

BONDS

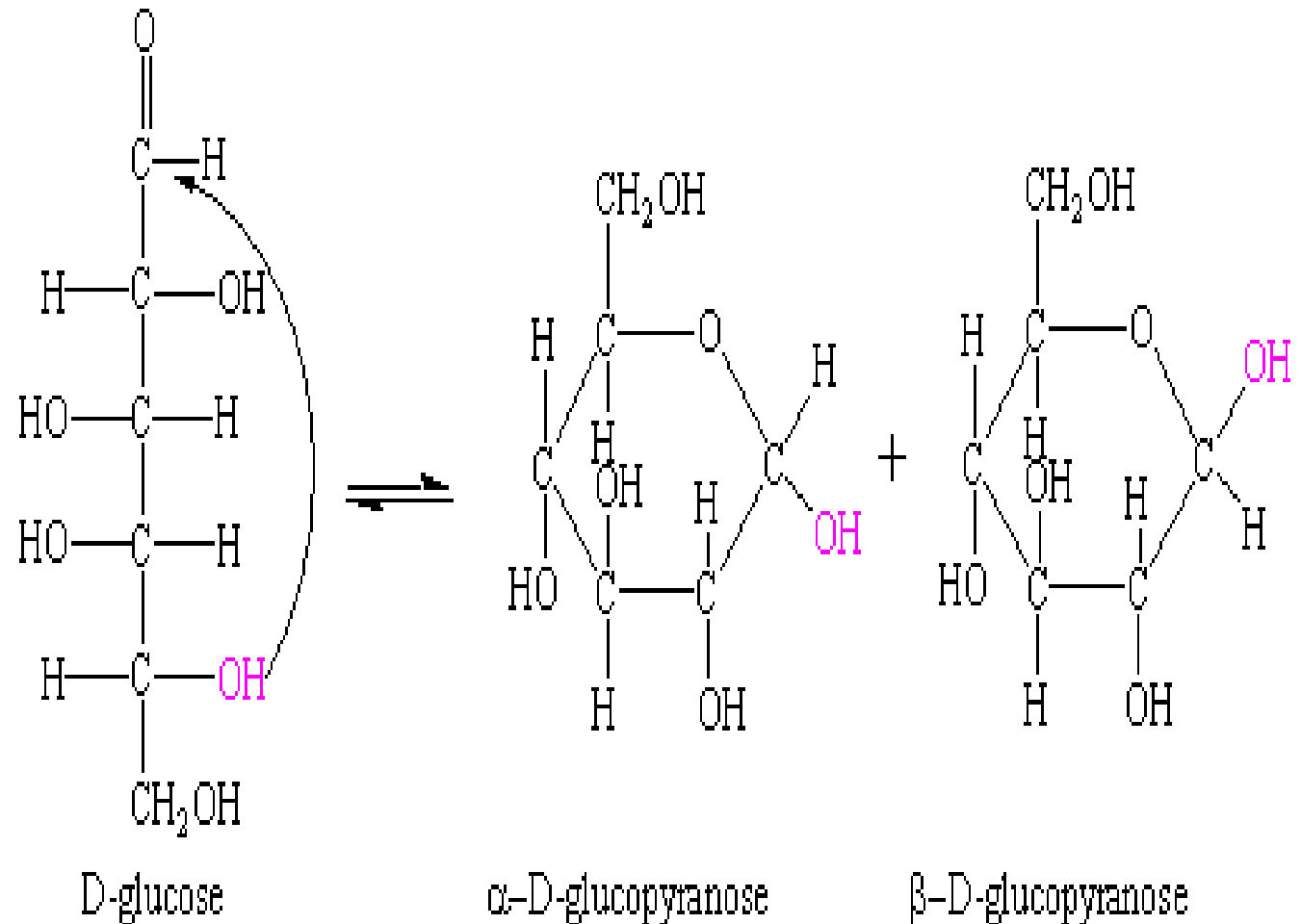
- Peptide bond
- Phosphodiester bond
- Glycosidic bond

