ACIDI NUCLEICI

CUSTODIRE e TRASMETTERE INFORMAZIONE GENETICA (DNA)

DNA → 2 filamenti

RNA → 1 filamento

↳ mRNA : messaggero

t RNA : trasportare aa

r RNA : ribosomale

DNA e RNA : da ~~xx~~ catene di nucleotidi

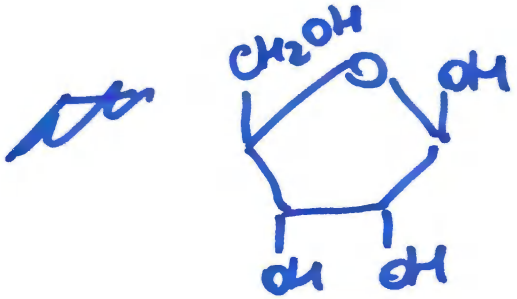
Nucleotidi : 4 nucleotidi per DNA

4 nucleotidi per RNA

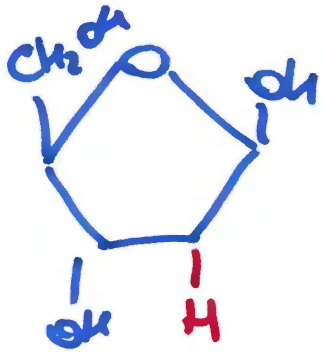
1 zucchero + 1 base azotata

+ 1 gruppo fosfato ($-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{P}}-O^-$)

