building block of DNA

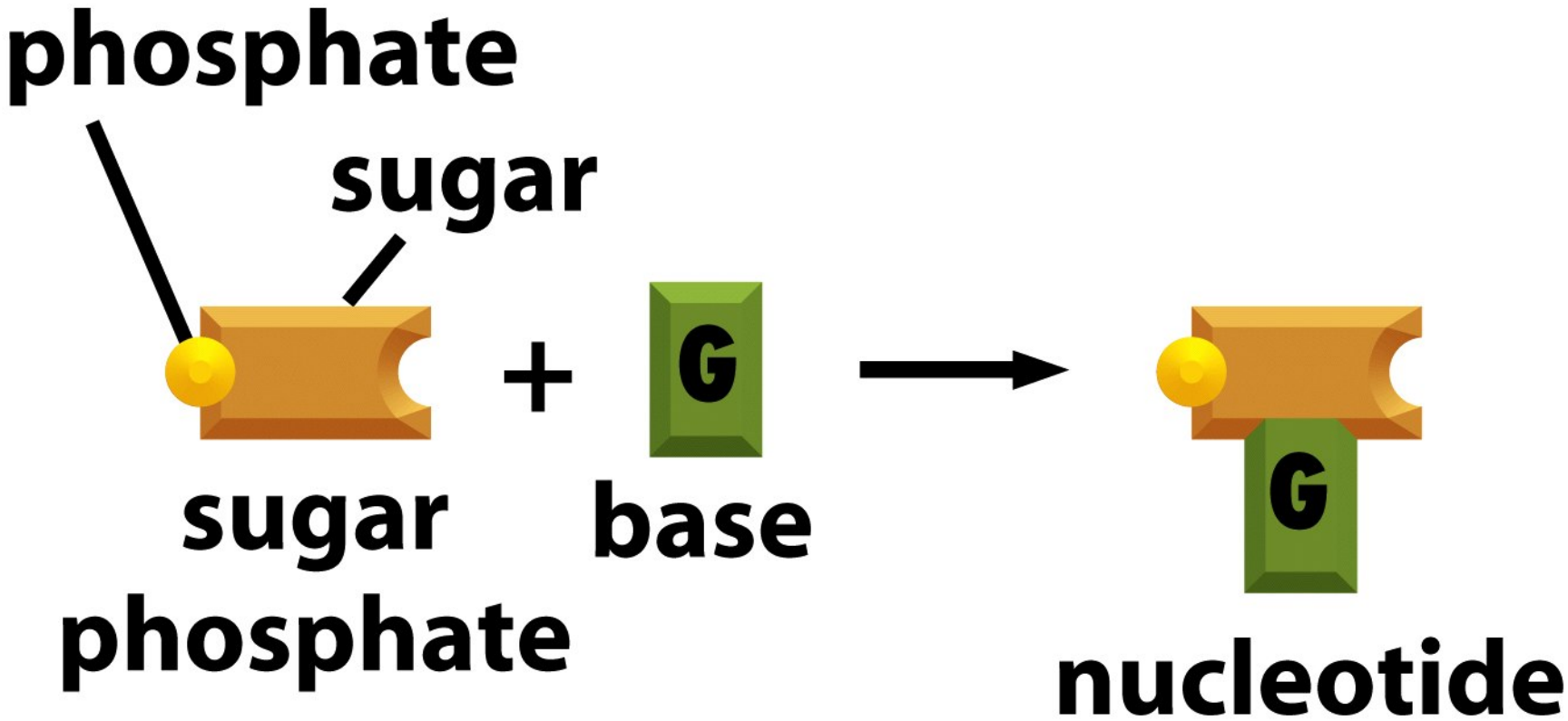


Figure 1-2a *Molecular Biology of the Cell*, Fifth Edition (© Garland Science 2008)

