GENETICS: EXAM II REVIEW

Book Chaps. 5, 7, 8, 9

Exam Details

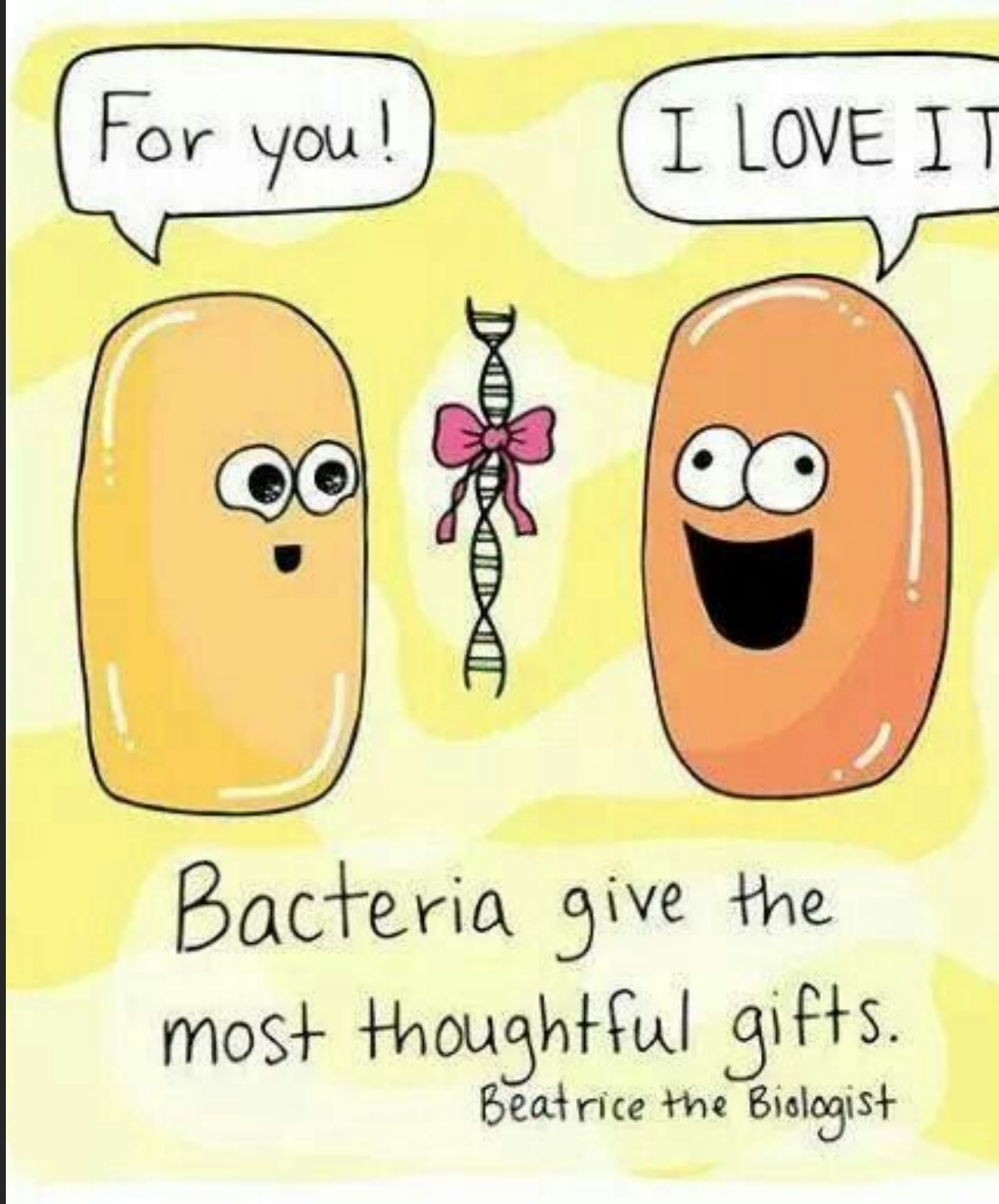
Monday, April 27th between 2:50-3:10pm

50 minutes to complete

40 multiple-choice questions (all displayed)