ZUCCHERO

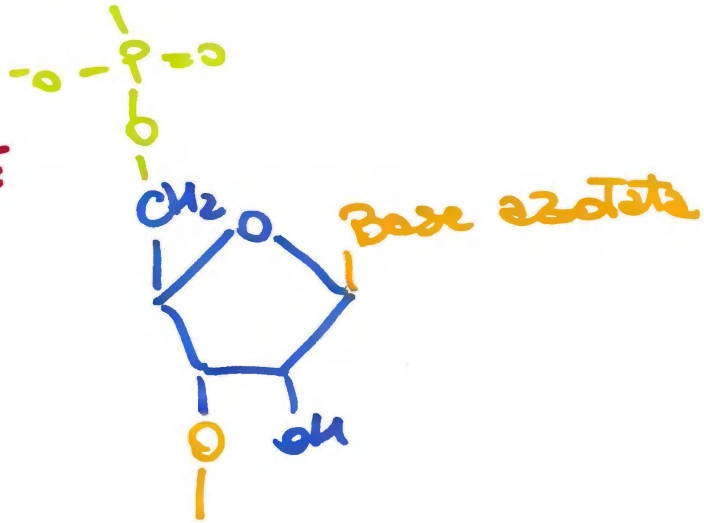


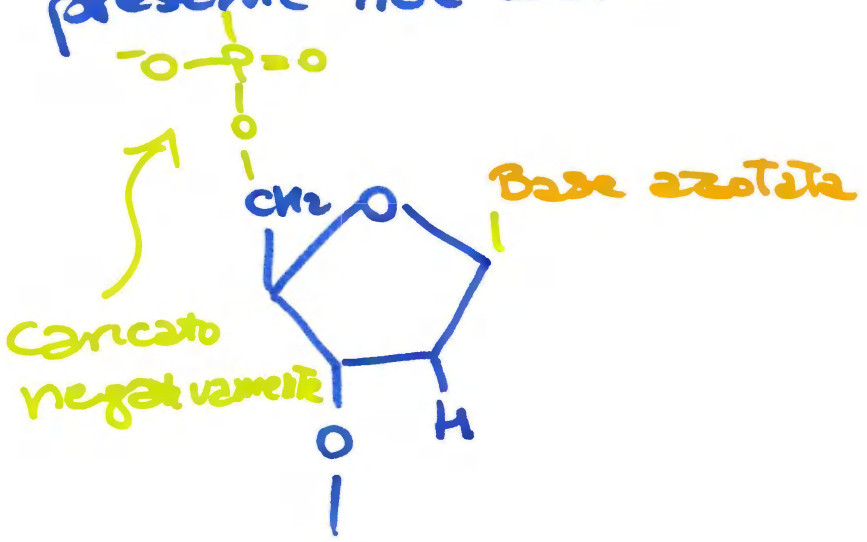
Ribosio
presente nel RNA



2-Deossiribosio
presente nel DNA

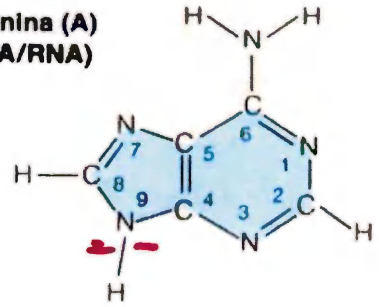
NUCLEOTIDE



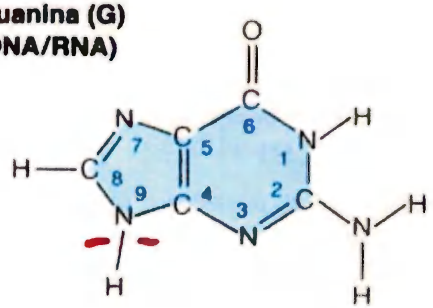


PURINE

Adenina (A)
(DNA/RNA)

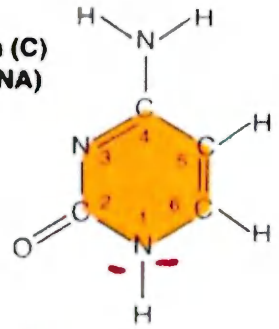


Guanina (G)
(DNA/RNA)

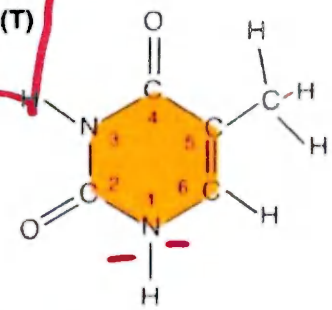


PIRIMIDINE

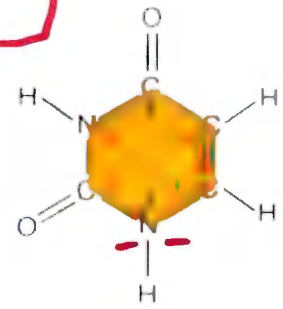
Citosina (C)
(DNA/RNA)



Timina (T)
(DNA)



Uracile (U)
(RNA)



BASI AZOTATE

PURINE

ADENINA (A)

GUANINA (G)

presenti sia nel DNA che nel RNA

si legano allo zucchero in posizione 1

PIRIMIDINE

CITOSINA (C)

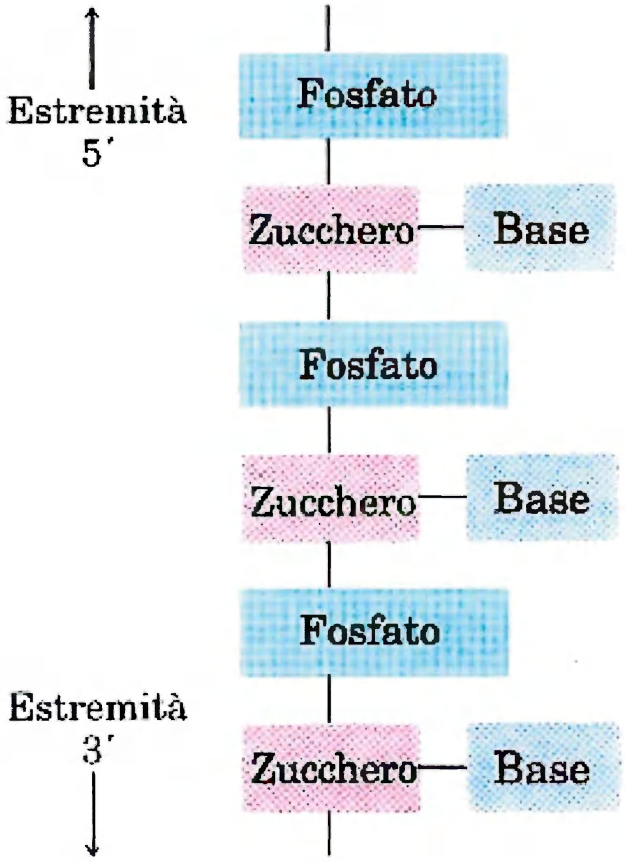
TIMINA (T)