Monosaccharides

- Triose
- Tetrose
- Pentose
- Hexose
- Heptose

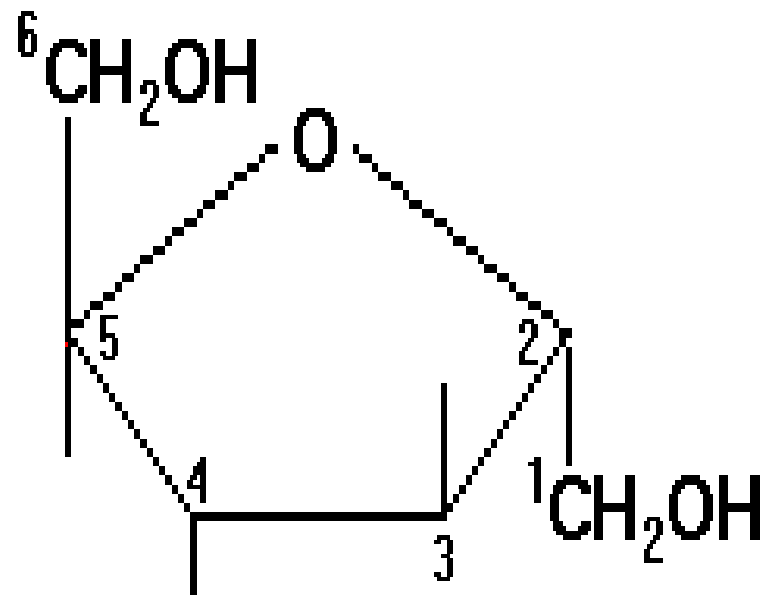
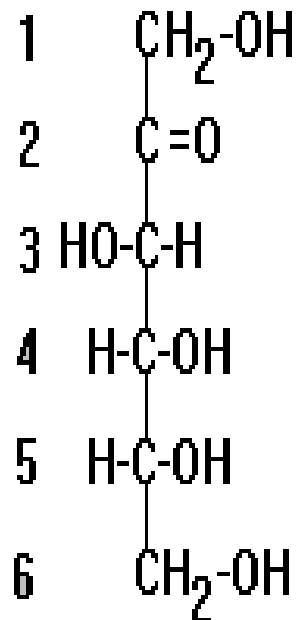
Ring forms of glucose

- Pyranose
- Furanose



Fructose

- Sweetest
- Fruit sugar
- Laevulose



Fructose

Glucose

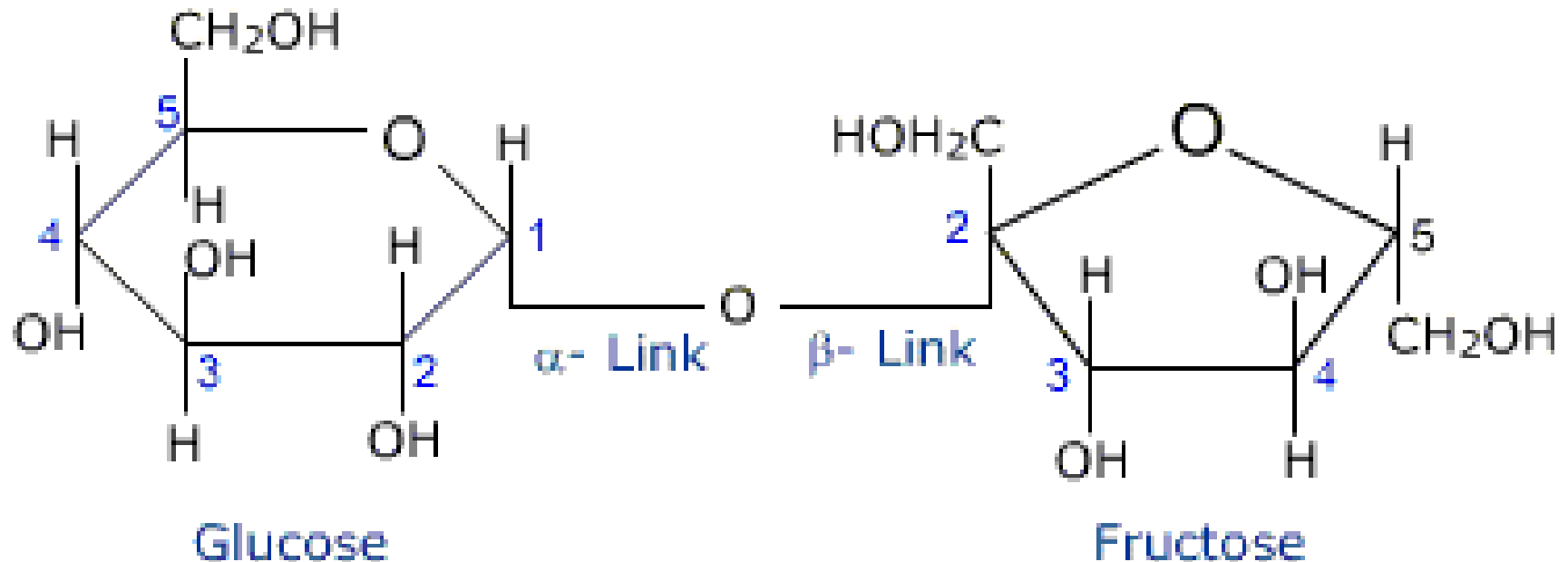
- Blood sugar
- Respiratory substrate
- Also called grape sugar or corn sugar
- Dextrose