Open book

Chapter 5: Bacterial Genetics



Bacteria exchange DNA by several processes

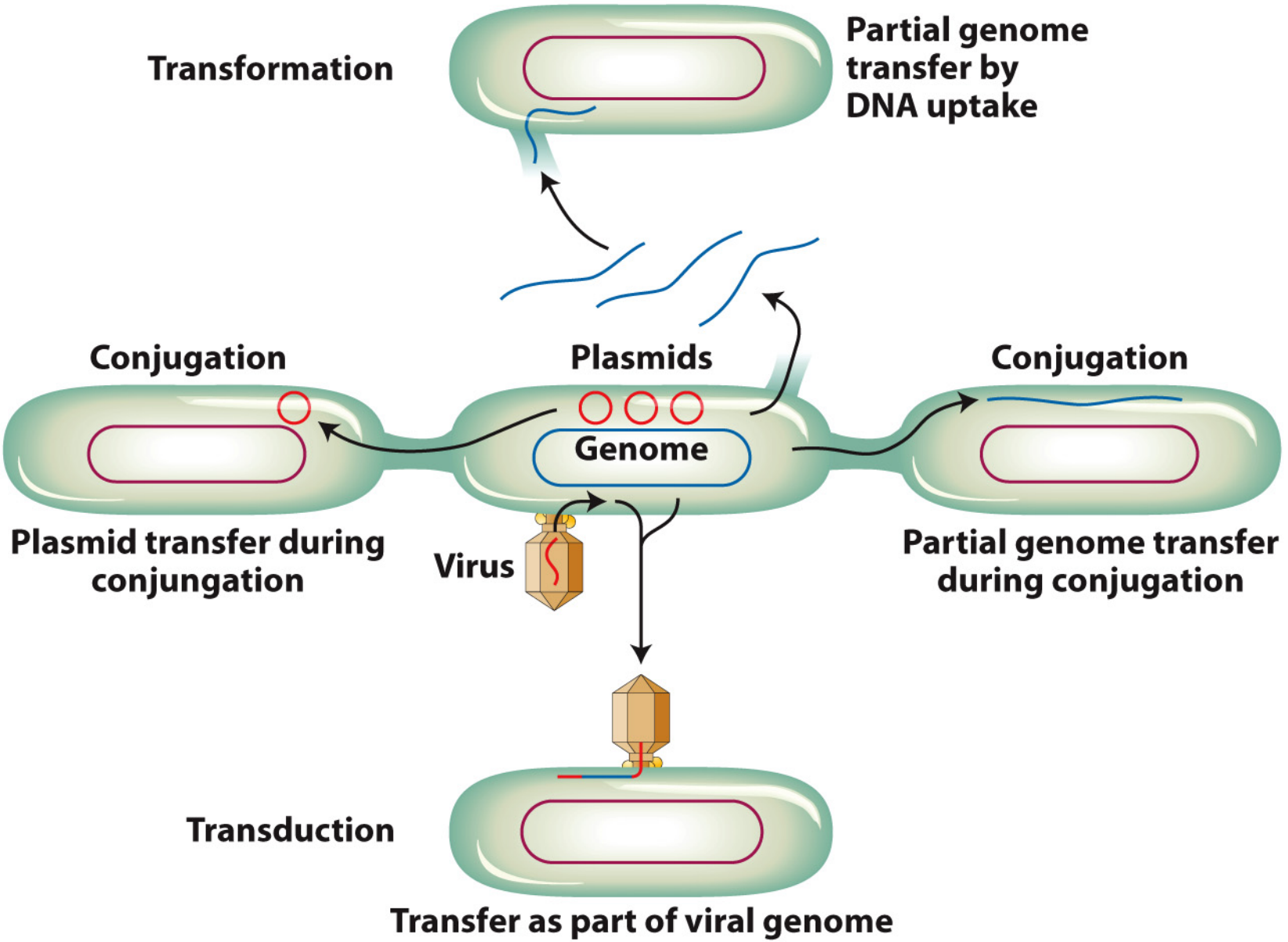


Figure 5-2
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TABLE 5-1 Some Genotypic Symbols Used in Bacterial Genetics

Symbol	Character or phenotype associated with symbol
bio$^-$	Requires biotin added as a supplement to minimal medium
arg$^-$	Requires arginine added as a supplement to minimal medium
met$^-$	Requires methionine added as a supplement to minimal medium
lac$^-$	Cannot utilize lactose as a carbon source
gal$^-$	Cannot utilize galactose as a carbon source
str^r	Resistant to the antibiotic streptomycin
str^s	Sensitive to the antibiotic streptomycin

Note: Minimal medium is the basic synthetic medium for bacterial growth without nutrient supplements.