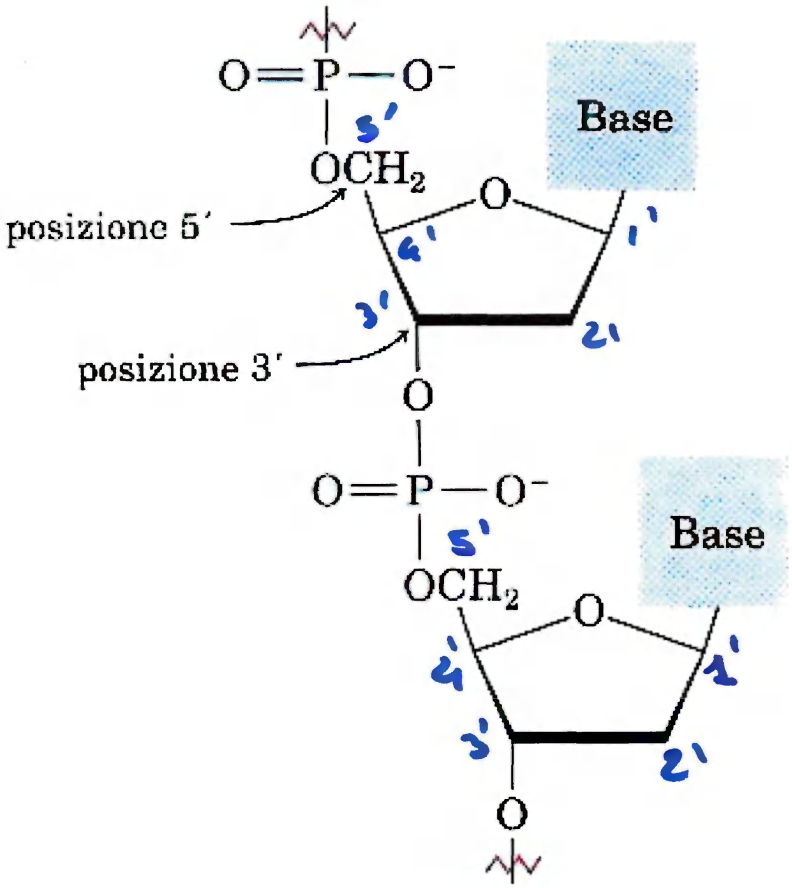
URACILE (U)