Derived monosaccharides

- Deoxy sugar
- Amino sugar
- Sugar acid
- Sugar alcohol

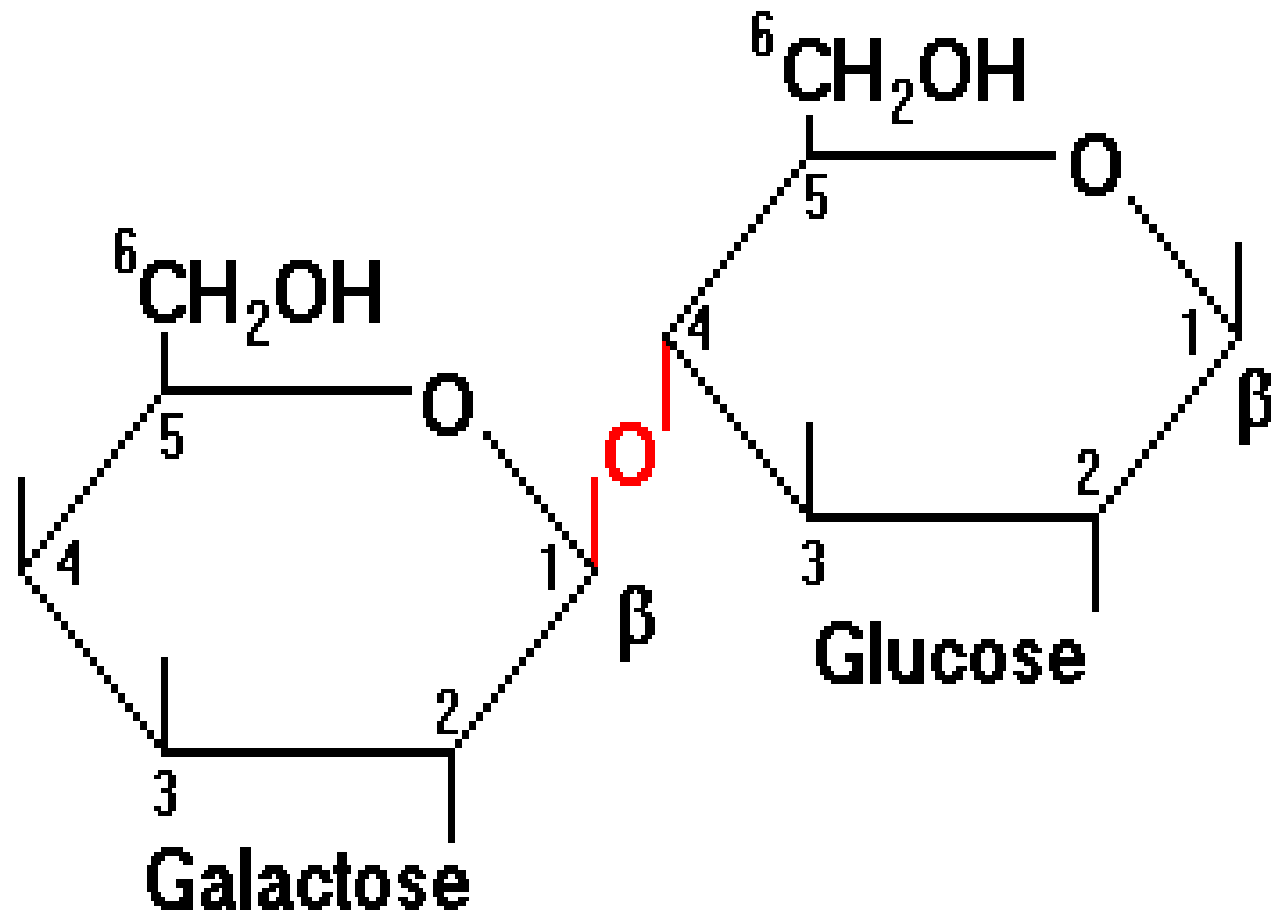
Sucrose

- Obtained from *Saccharum officinarum* and *Beta vulgaris*
- Non reducing

