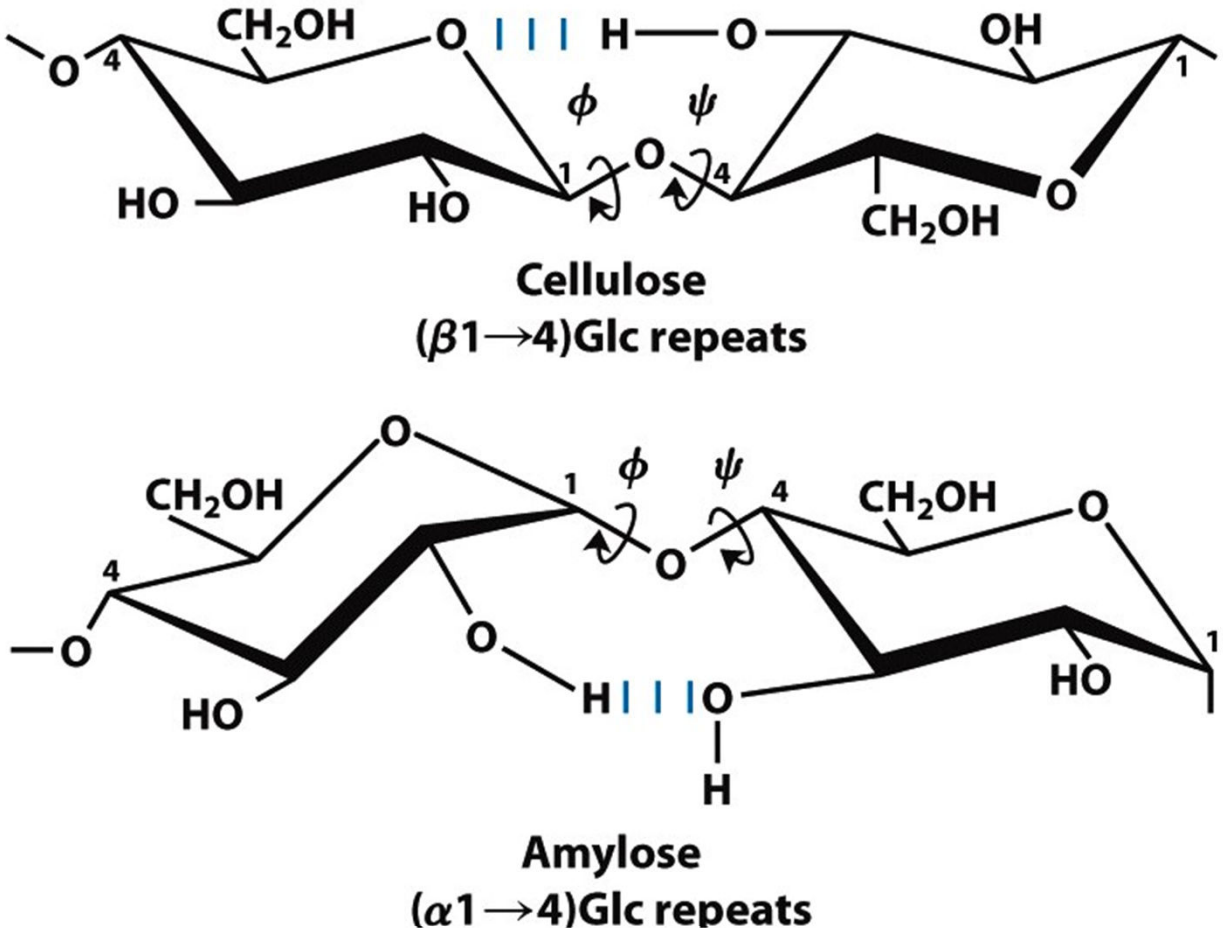
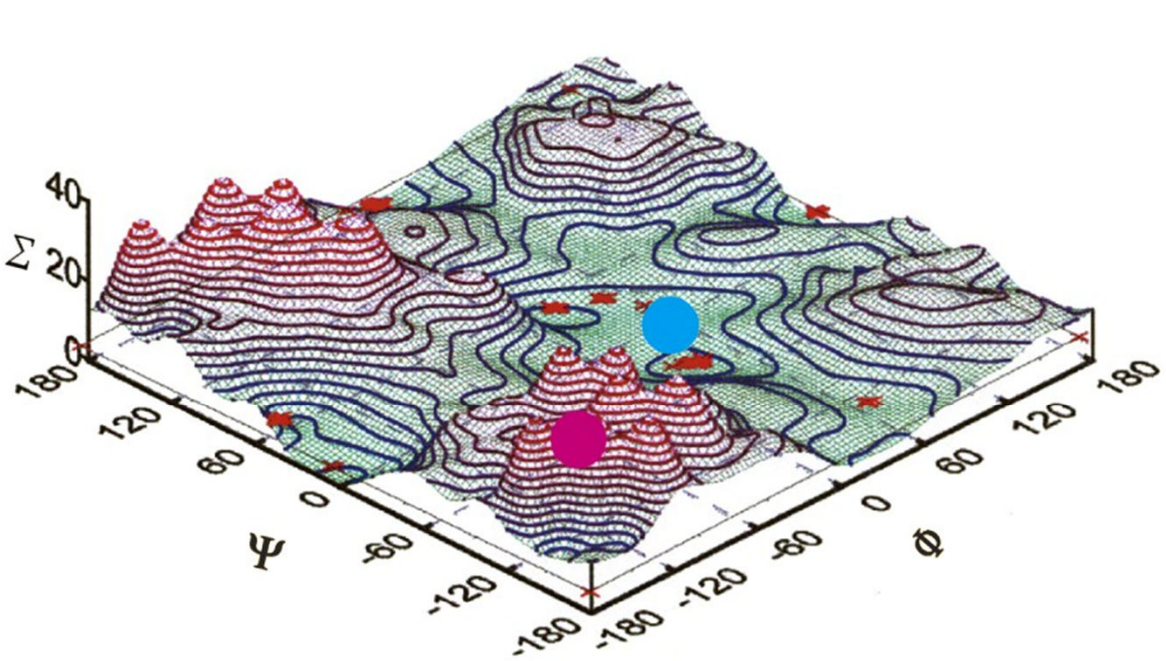
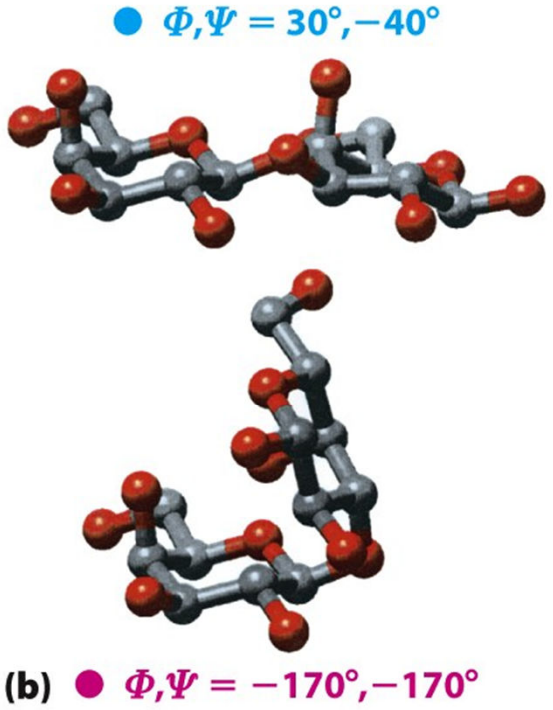


Figure 7-18
Lehninger Principles of Biochemistry, Fifth Edition

Certain conformations (values of ϕ and ψ) are more energetically favored than others



(a)



(b)

Figure 7-19
Lehninger Principles of Biochemistry, Fifth Edition

Both the identity of the monosaccharide units and how (where) they are linked will determine which conformations are preferred