C, T nel DNA

C, U nel RNA

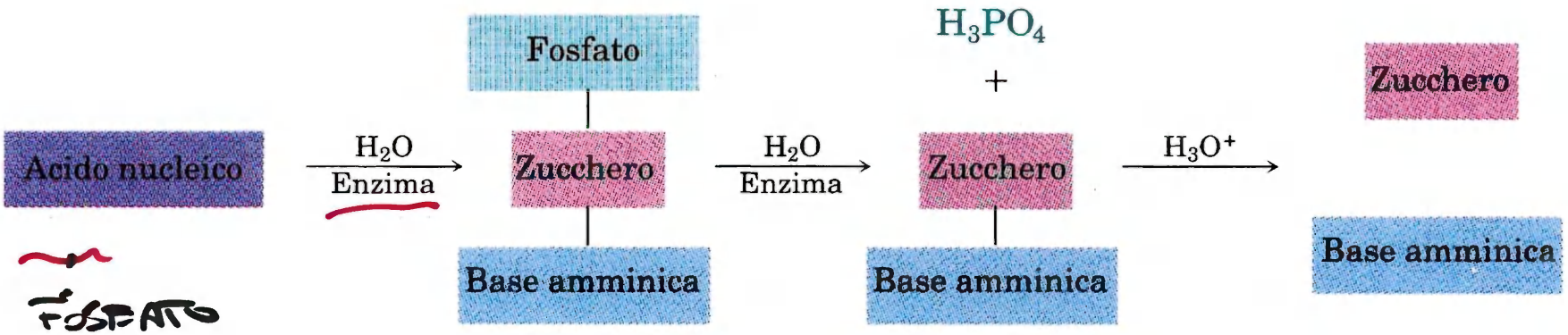
posizione 9

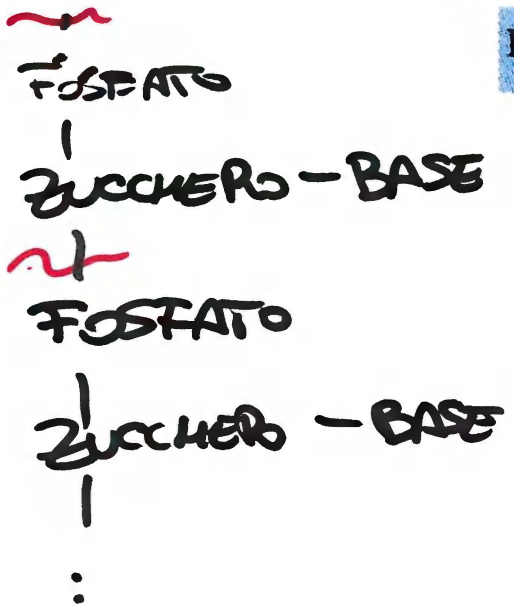




Struttura schematica del DNA.

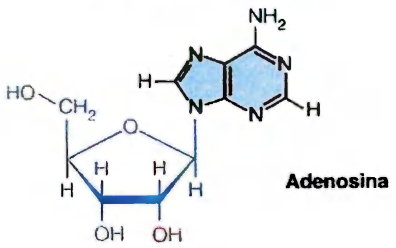
DEGRADAZIONE



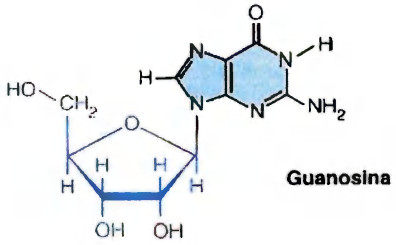


Nucleotidi e nucleosidi

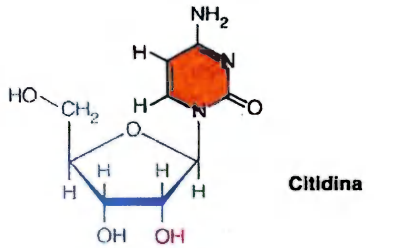
NUCLEOSIDI (zucchero + base)



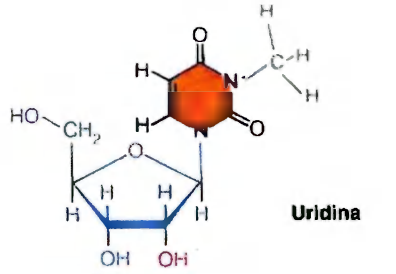
Adenosina



Guanosina

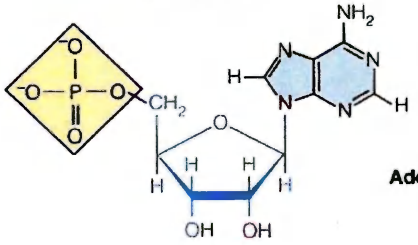


Citidina



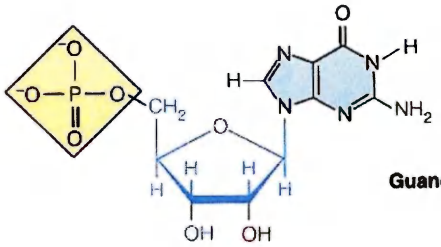
Uridina

NUCLEOTIDI



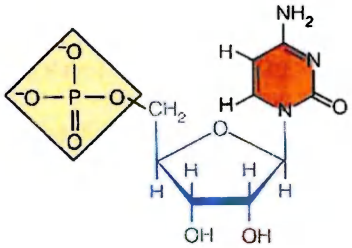
AMP

Adenosina 5'-monofosfato (AMP)



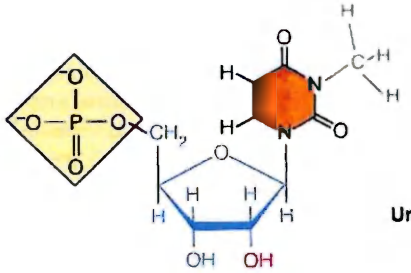
GMP

Guanosina 5'-monofosfato (GMP)



CMP

Citidina 5'-monofosfato (CMP)



UMP

Uridina 5'-monofosfato (UMP)

A = Adenina
G = Guanina
C = Citosina
U = Uracile
T = Timina

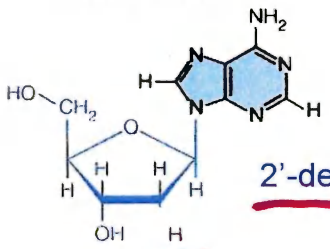
- legato al C 5' dello zucchero

I nucleotidi indicati rappresentano le unità ripetitive dell'DNA.

