

Nucleosides And Nucleotides

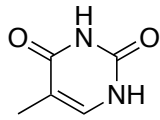
from chapter(s) _____ in the recommended text

A. Introduction

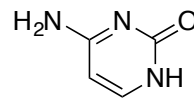
B. Nucleosides



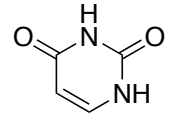
pyrimidine



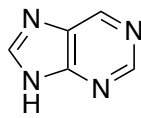
thymine
DNA



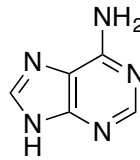
cytosine
both



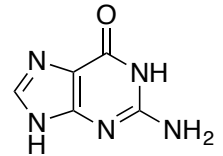
uracil
RNA



purine

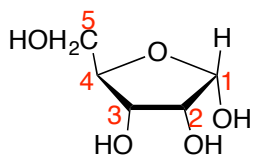


adenine
both

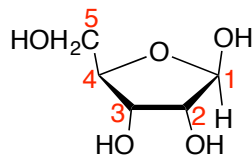


guanine
both

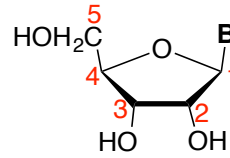
ribose in a *furanose*
β-anomer.
β-anomers.



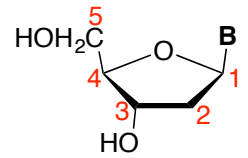
α-D-ribofuranose



β-D-ribofuranose



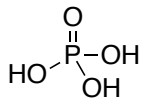
generic RNA



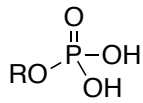
generic DNA

C. Nucleotides

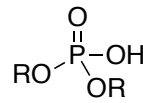
without a phosphate
phosphate esters.



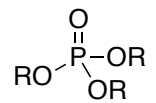
phosphoric acid



phosphomonoester



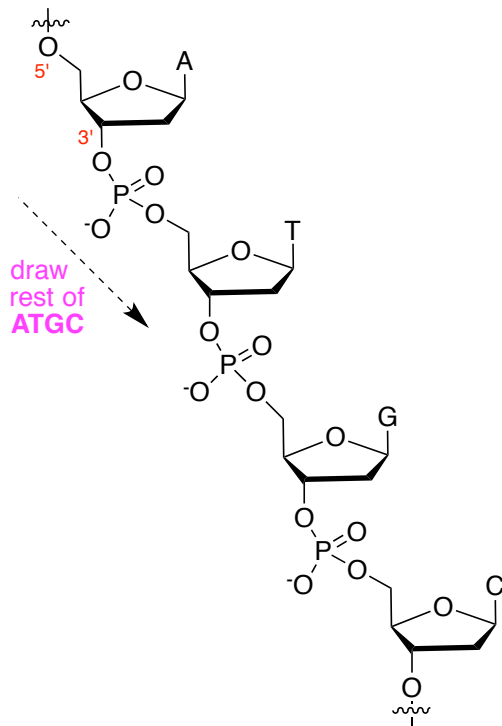
phosphodiester



phosphotriester

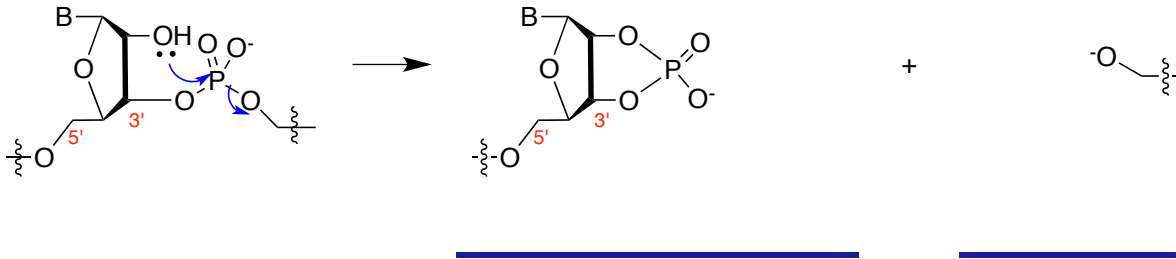
di-esters.

di-esters.



