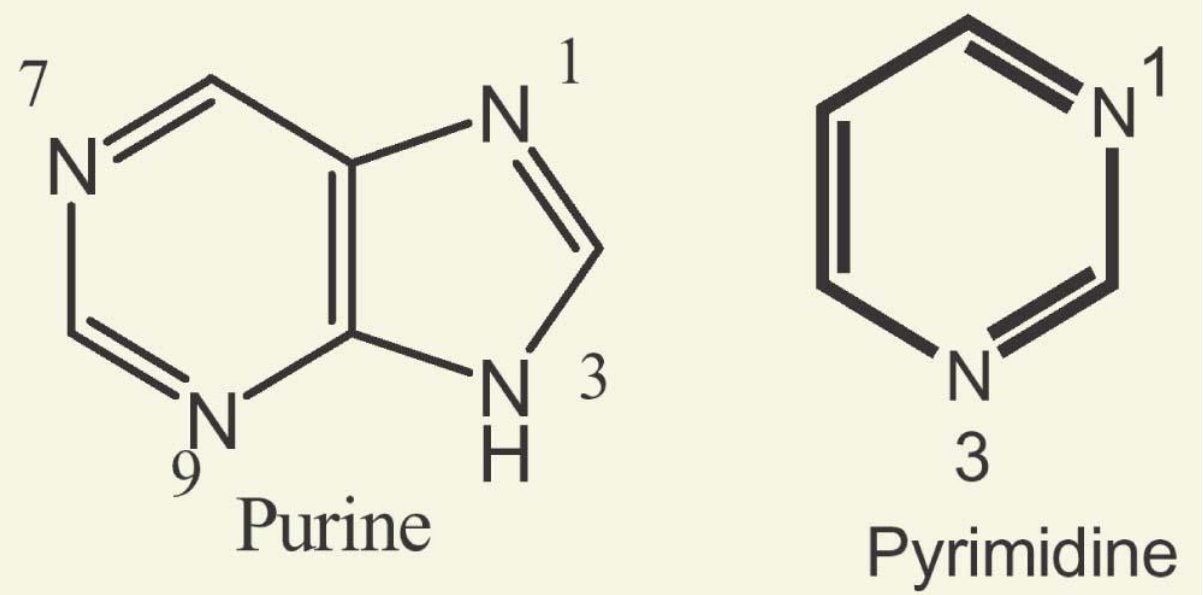
ACIDI NUCLEICI

Purine and Pyrimidine

Pyrimidine contains two pyridine-like nitrogens in a six-membered aromatic ring

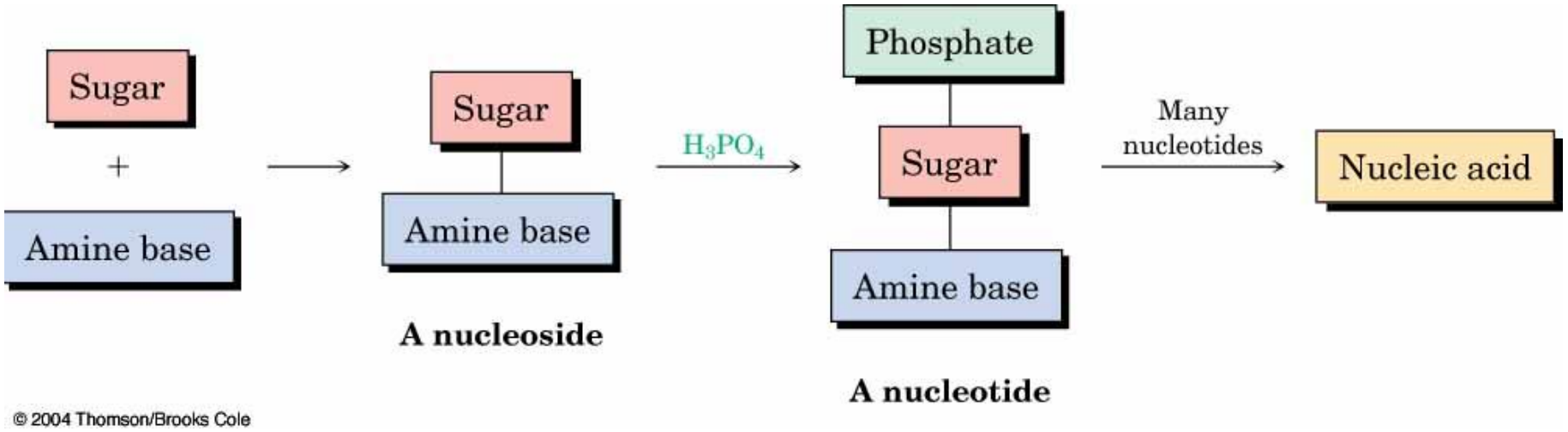
Purine has 4 N's in a fused-ring structure. Three are basic like pyridine-like and one is like that in pyrrole



