
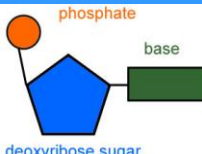


Thymine
Uracil

(Klug & Cummings 1997)



1.6- Nucleic Acids

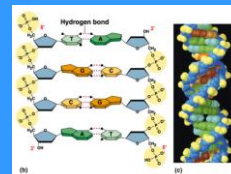


phosphate

base

deoxyribose sugar

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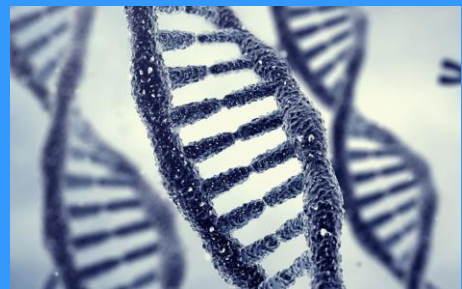


Hydrogen bond

(a) (b) (c)

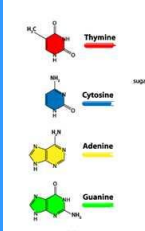
ENDURING UNDERSTANDING

IST-1 Heritable information provides for continuity of life.




IST-1.A Describe the structural similarities and differences between DNA and RNA.

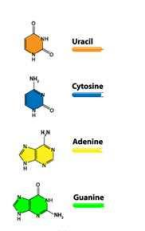
□ DNA and RNA molecules have structural similarities and differences related to their function



Nucleobases of DNA



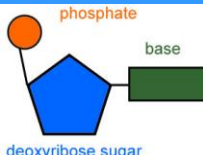
DNA
Deoxyribonucleic Acid



Nucleobases of RNA

Similarities

- Both DNA and RNA have three components (sugar, a phosphate group, and a nitrogenous base)
- Form nucleotide units that are connected by covalent bonds to form a linear molecule with 5' and 3' ends
- Nitrogenous bases perpendicular to the sugar-phosphate backbone

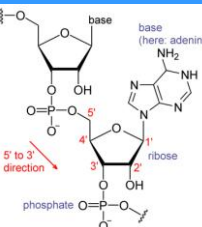


phosphate

base

deoxyribose sugar

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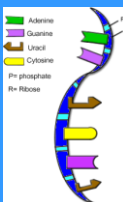


base (here: adenine)

ribose

5' to 3' direction

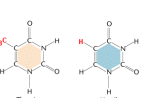
phosphate



Adenine
Guanine
Uracil
Cytosine
P= phosphate
R= Ribose

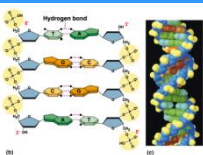
Differences

- DNA contains deoxyribose and RNA contains ribose.
- RNA contains uracil and DNA contains thymine.
- DNA is usually double stranded; RNA is usually single stranded.
- The two DNA strands in double-stranded DNA are antiparallel in directionality.



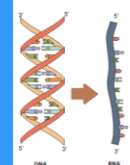
Thymine
Uracil

(Klug & Cummings 1997)



Hydrogen bond

(a) (b) (c)



DNA

RNA