- Il sistema base+zucchero viene definito nucleoside.
- I nucleotidi sono nucleosidi 5'-monofosfati.

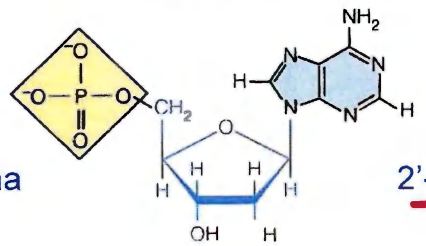
Nucleotidi e nucleosidi

NUCLEOSIDI



2'-deossiadenosina

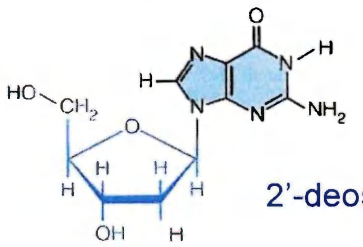
NUCLEOTIDI



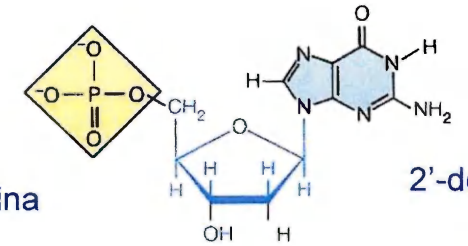
2'-deossiadenosina 5'-monofosfato

DNA

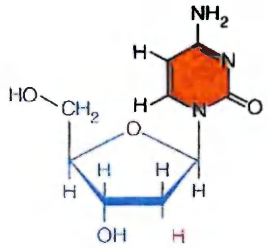
A = Adenina
G = Guanina
C = Citosina
U = Uracile → RNA
T = Timina → DNA