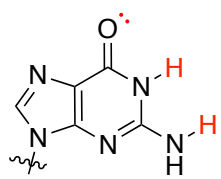
a different
3'- end.
the sugar part.
are not

RNA is *less*



2'-OH.

transcribed
translated



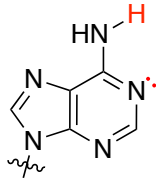
G

H-bond donors:

2

H-bond acc's:

1



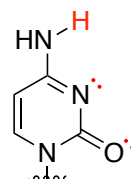
A

H-bond donors:

1

H-bond acc's:

1



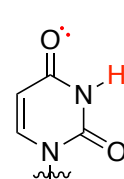
C

H-bond donors:

1

H-bond acc's:

2



U

H-bond donors:

1

H-bond acc's:

1

refers to H-bond acceptors and donors, as indicated in structure

C in DNA

C in RNA

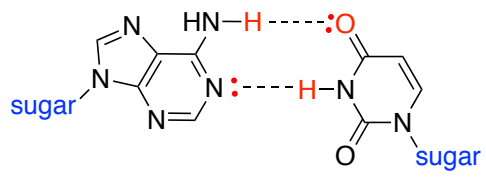
T in DNA

U in RNA

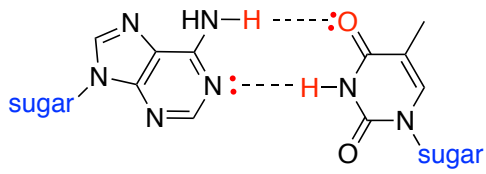
G in DNA

G in RNA

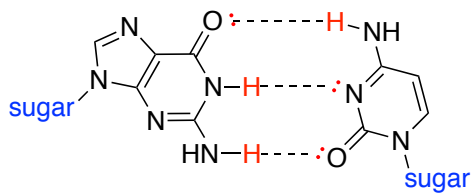
A in DNA



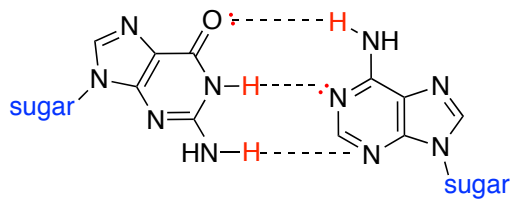
A H-bonded to U