Nucleic Acids and Nucleotides

Deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), are the chemical carriers of genetic information

Nucleic acids are biopolymers made of nucleotides, aldopentoses linked to a purine or pyrimidine and a phosphate

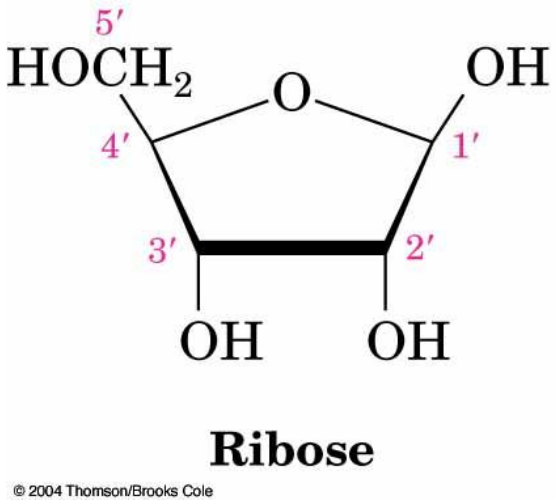


Sugars in DNA and RNA

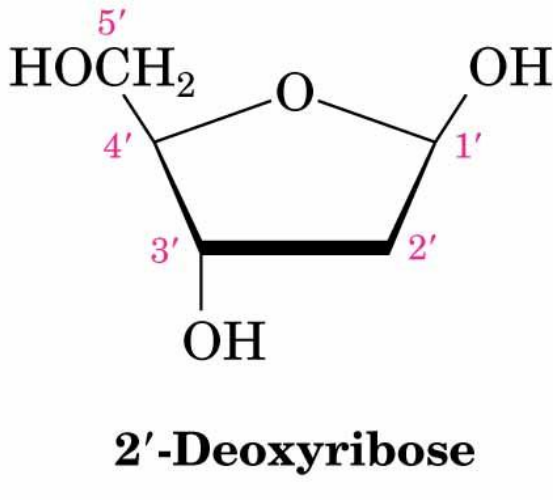
RNA is derived from ribose

DNA is from 2′-deoxyribose

- (the ' is used to refer to positions on the sugar portion of a nucleotide)