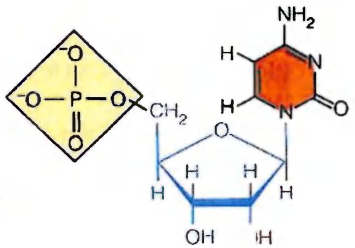
2'-deossiguanosina



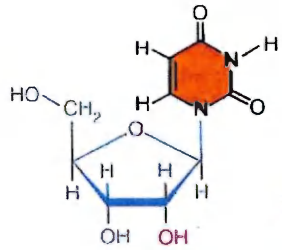
2'-deossiguanosina 5'-monofosfato



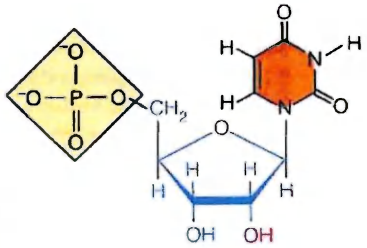
2'-deossicitidina



2'-deossicitidina 5'-monofosfato



2'-deossiatimina



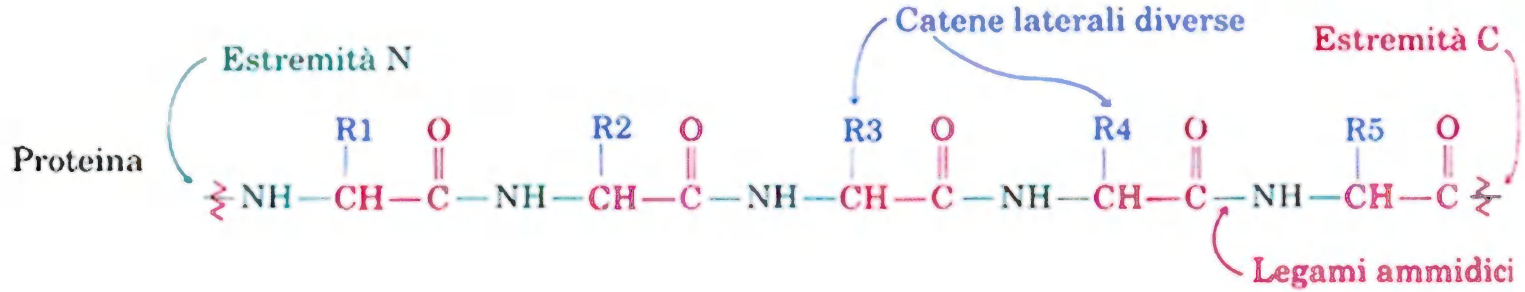
2'-deossiatimina 5'-monofosfato

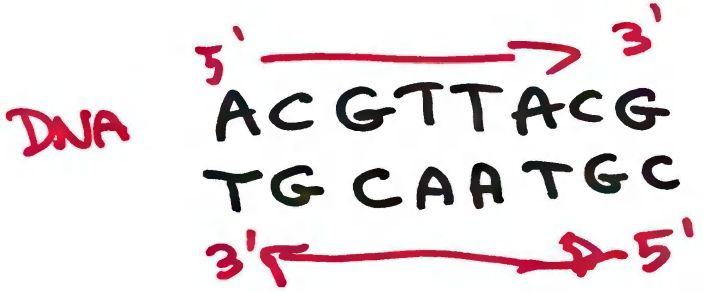
I nucleotidi indicati rappresentano le unità ripetitive dell'RNA.

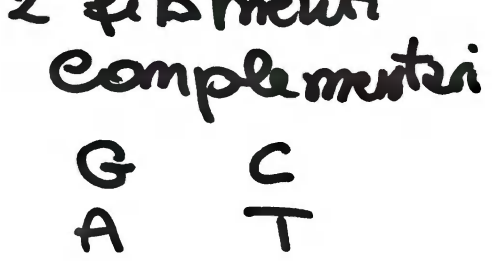
- Il sistema base+zucchero viene definito nucleoside.
- I nucleotidi sono nucleosidi 5'-monofosfati.

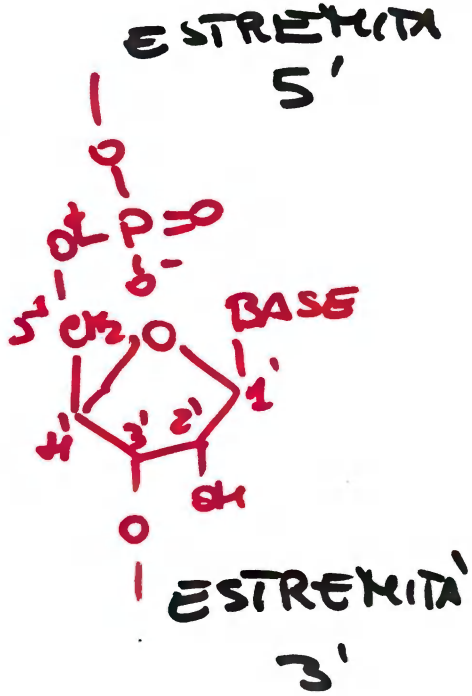
Struttura primaria

La catena polinucleotidica possiede un verso.
Per convenzione si legge dal terminale 5' libero al terminale 3' libero