Table 5-1
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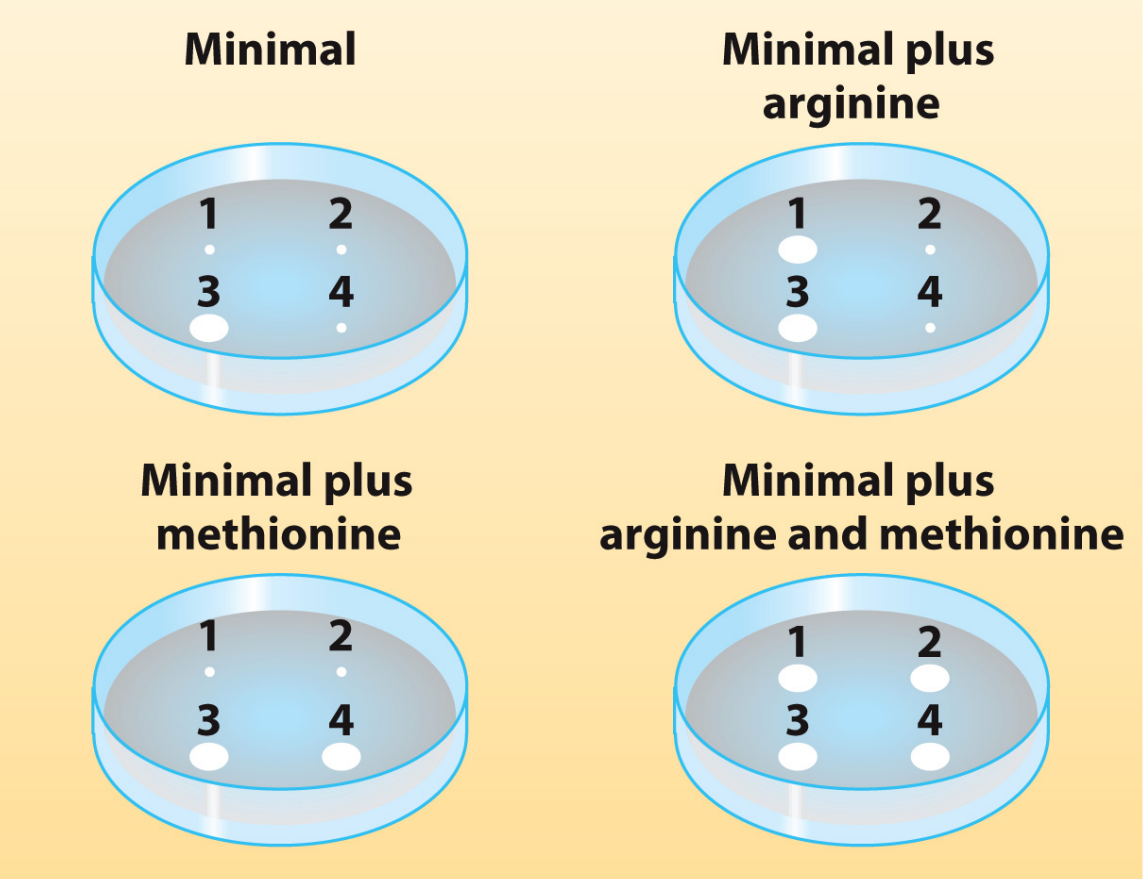
Problem 5-40
Deduce the genotypes of the following *E. coli* strains:



Problem 5-40
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Mixing bacterial genotypes produces rare recombinants

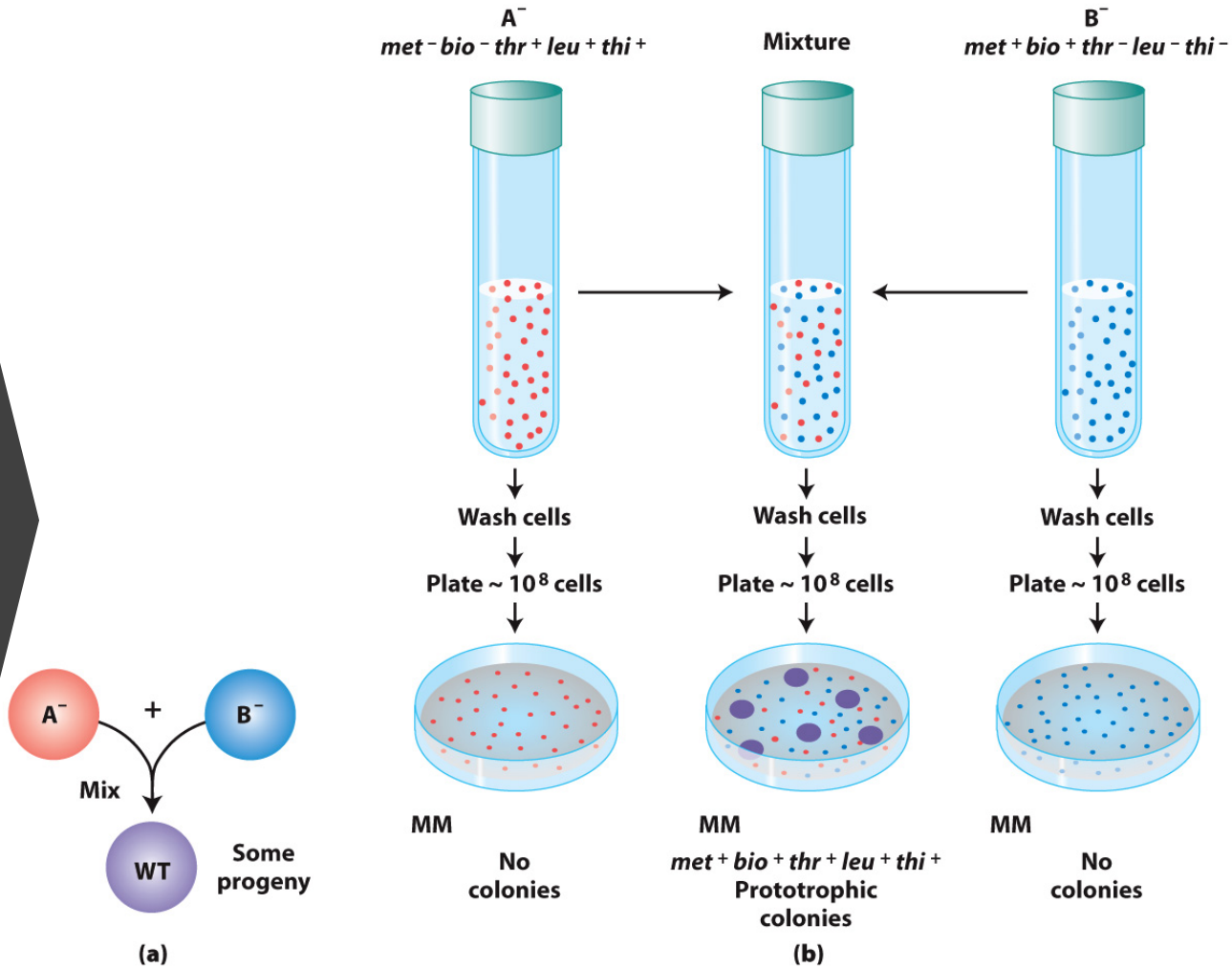

Figure 5-5
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F plasmids transfer during conjugation