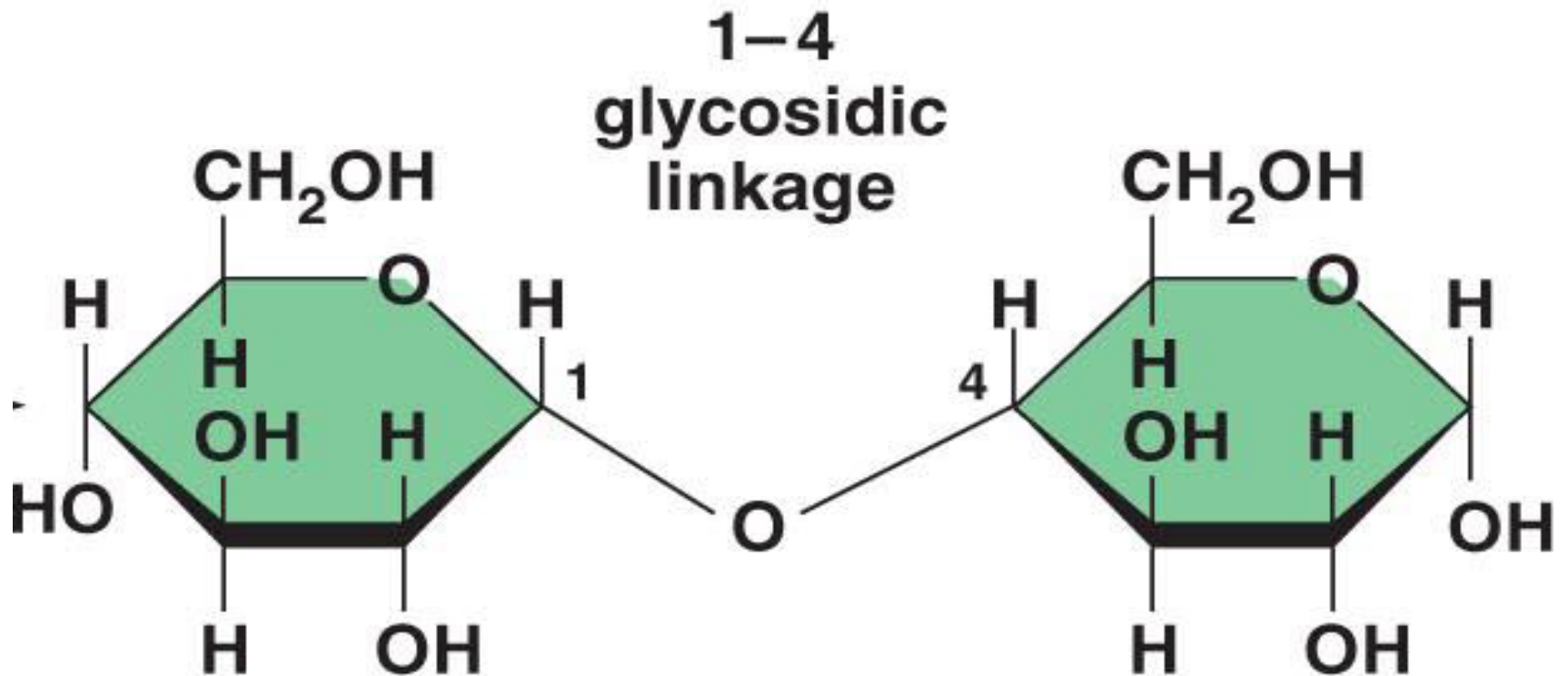


Lactose

- Reducing



Maltose



Maltose

Polysaccharides / glycans

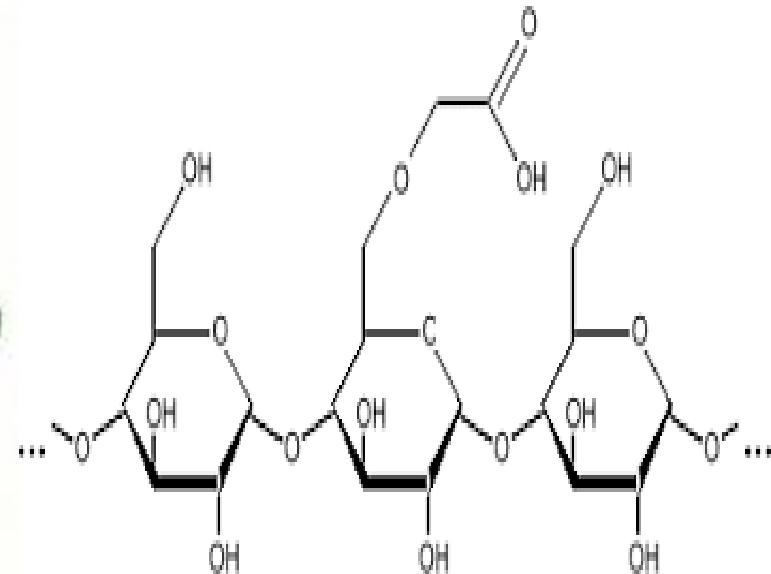
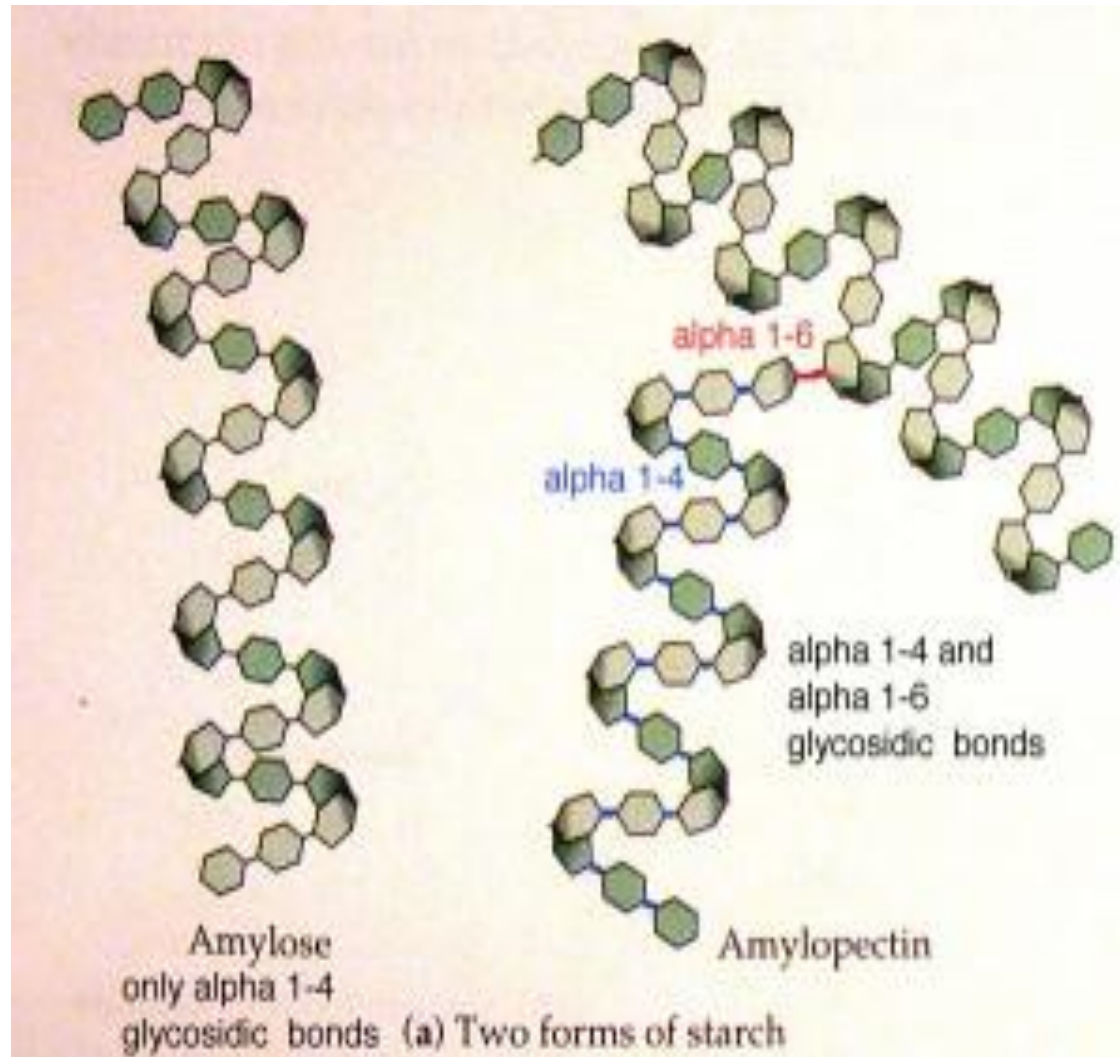
Homopolysaccharides

- Glucan
- Fructan
- Xylan – made of xylose or wood sugar (aldopentose)
- Arabin – made of arabinose (aldopentose)
- Galactan
- Chitin

Heteropolysaccharides

- Agar
- Peptidoglycan
- Arabinogalactans
- Arabinoxylan
- Pectin
- Hemicellulose