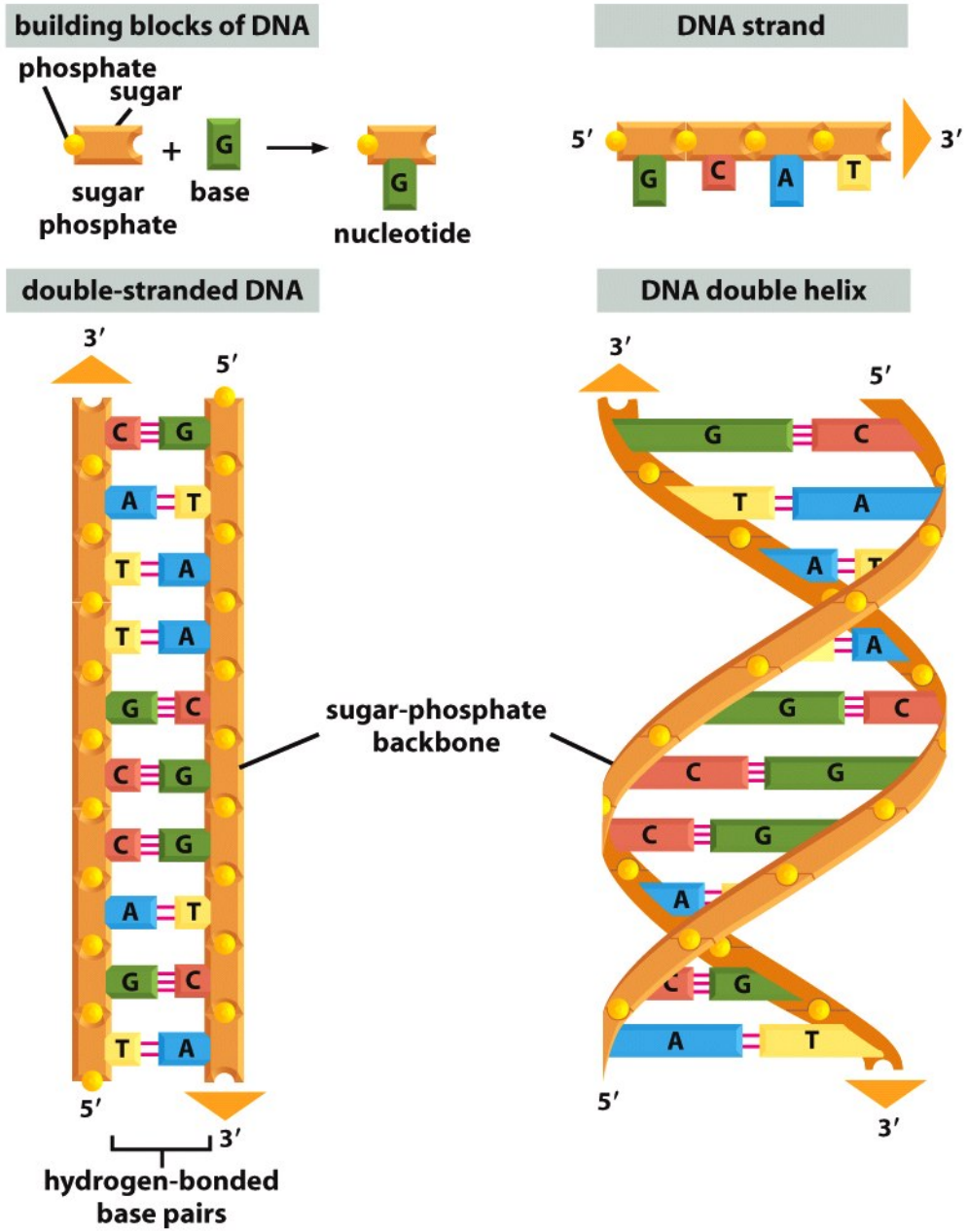


Figure 4-3 *Molecular Biology of the Cell* (© Garland Science 2008)