Ribose



2′-Deoxyribose

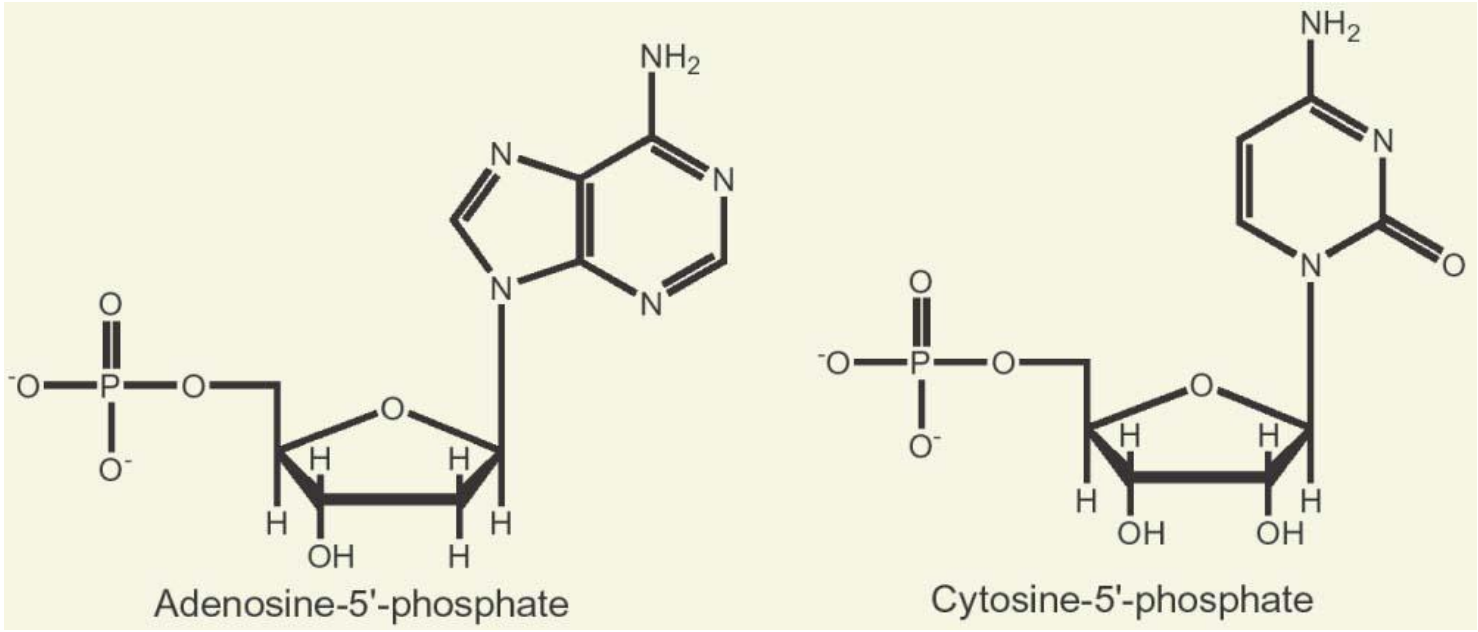
Heterocycles in DNA and RNA

Adenine, guanine, cytosine and thymine are in DNA

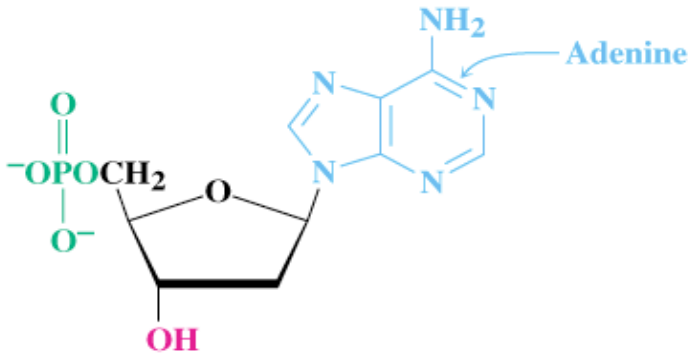
RNA contains uracil rather than thymine

Nucleotides

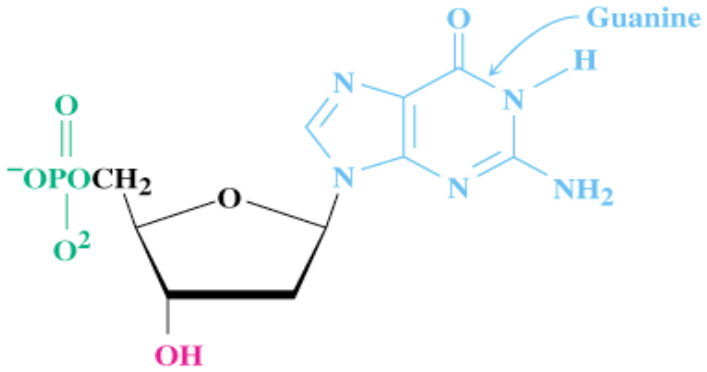
In DNA and RNA the heterocycle is bonded to C1′ of the sugar and the phosphate is bonded to C5′ (and connected to 3’ of the next unit)



