

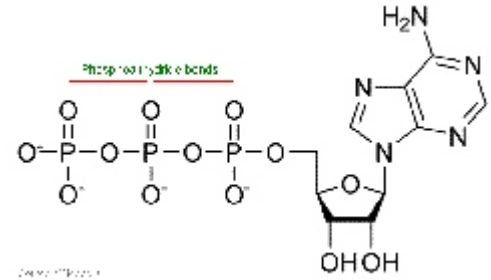
NUCLEIC ACIDS & POLYSACCHARIDES

rvdsd 27 Sept 95, 1 Oct 01, 7 Oct 02, 29 Sept 03, 1 Oct 03, 29Sept04, 30 Sept 05, 26 Sept 07, 30Oct08, 30Sept09, 29Sept10, 30Sept11
 BKH: 63-73, BKH 5th: 54-66, BKH: 6th: 53-70, 7th: 54-66

NUCLEIC ACIDS: (Most saved for genetics course)

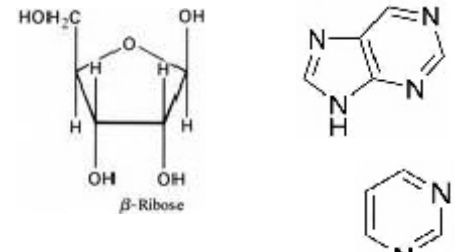
Monomers are nucleotides [-ide = chemical derivative]
 = (base plus sugar = nucleoside) nucleotide has PO₄
 PO₄ is added to 5' carbon of sugar

ATP rotatable: <http://www.biopics.co.uk/JmolApplet/atpdisplay.htm>



Play three major roles: genetic library (genes composed of DNA), Protein synthesis: (rRNA, mRNA, tRNA), energy carriers (ATP, GTP)

learn heterocyclic amines: purine structure (note location of R (p 56)), pyrimidines (note location R (P 57))



Draw ribose

DNA and RNA are unidirectional, written 5' to 3'

see p 58 for H bonding, antiparallel, complimentary distance between sugar-PO₄, just right for packing of bases

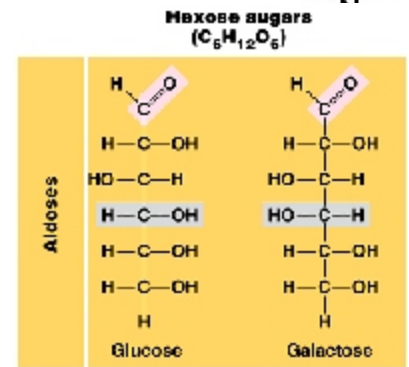
Illustrate ATP, learn structure, phosphoester, phosphoanhydride [without-water]

CARBOHYDRATES

Primarily functions CH₂O: 1. storage (plants & animals), 2. structure (plants, fungi)

Definition of sugar: polyhydroxy- aldehyde or ketone.

Contrast Fischer (vertical) vs Haworth (ring) projections of glucose (p 62), ring form can form either alpha or beta form (P 63)

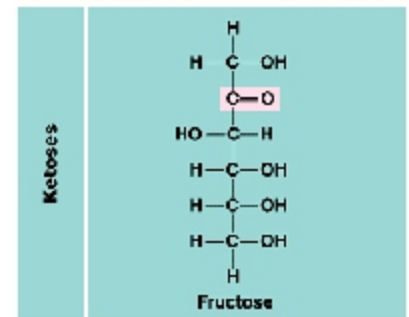


LEARN monosaccharides: glucose, fructose, galactose (p 63)

Disaccharides: maltose (α1,4), sucrose (α1,2) and lactose (β1,4) (p 63)

polysaccharides (glycans)

starch/glycogen: polysaccharide bonds = glycosidic bonds (P 64)
 main chain is α1,4, branching by α 1,6
 glycogen every 8-10,
 starch 12-25, side chains same length as interval
 amylose is straight chain
 amylopectin branched (**pecto-** means congealed, fixed)

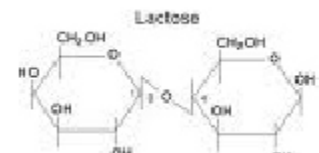
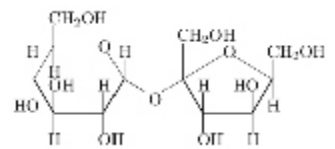


cellulose contains more than half of the carbon in plants (P 65)

Substituted polysaccharides:

chitin, show NAG, NAM [NAM = NAG + 2-propanylic acid at C-3]

polysaccharides structure: α 1,4 forms helices (P 66), β 1,4 forms stiff rods



Cell walls: microfibrils of cellulose embedded in matrix of hemicellulose, pectin, and lignin and protein extensin