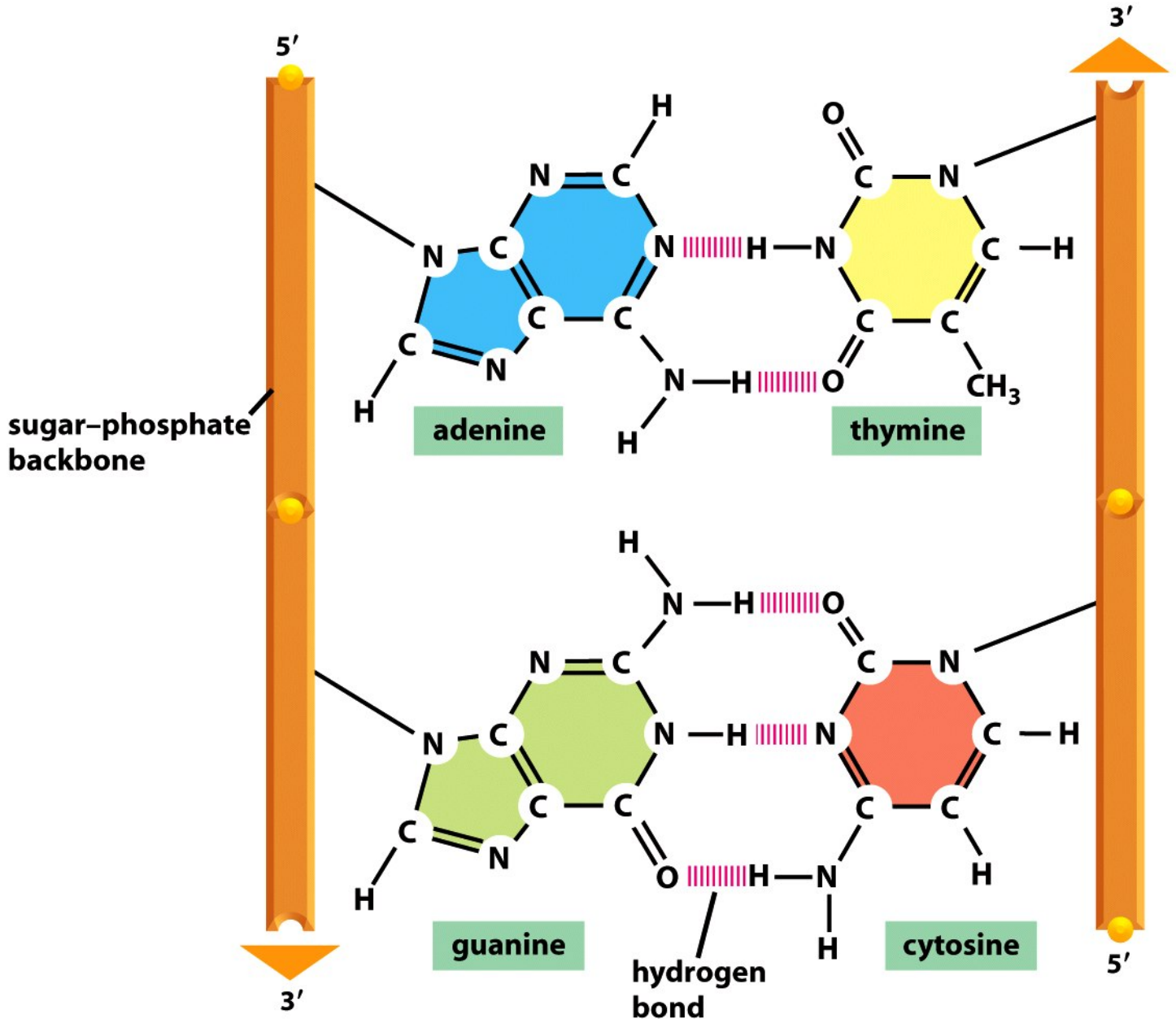
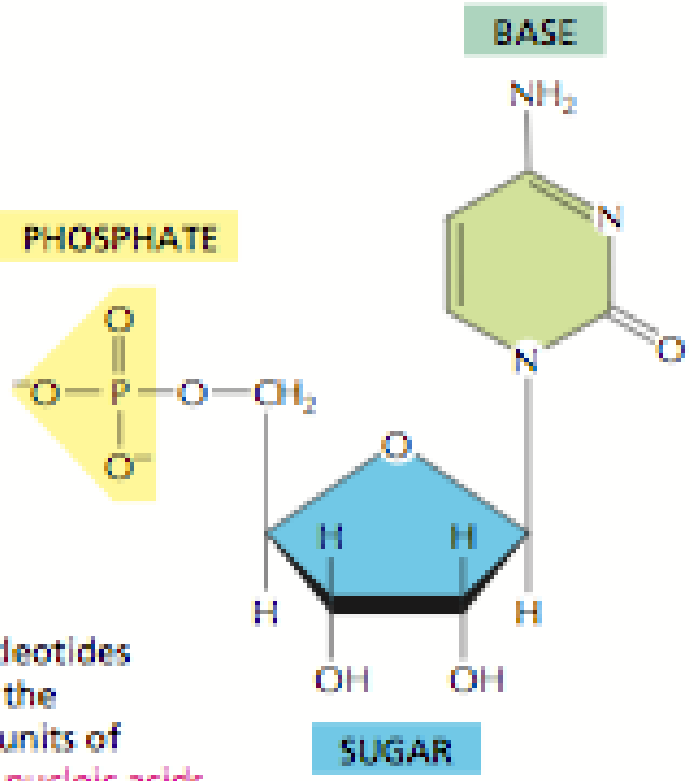