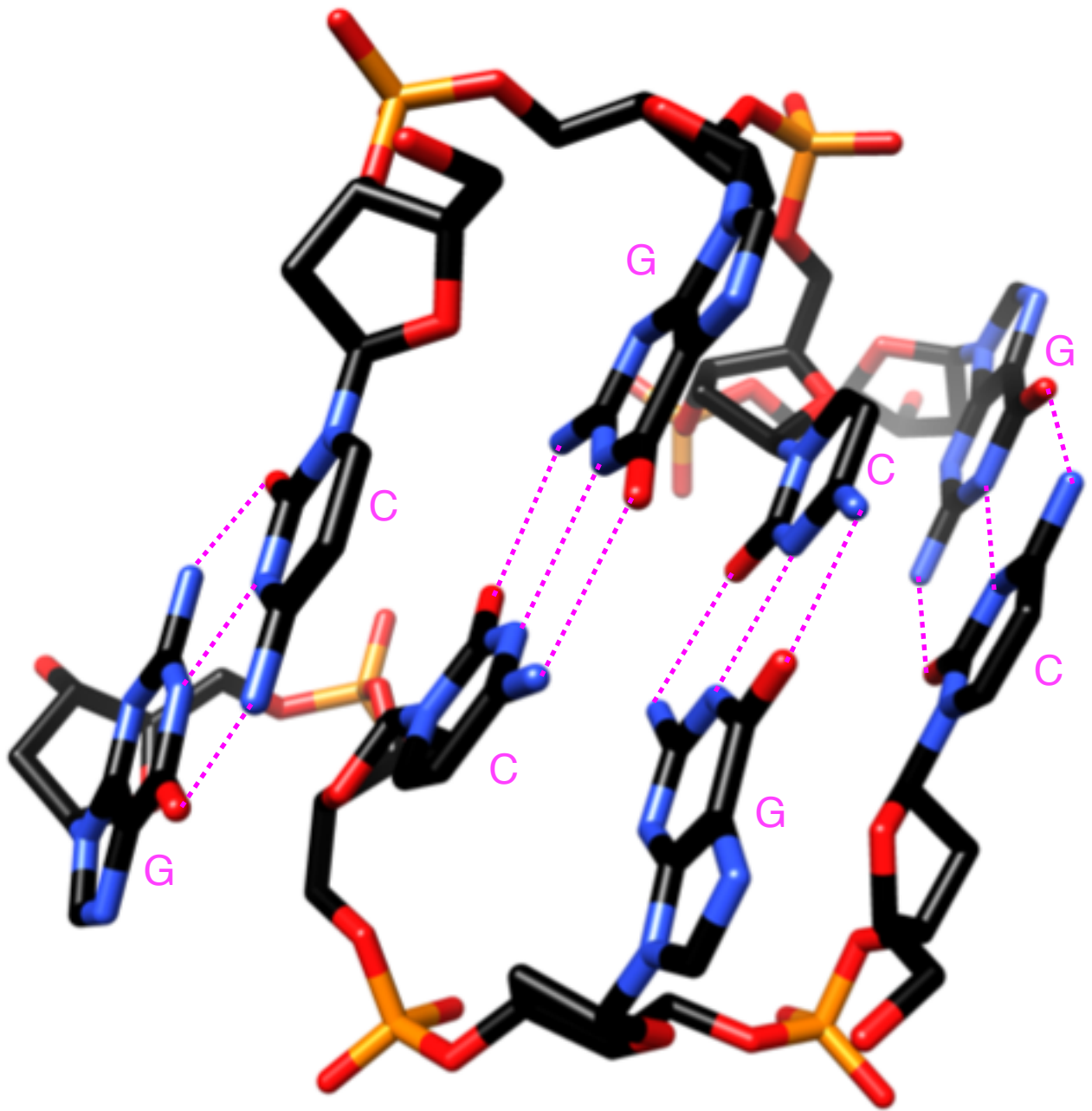
A H-bonded to T



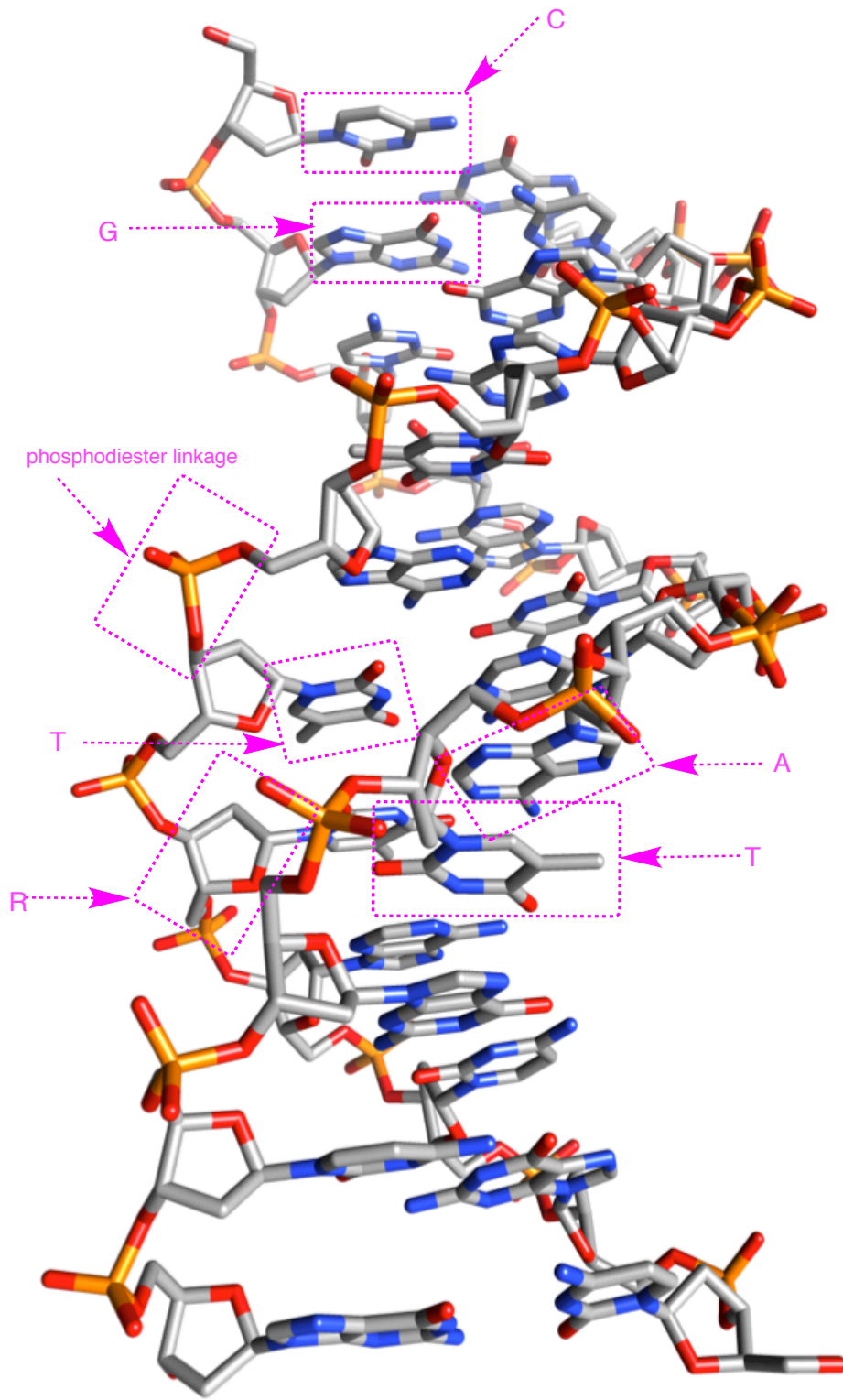
G H-bonded to C



*G H-bonded to A
does not match well*



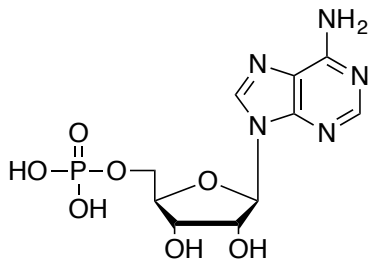
weaker
less



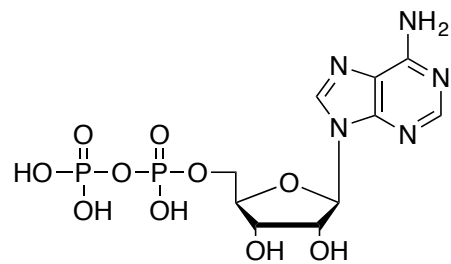
phosphodiester
nucleobases

C into **U**
right
the same as
less

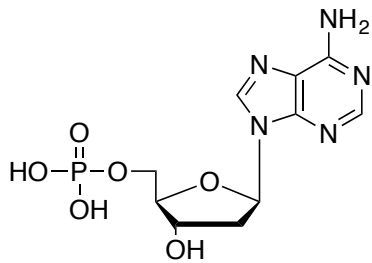
DNA
RNA.