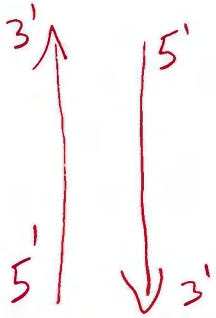


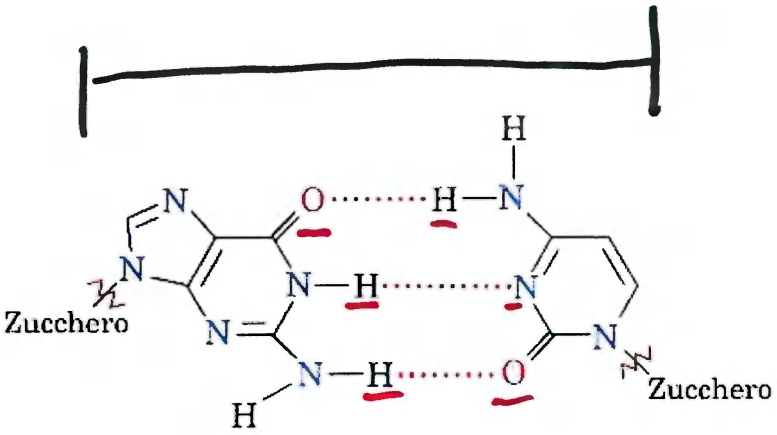




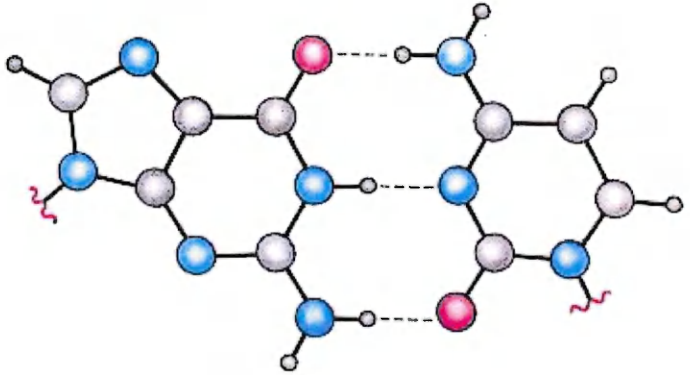


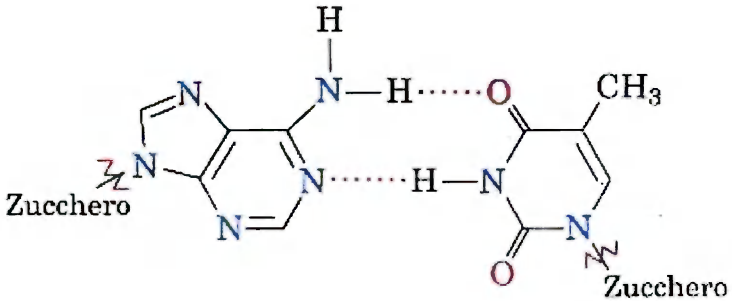
Struttura secondaria e terziaria degli acidi nucleici



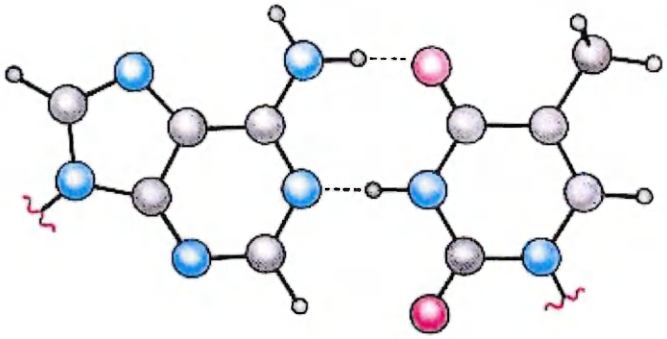


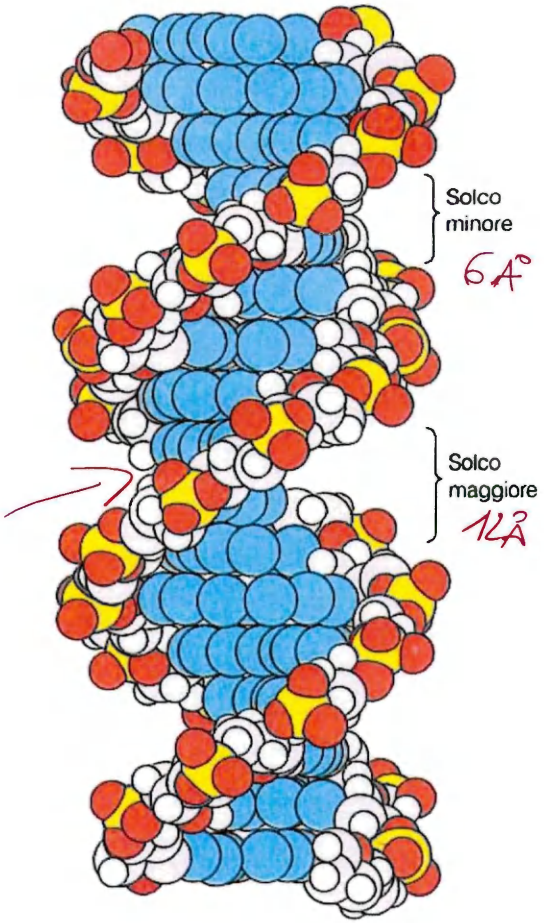
(Guanina) G : : : : : : C (Citosina)