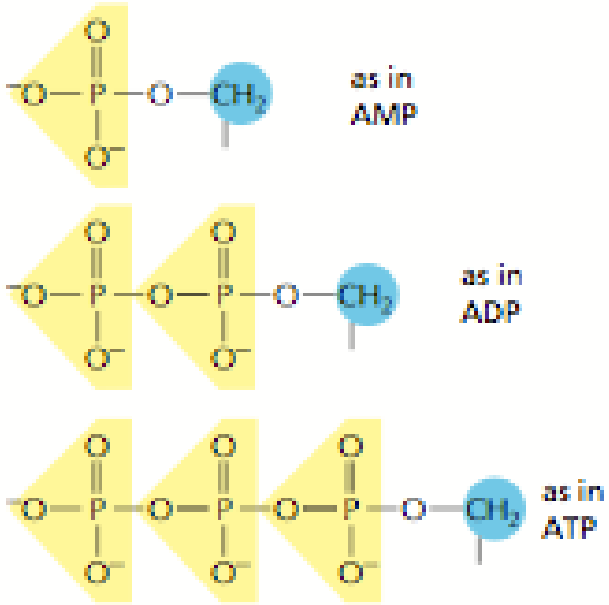
Figure 4-4 *Molecular Biology of the Cell* (© Garland Science 2008)

NUCLEOTIDES

A nucleotide consists of a nitrogen-containing base, a five-carbon sugar, and one or more phosphate groups.

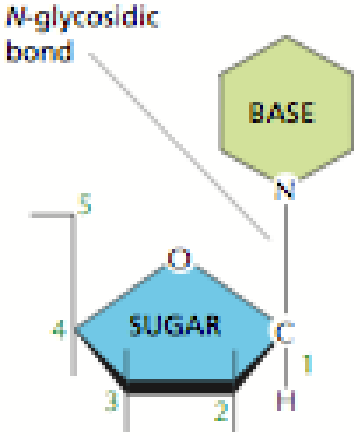


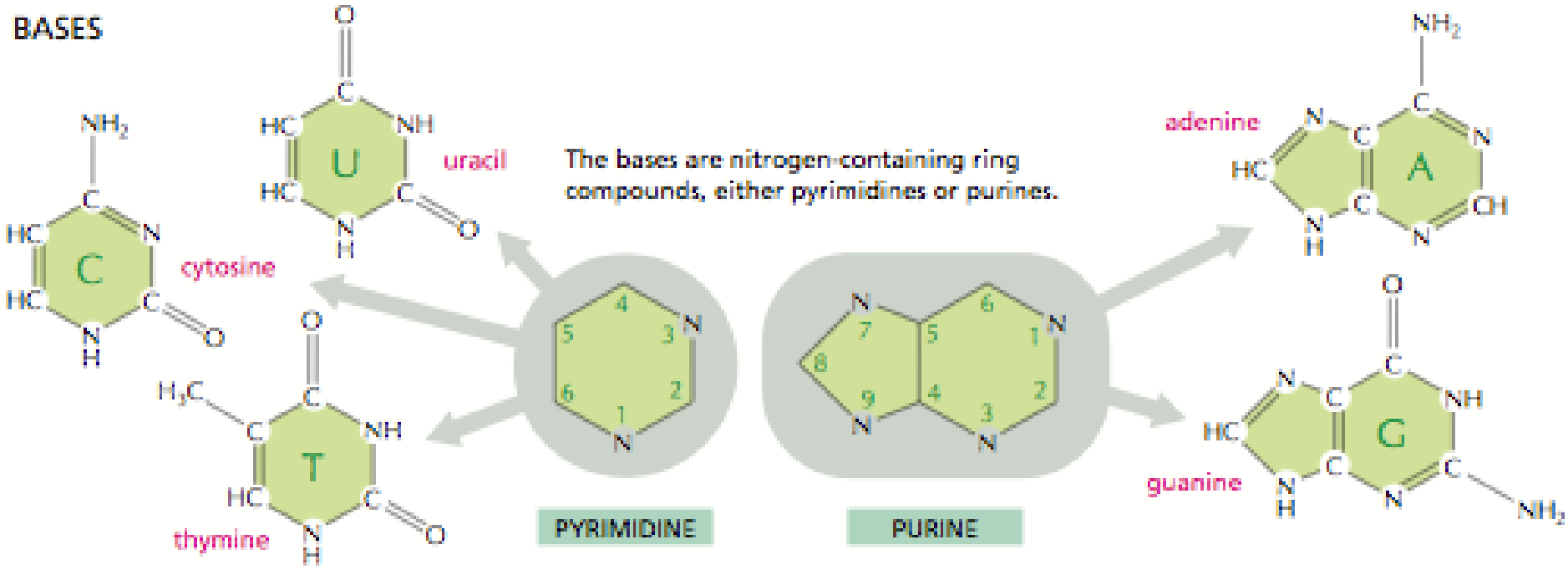
Nucleotides are the subunits of the nucleic acids.



