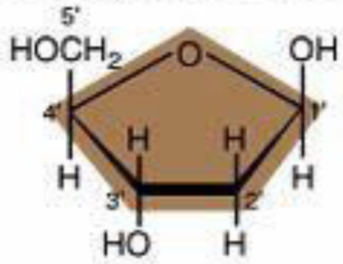
Molecular Biology and Genetics

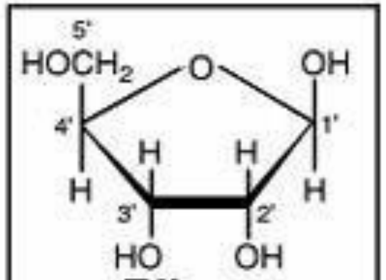
13-01-2024

DNA's chemical constituents, part 1

(a) The separate entities

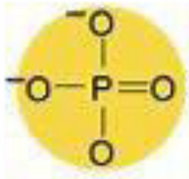
1. Deoxyribose sugar





Ribose

2. A phosphate group



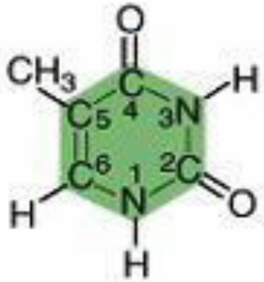
3. Four nitrogenous bases

Purines

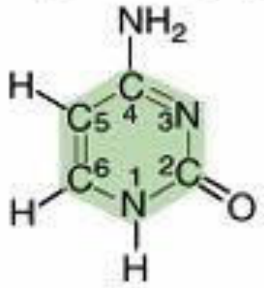
Adenine (A)

Guanine (G)

Pyrimidines



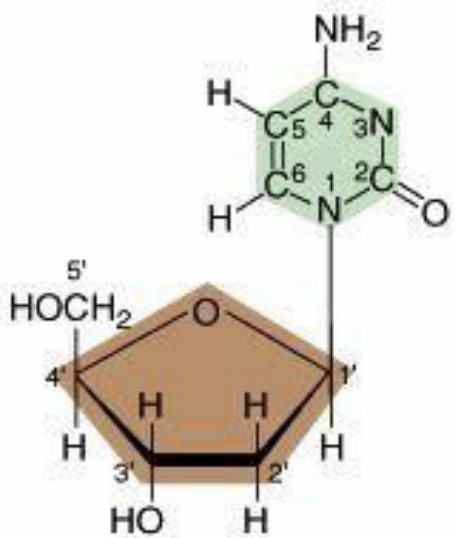
Thymine (T)



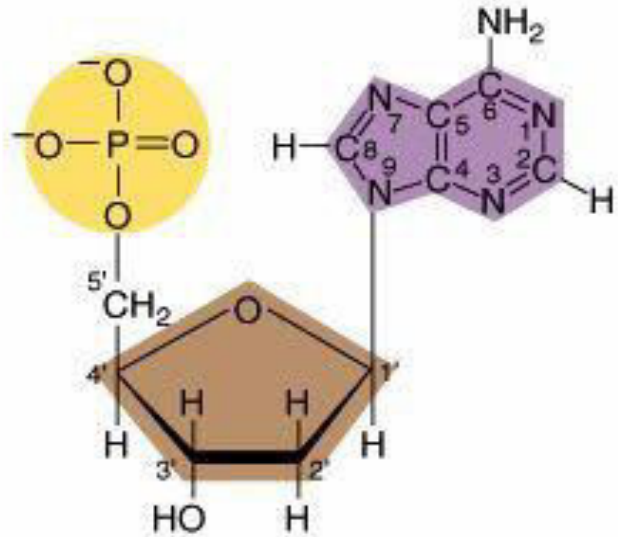
Cytosine (C)

DNA's chemical constituents, part 2

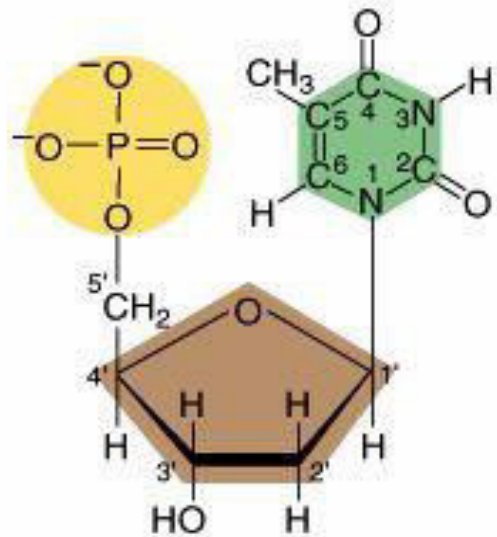
(b) Assembly into a nucleotide



Nucleoside



Purine nucleotide



Pyrimidine nucleotide

DNA's chemical constituents, part 2

(c) Nucleotides linked in a directional chain

DNA is polar: 5’ to 3’

Beta N-glycosidic bond connects the sugar to the nitrogen base.

A phosphodiester bond connects one nucleotide to the next.

The sugar phosphate backbone is identical in every DNA molecule.

In any DNA purine = pyrimidine