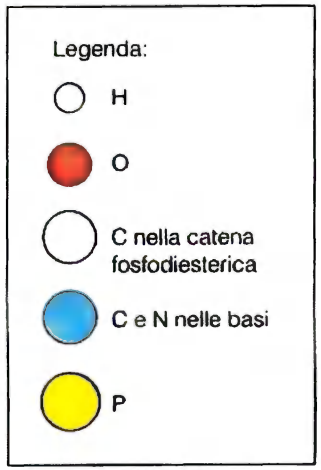




(Adenina) A : : : : : : T (Timina)







DOPPIA ELICA

PRESENZA DI DUE SOLCHI:

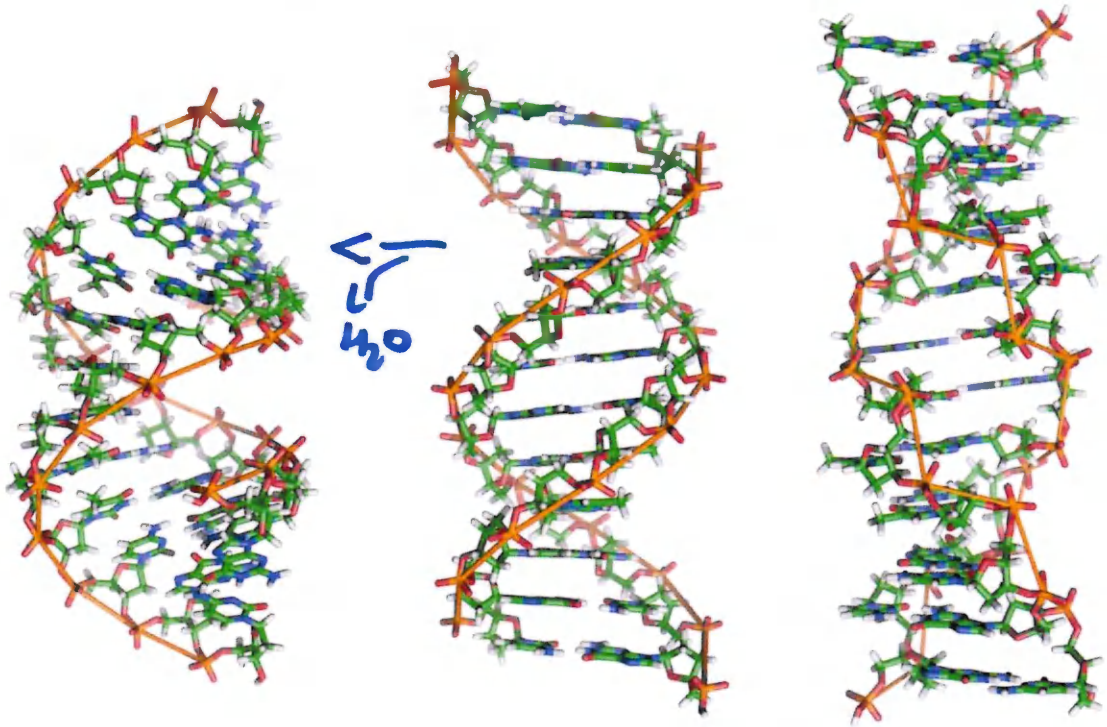
- MAGGIORE: 12 Å
- MINORE: 6 Å

PUNTI DEBOLI DEL DNA

(ingresso degli INTERCALANTI)

Conformazioni del DNA a doppia elica

Quanto descritto finora si riferisce alla conformazione B del DNA a doppia elica. Esistono altre conformazioni dette A e Z.



A B Z

La conformazione A è propria del DNA disidratato, la Z si forma con particolari sequenze, è un'elica sinistrorsa e priva di solchi.

DENATURAZIONE DNA

VIENE STUDIATA MEDIANTE TECNICA UV-VIS.

T_m : 50% di forma nativa e 50% forma denaturata

A:::T

G:::C

DENATURAZIONE : rottura legami interazioni