The phosphate makes a nucleotide negatively charged.

BASIC SUGAR LINKAGE

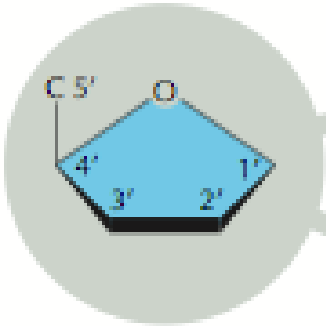



BASES
uracil
The bases are nitrogen-containing ring compounds, either pyrimidines or purines.
adenine
cytosine
thymine
guanine
PYRIMIDINE
PURINE

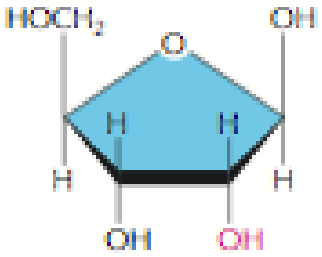
SUGARS

PENTOSE

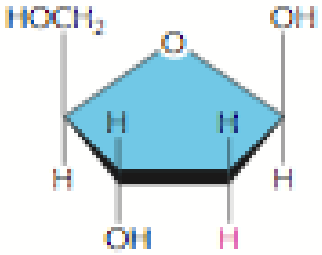
a five-carbon sugar



two kinds are used

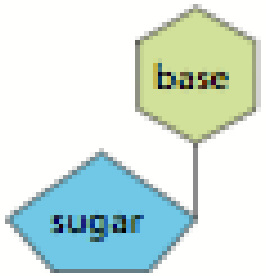


β-o-ribose
used in ribonucleic acid

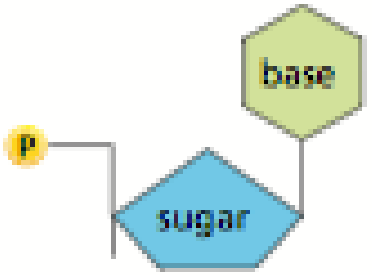


β-o-2-deoxyribose
used in deoxyribonucleic acid

Each numbered carbon on the sugar of a nucleotide is followed by a prime mark; therefore, one speaks of the "5-prime carbon," etc.



BASE + SUGAR = NUCLEOSIDE



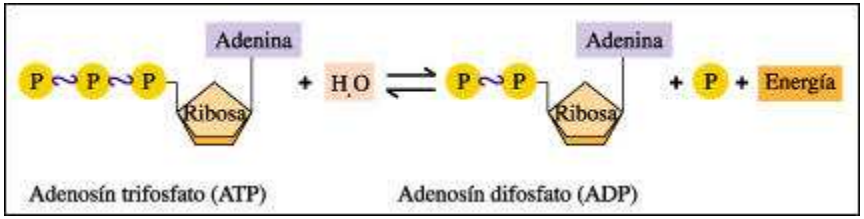
BASE + SUGAR + PHOSPHATE = NUCLEOTIDE

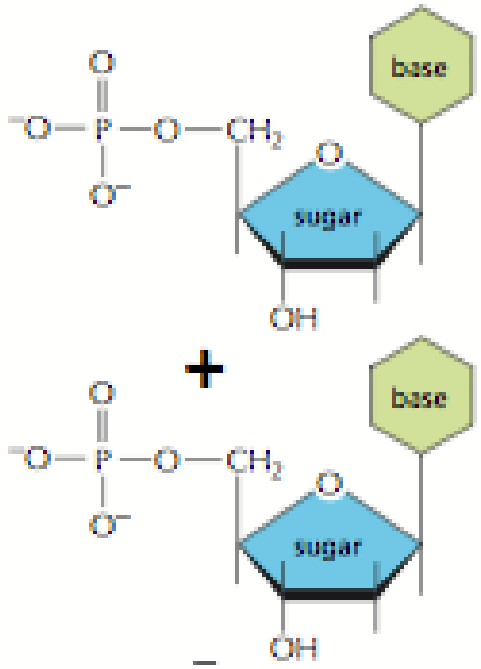
BASE	NUCLEOSIDE	ABBR.
adenine	adenosine	A
guanine	guanosine	G
cytosine	cytidine	C
uracil	uridine	U
thymine	thymidine	T