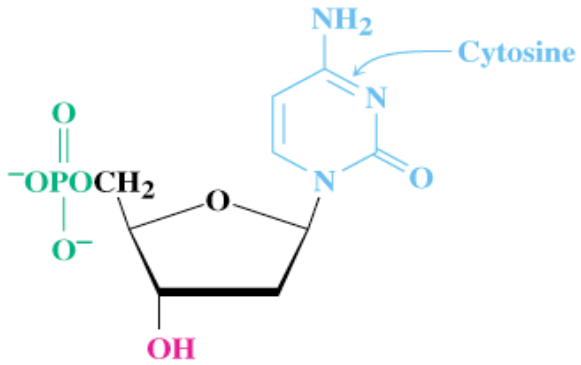
The Deoxyribonucleotides



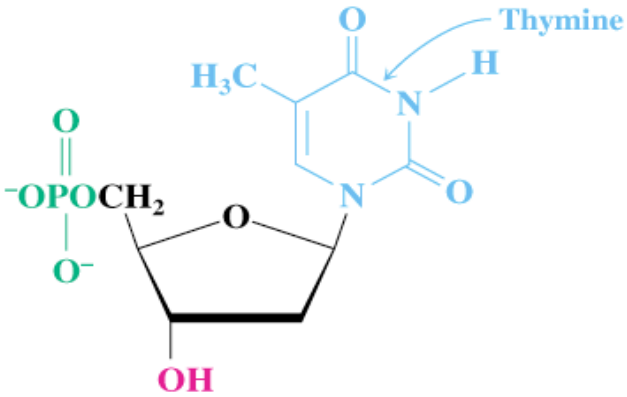
2′-Deoxyadenosine 5′-phosphate



2'-Deoxyguanosine 5'-phosphate

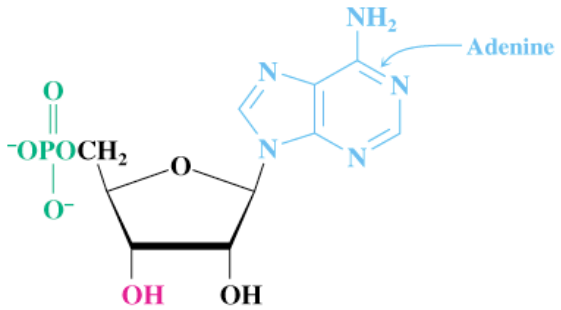


2'-Deoxycytidine 5'-phosphate

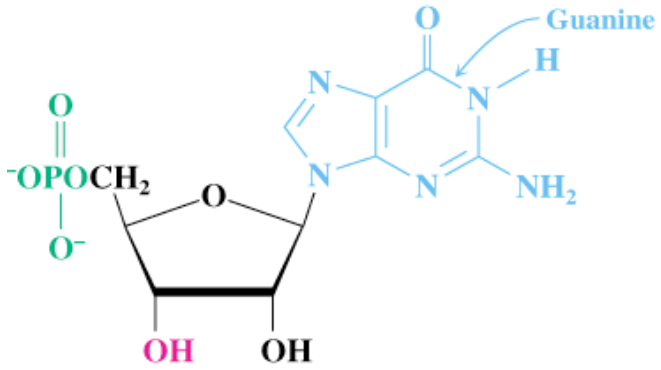


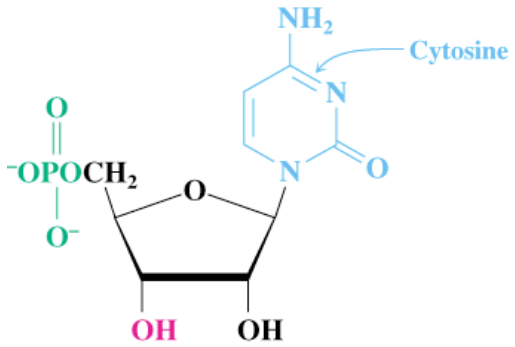
2'-Deoxythymidine 5'-phosphate

The Ribonucleotides

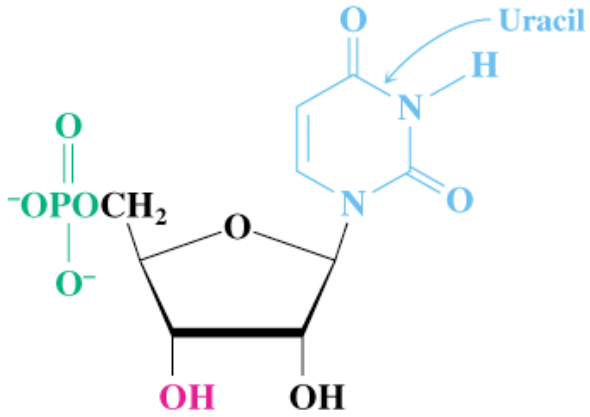


Adenosine 5'-phosphate

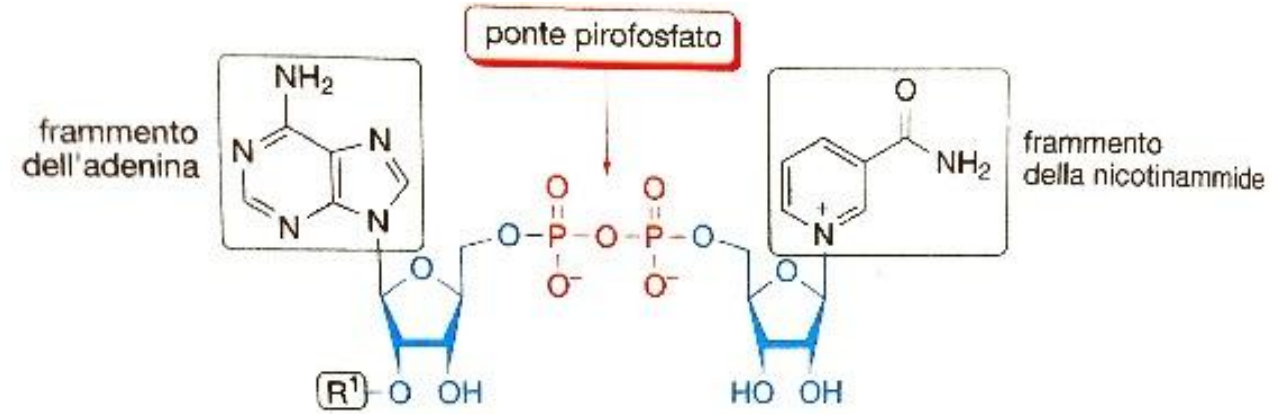




Cytidine 5'-phosphate



Uridine 5'-phosphate



cofattori NAD^+ e $NADP^+$

COFATTORI ENZIMATICI DI NATURA NUCLEOTIDICA