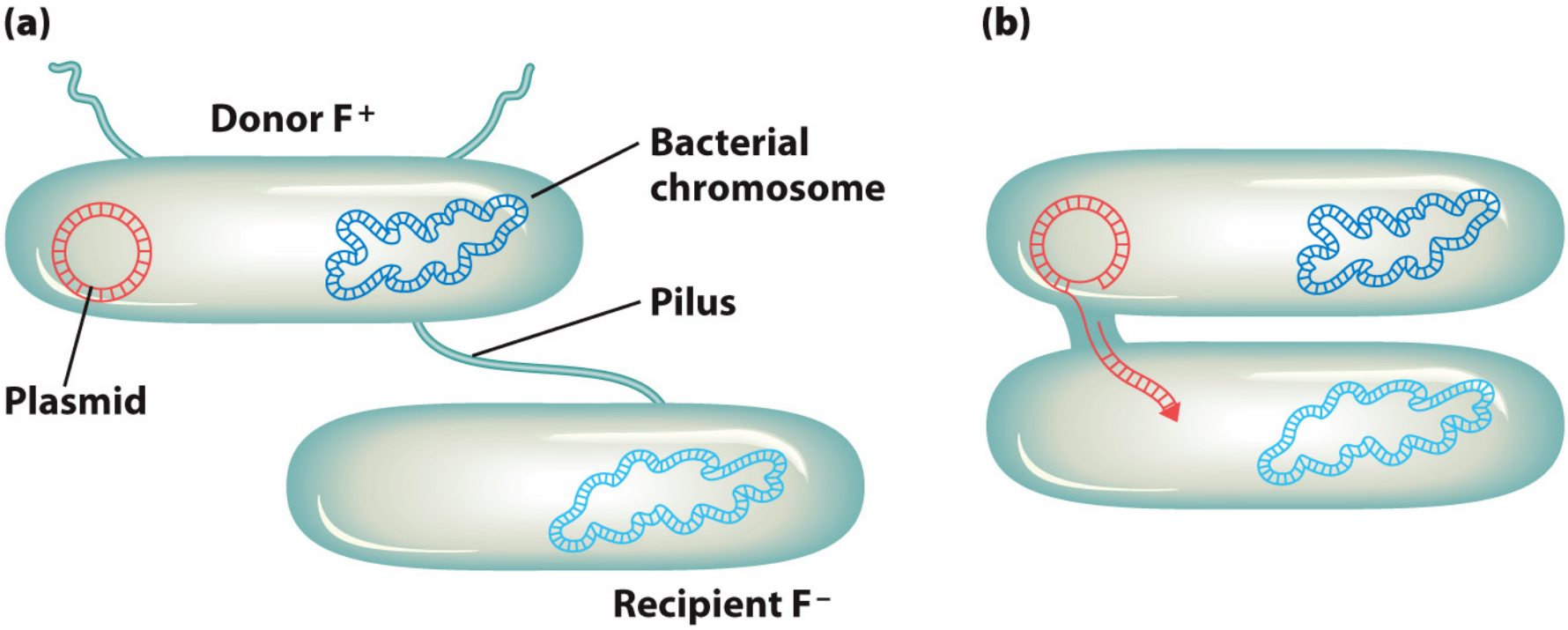

Figure 5-8
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Integration of the F plasmid creates an Hfr strain