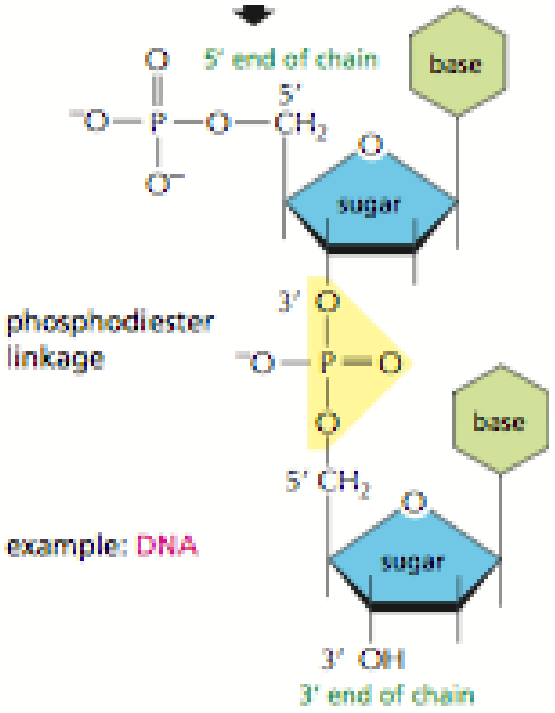
NUCLEIC ACIDS

Nucleotides are joined together by a phosphodiester linkage between 5′ and 3′ carbon atoms to form nucleic acids. The linear sequence of nucleotides in a nucleic acid chain is commonly abbreviated by a one-letter code, A—G—C—T—T—A—C—A, with the 5′ end of the chain at the left.