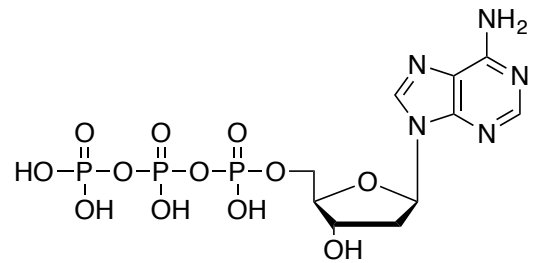
AMP



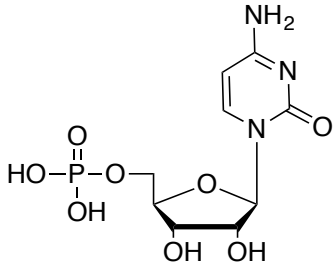
ADP



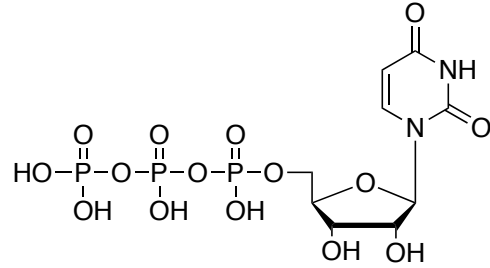
dAMP



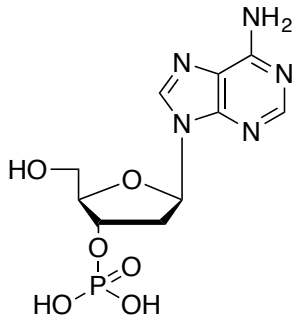
dATP



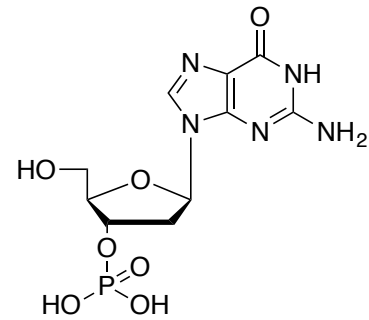
CMP



UTP



*2-deoxyadenosine
3'-monophosphate*



*2-deoxyguanosine
3'-monophosphate*

polymerases.

antiparallel

3'-end of the growing strand.

A *di*-phosphate

promoter

promoting

messenger RNA.

Ha! Caught you looking unnecessarily! codons.

Exon

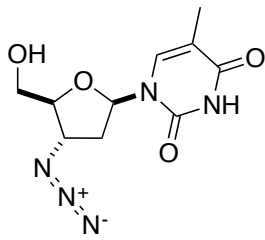
introns.

splicing.

transfer messenger

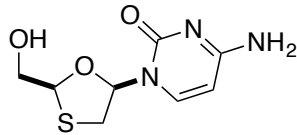
D. Nucleoside Drugs

*DNA
arresting*



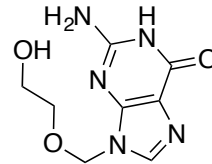
Zidovudine

treatment of HIV



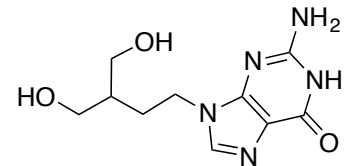
Lamivudine

treatment of HIV



Acyclovir

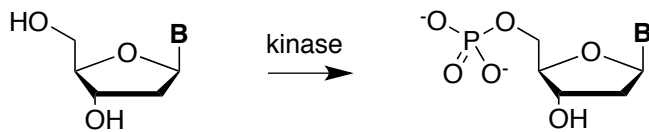
treatment of herpes



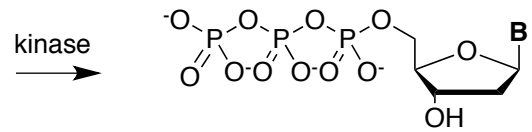
Penciclovir

treatment of herpes

*nucleotide triphosphates.
kinase*



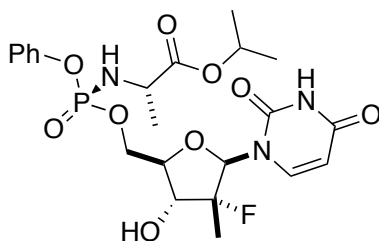
*cell permeability
likely*



*cell permeability
unlikely*

*cell permeability
unlikely*

*mono-
negatively
do not
do not*



*Sofosbuvir
treatment of hepatitis C*

Nucleotide Prodrugs
*neutral charged, cell
prodrug
ProTides.*