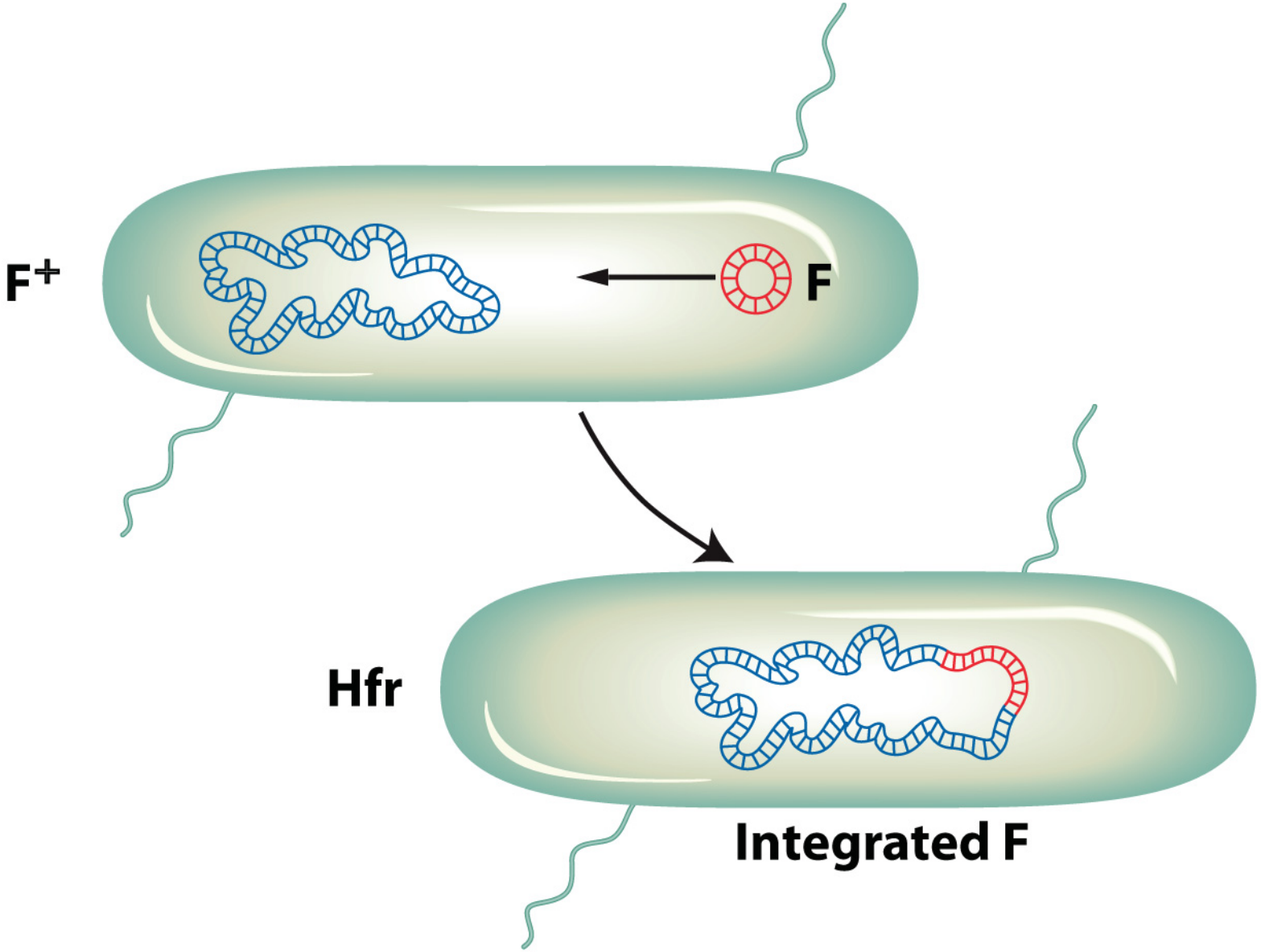

Figure 5-9
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Crossovers integrate parts of the transferred donor fragment