$







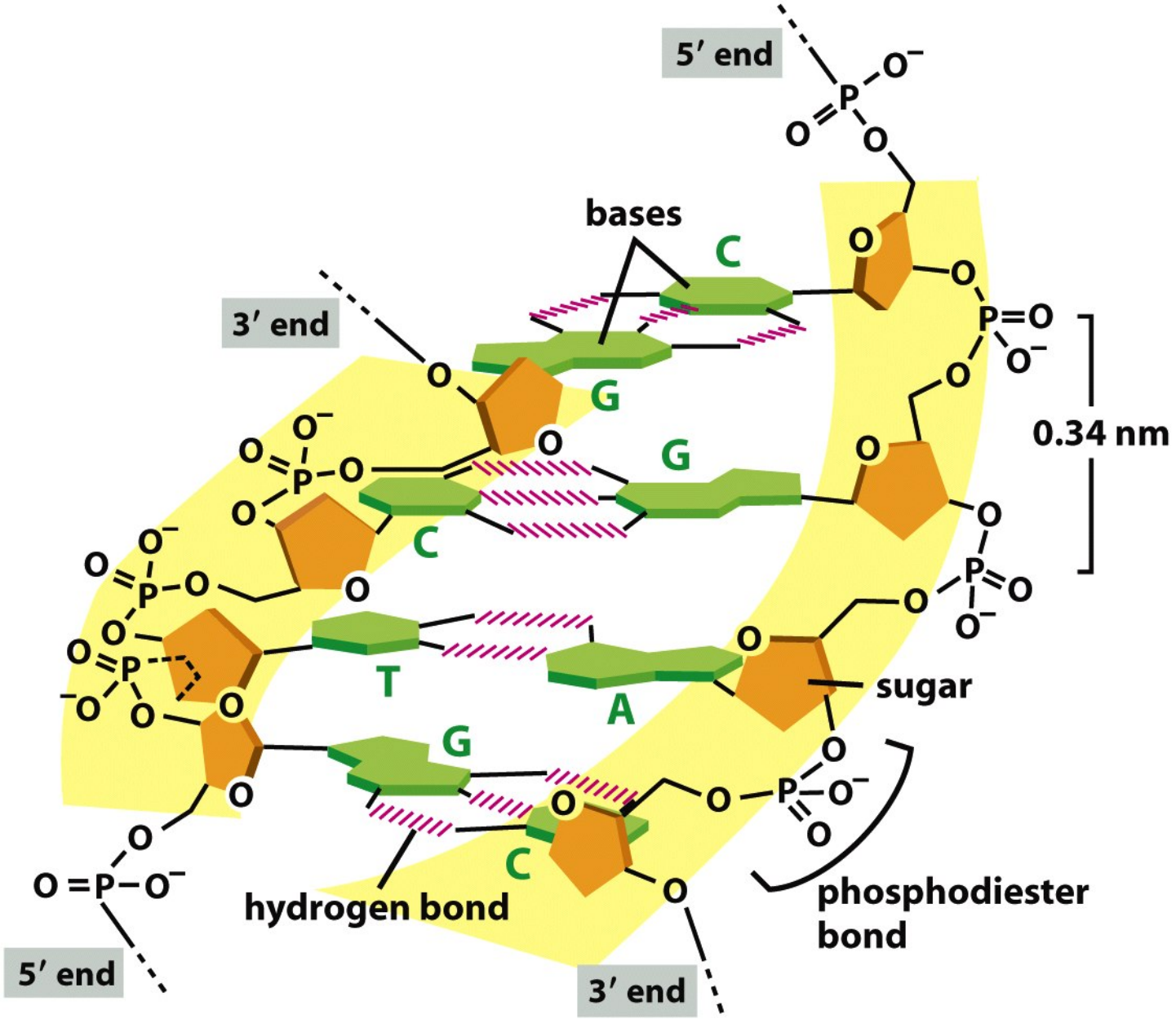


Figure 4-5b *Molecular Biology of the Cell* (© Garland Science 2008)

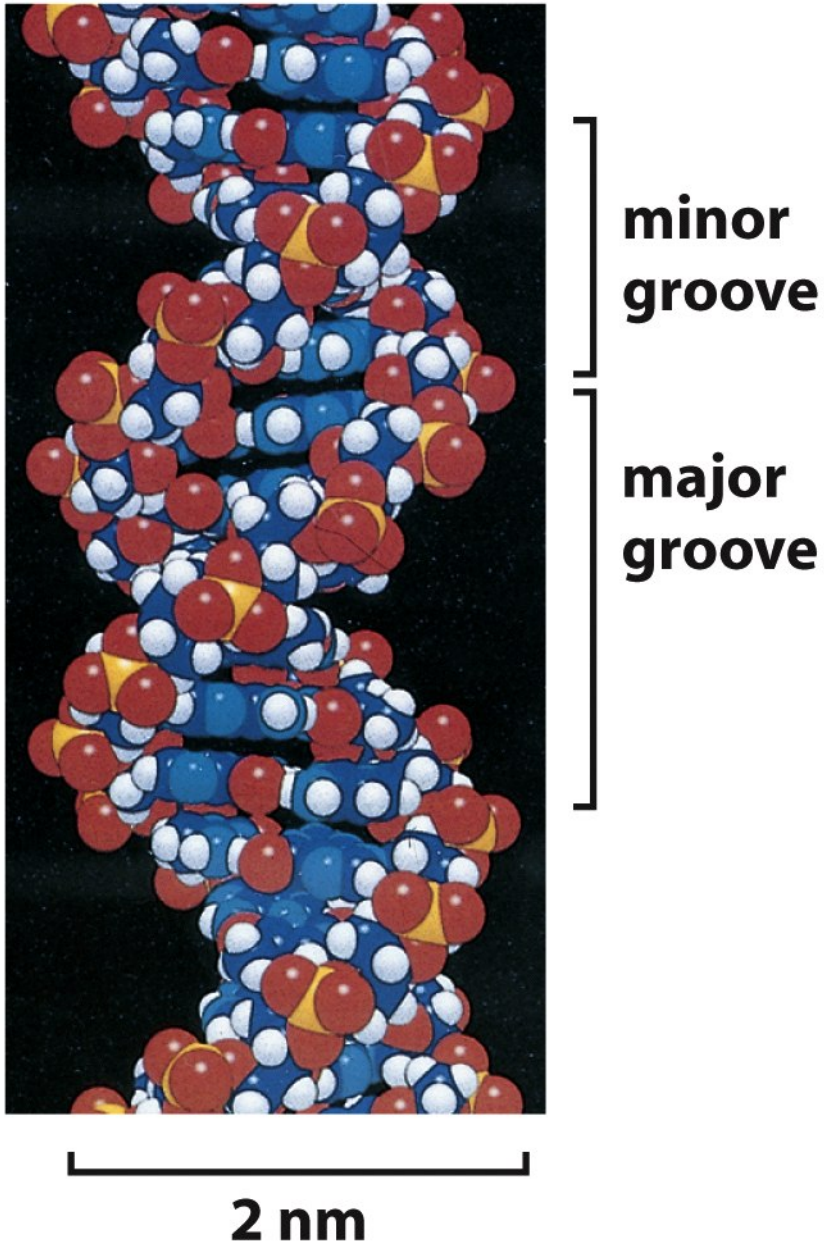


Figure 4-5a *Molecular Biology of the Cell* (© Garland Science 2008)