Starch



Glycogen Structure

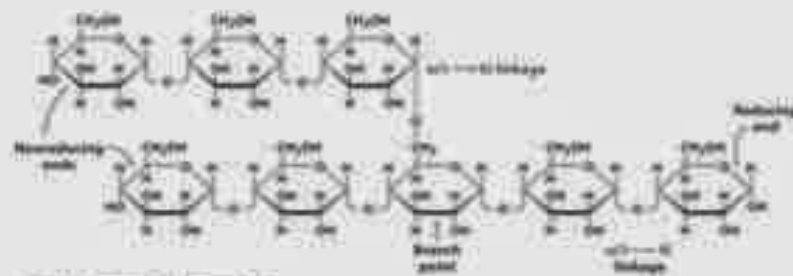


Figure 15-26: Fundamentals of Biochemistry, 6/e
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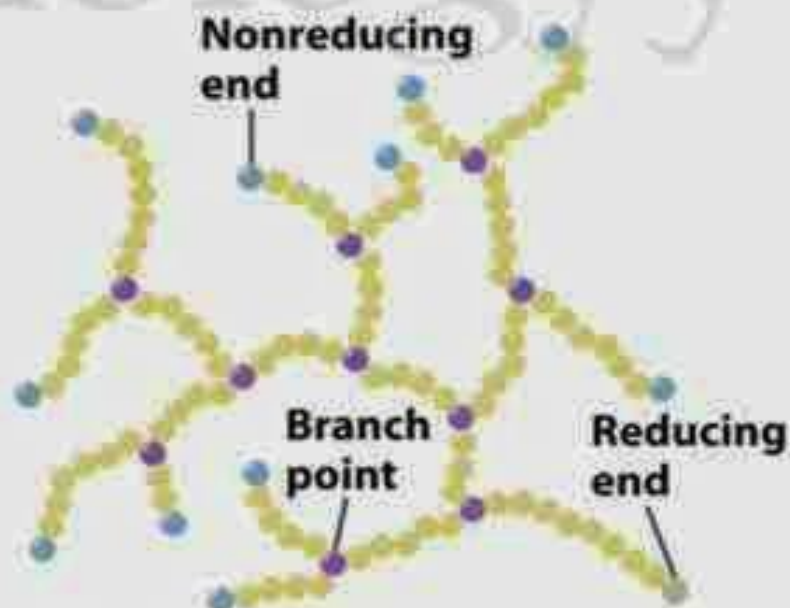
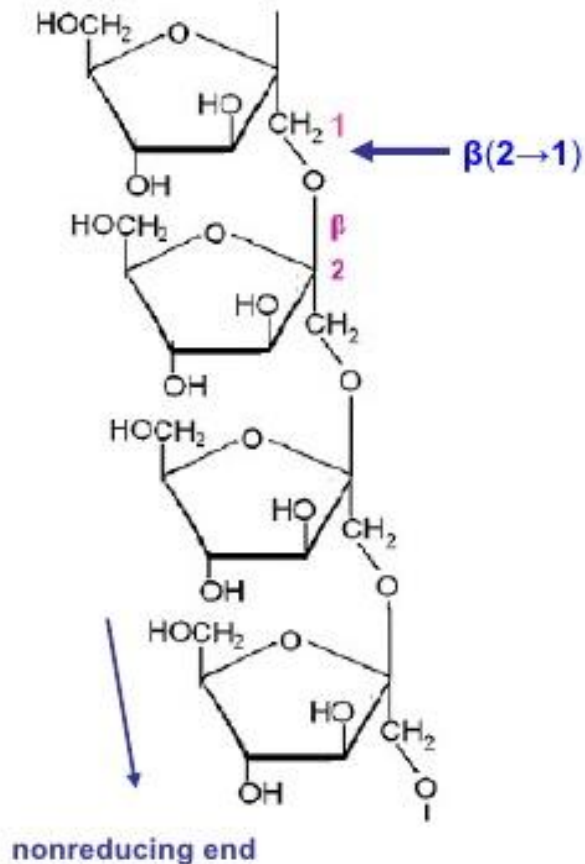


Figure 15-26: Fundamentals of Biochemistry, 6/e
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Inulin

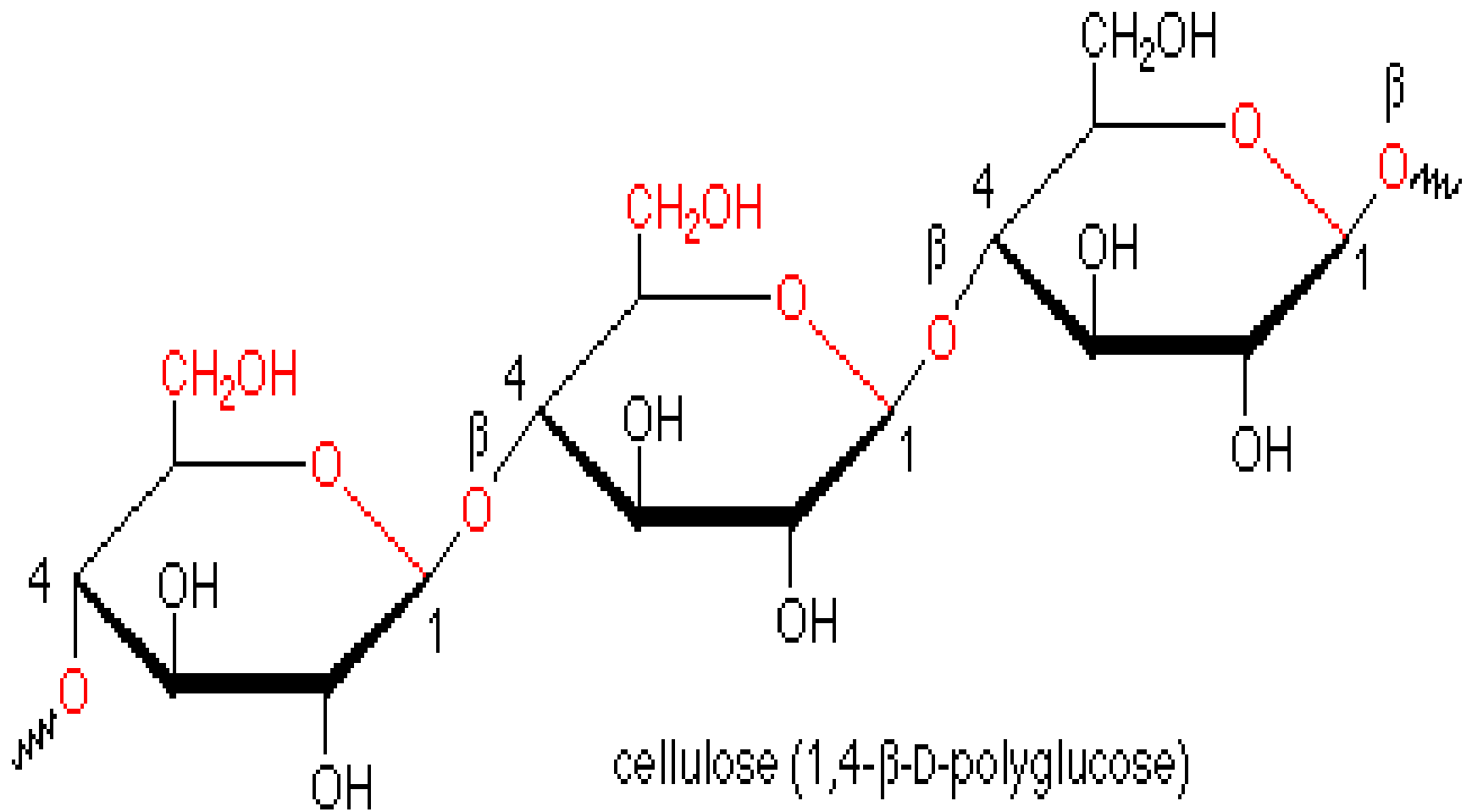
(2→1)- β -D-fructan (fructofuranan)