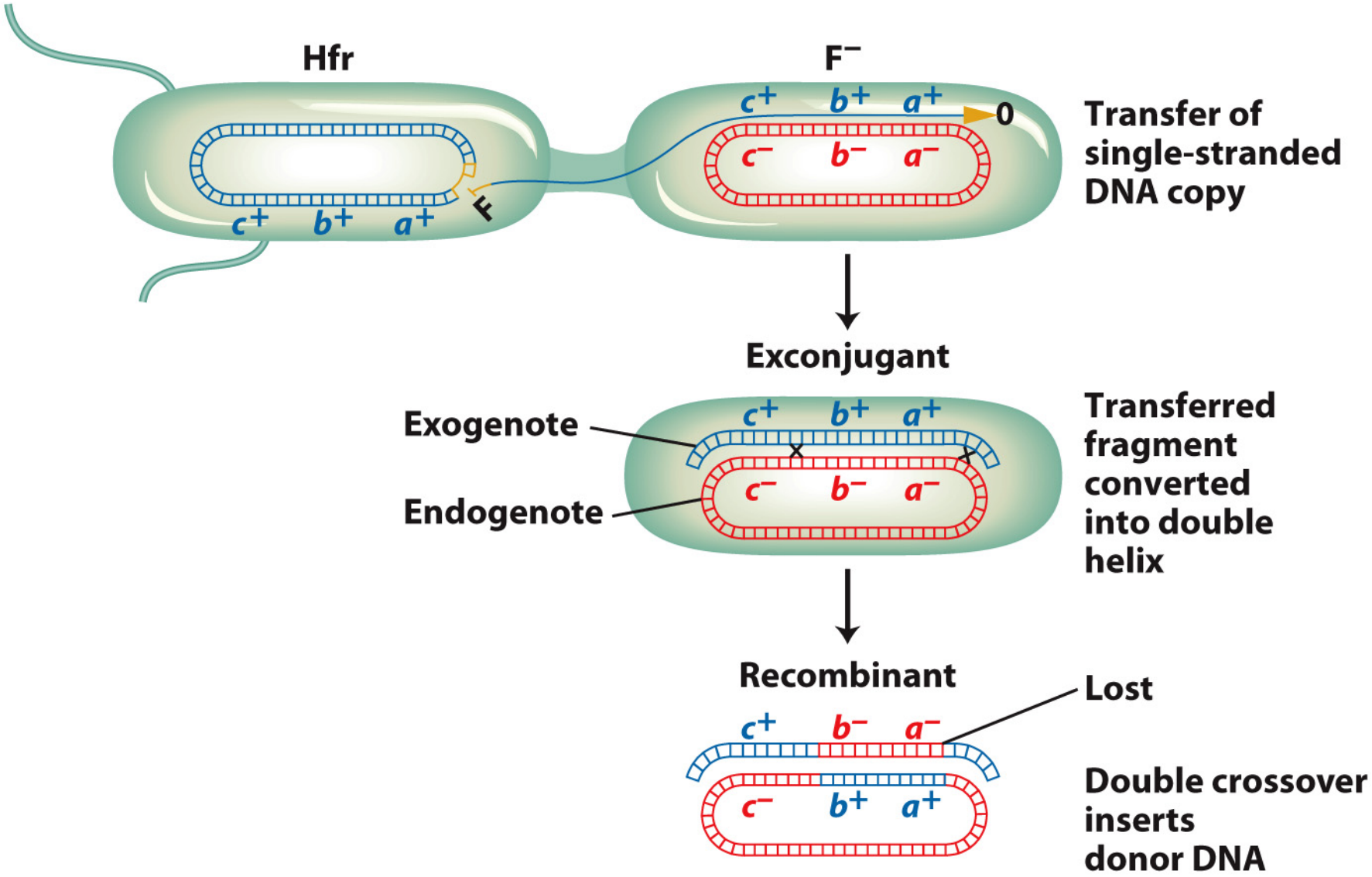

Figure 5-11
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The generation of various recombinants by crossing over in different regions

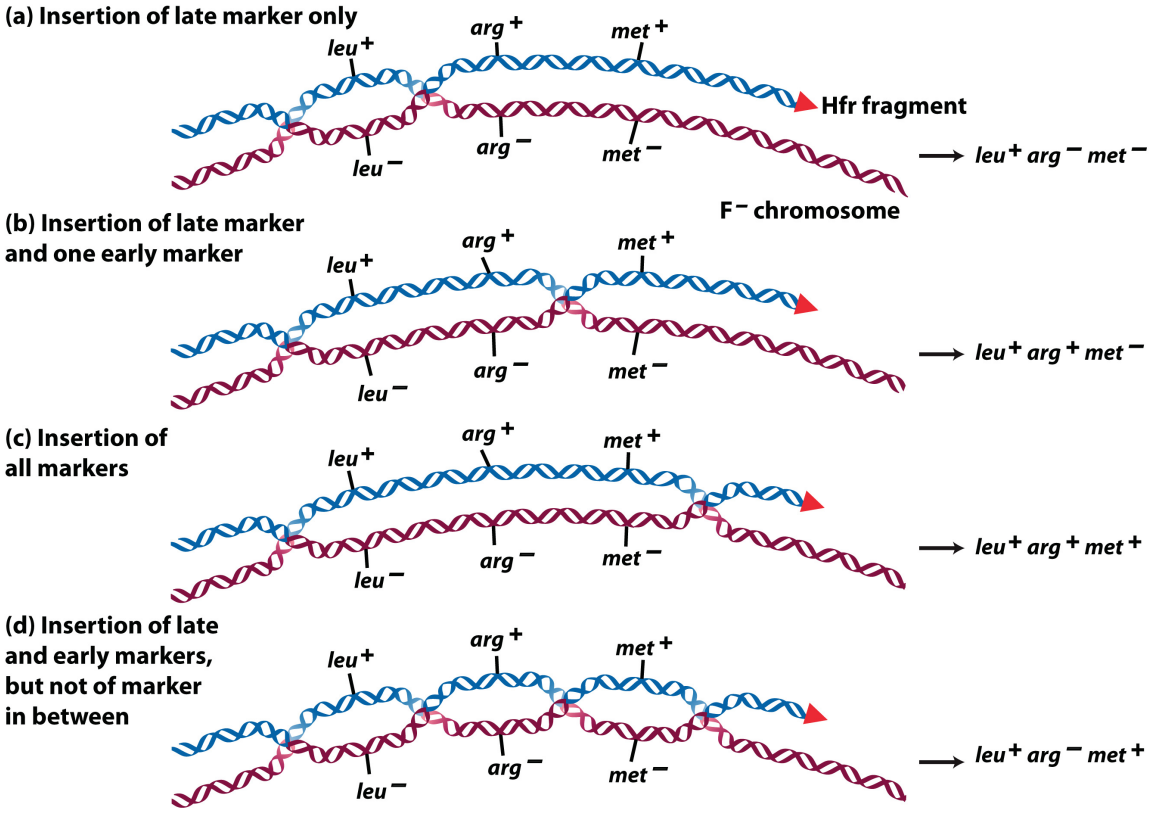

Figure 5-17
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Tracking time of marker entry generates a chromosome map