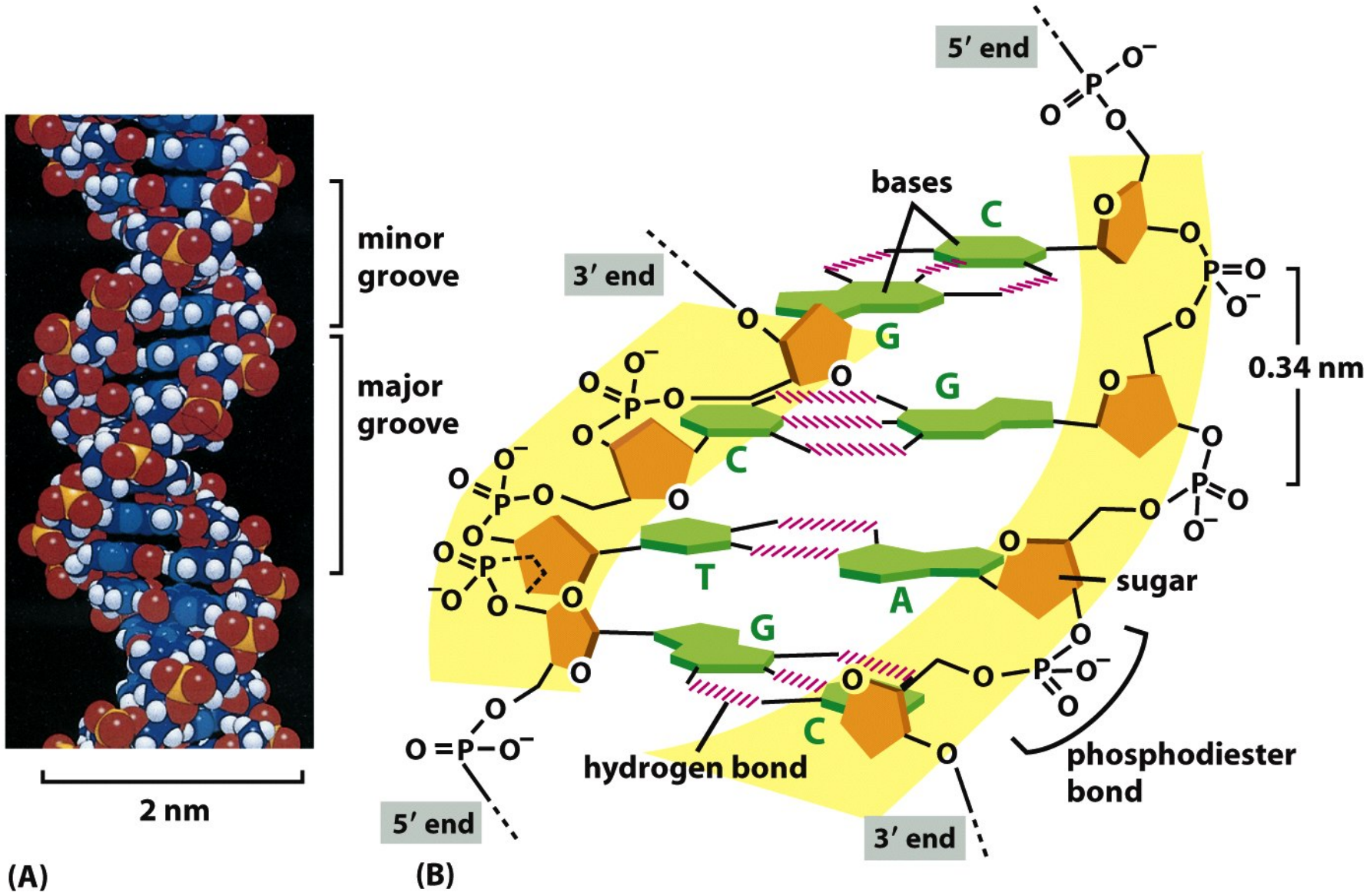


Figure 4-5 *Molecular Biology of the Cell* (© Garland Science 2008)