Inulin is the energy-storing unbranched polysaccharide (up to 100 D-fructose units), which occurs in tubers of some plants (topinambour, sunflower, chicory) and also in small amounts in fruit and vegetables.

It is one of the components of dietary fibre.

Cellulose



Mucopolysaccharides

- Keratan sulfate
- Chondritin sulfate
- Hyaluronic acid
- Heparin
- Agar

Lipids

- Essential fatty acids – linoleic acid, linolenic acid and arachidonic acid
- Phrenoderma or follicular hyperkeratosis
- Saturated fatty acids – palmitic and stearic acid
- Unsaturated fatty acids – oleic acid, linoleic acid, linolenic acid
- Hydrophobic and hydrophilic ends

Lipids

Simple

- Fats, suberin, cutin, wax

Compound

- Phospholipids, glycolipids, lipoproteins

Fats

Pure fats

- Tripalmitin, tristearin

Mixed fats

- Dipalmitostearin, palmito-oleio - stearin

- Hard fats and oils
- Drying oils
- Hydrogenation
- Polyunsaturated fatty acids

Waxes

- Lanolin in animal fur
- Cerumen
- Beeswax
- Paraffin wax

Cutin and suberin

Phospholipids

Sphingolipids

- Sphingomyelins
- Cerebrosides