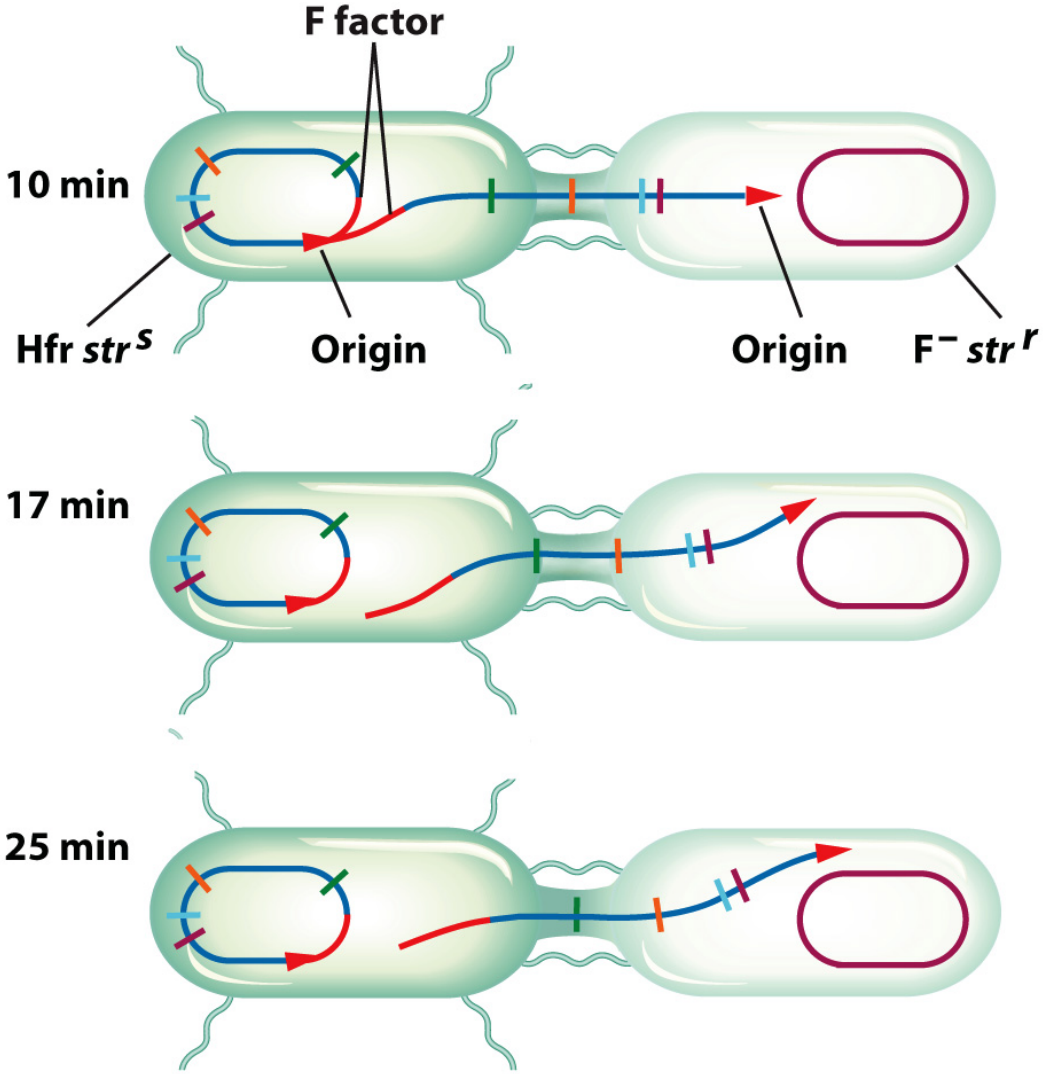

Figure 5-12b
Introduction to Genetic Analysis, Eleventh Edition

Tracking time of marker entry generates a chromosome map

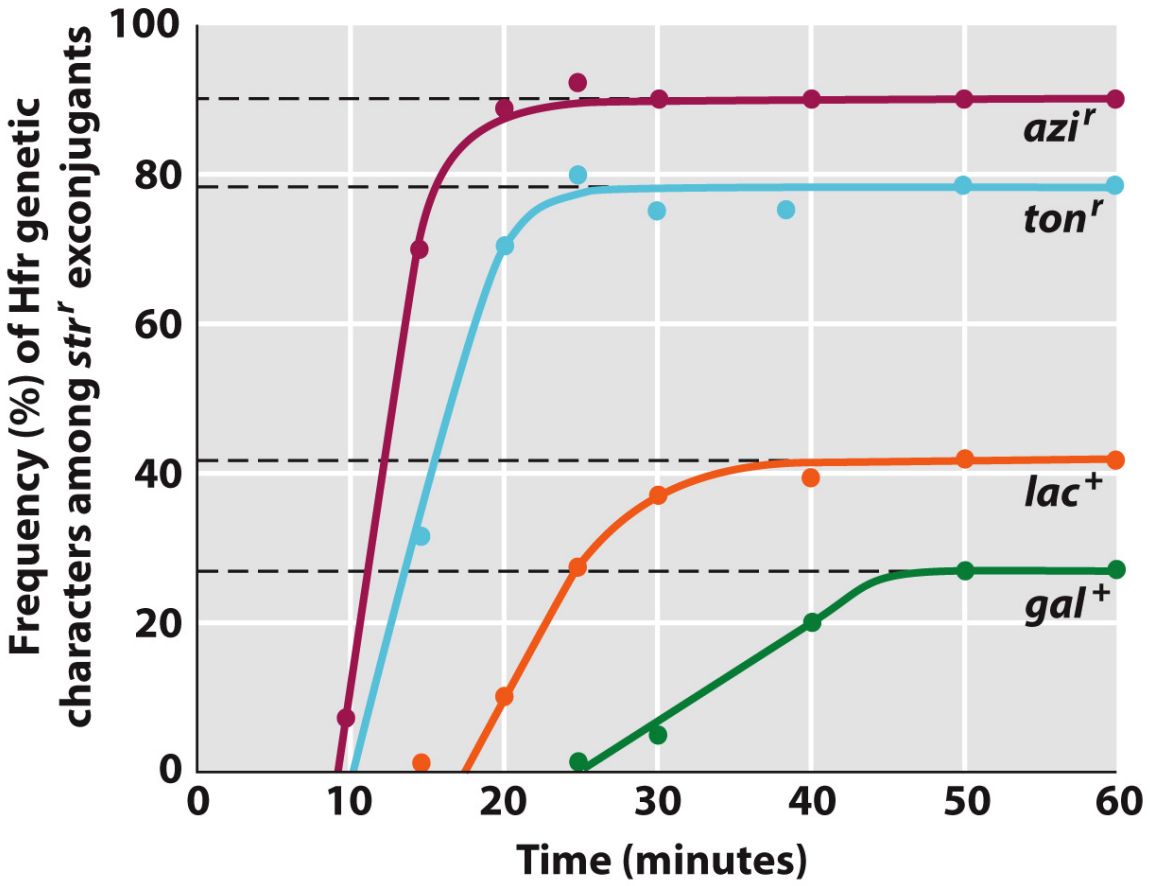

Figure 5-12a
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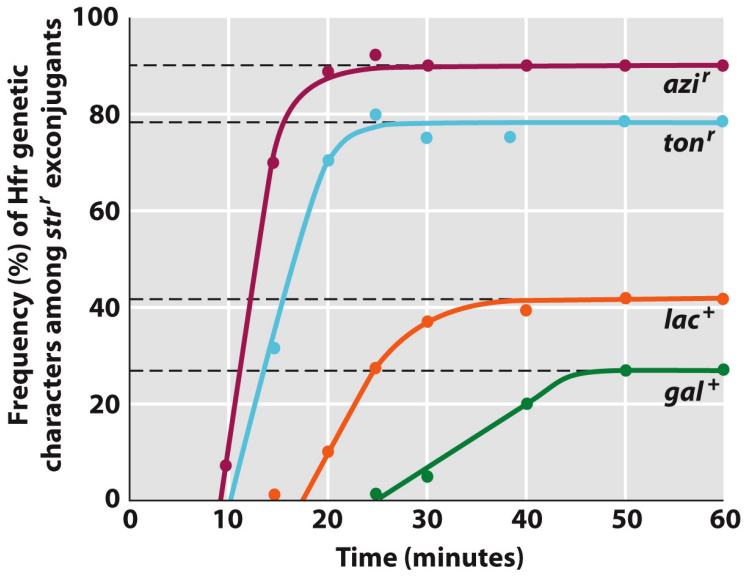