- Gangliosides

Prostaglandins

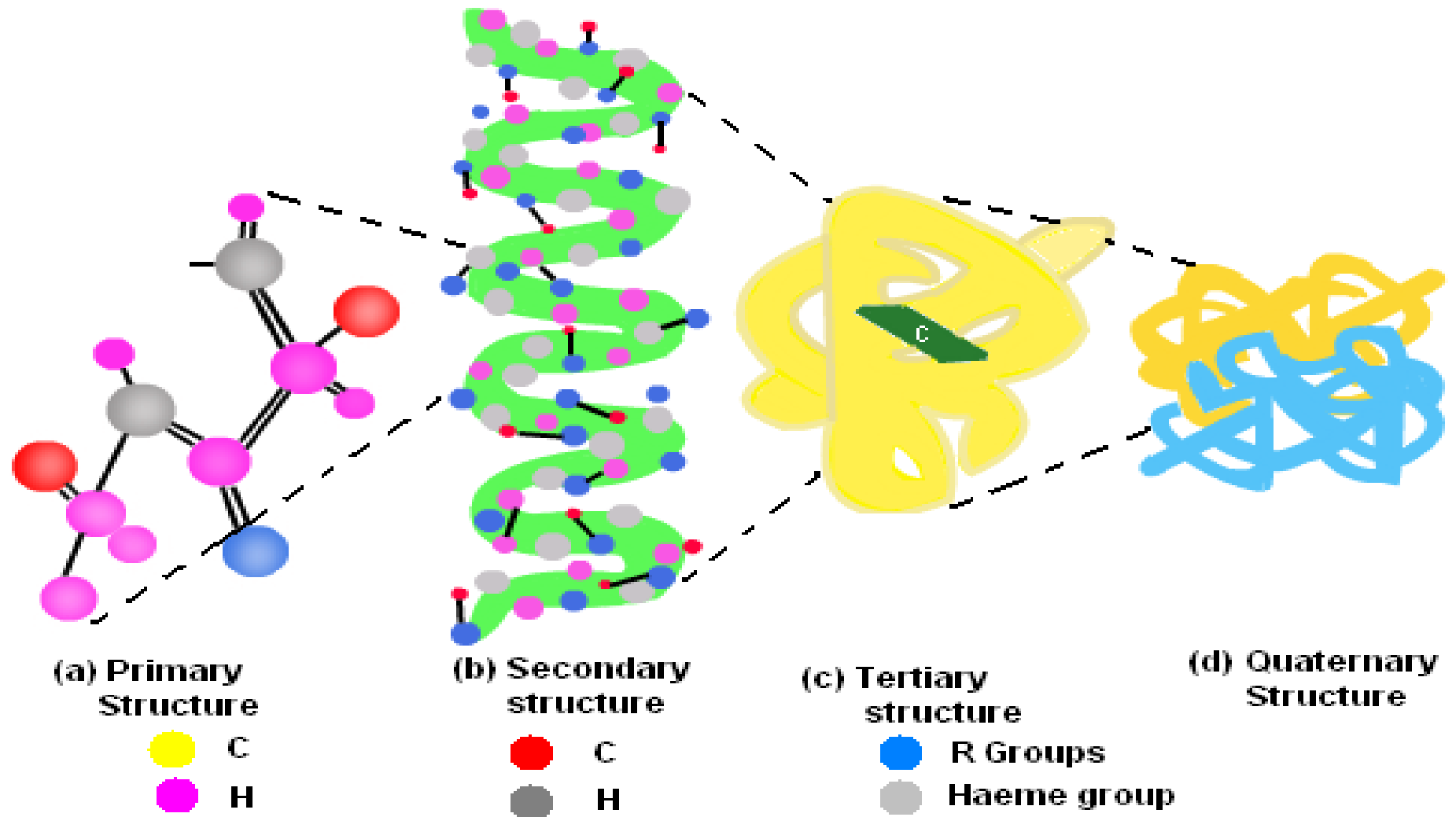
Steroids

- Cholesterol
- Bile acids
- Sex hormones
- Adrenocortical hormones
- Cardiac glycosides
- Saponins

Amino acids

- Glycine
- Proline and hydroxyproline
- Cysteine and methionine
- Protein and non protein amino acids
- Rare amino acids
- Monomeric and multimeric
- Collagen and RUBISCO

Three dimensional structure of proteins



Non covalent interactions

Isoelectric pH

DNA and RNA

Metabolic pathways

- Catabolism
- Anabolism

Feedback inhibition

Allosteric inhibition

Enzymes

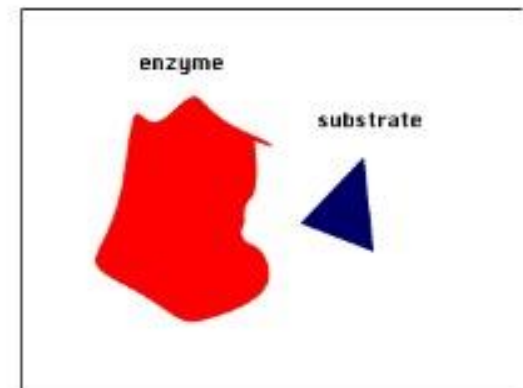
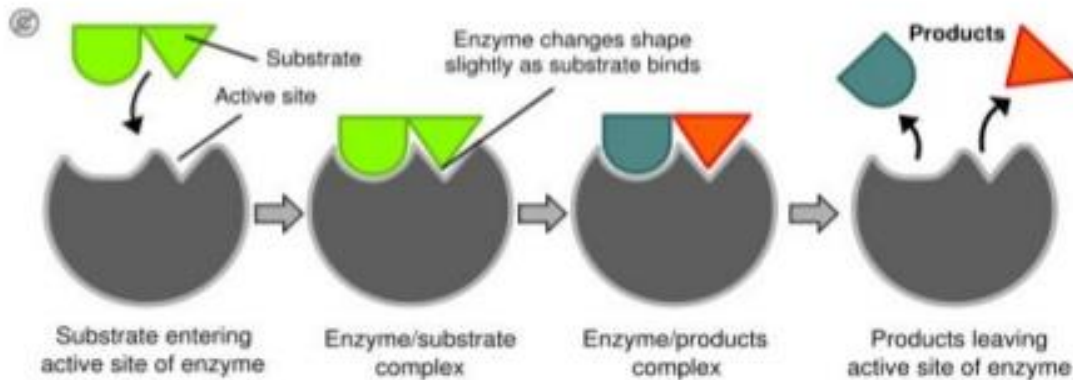
- Endo and exoenzymes
- Simple and conjugate enzymes
- Nomenclature
- Classification
- Properties
- Factors

Lock and key hypothesis

Induced fit hypothesis

What is induced fit hypothesis?

- shape of the active site adjusts to fit the substrate.



Allosteric enzymes

Isoenzymes

Reversible and irreversible inhibition

Feedback inhibition

Non competitive inhibition

- Cyanide
- Nerve gas

Competitive inhibition

- Succinate dehydrogenase