Figure 5-12a
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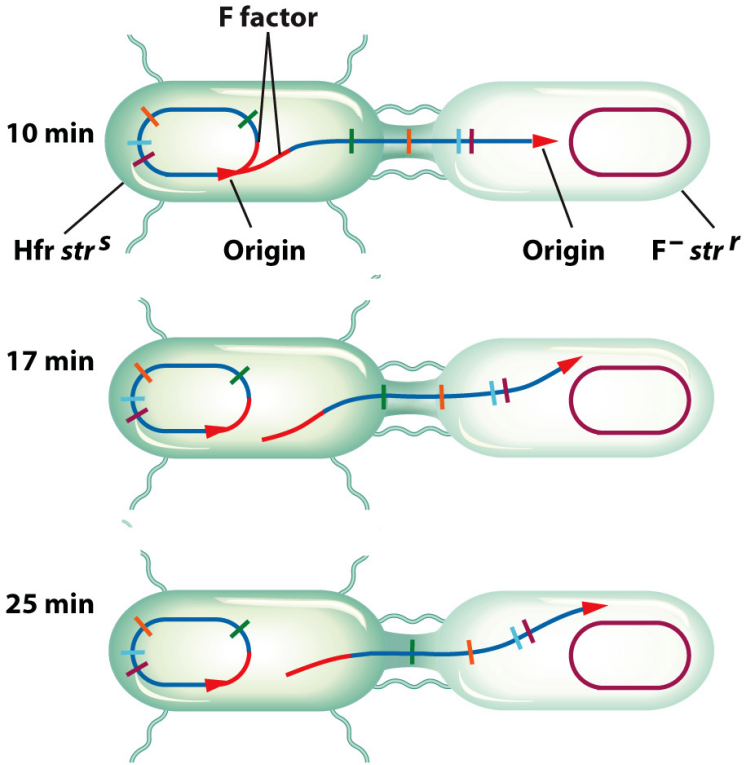

Figure 5-12b
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The F integration site determines the order of gene transfer in Hfrs

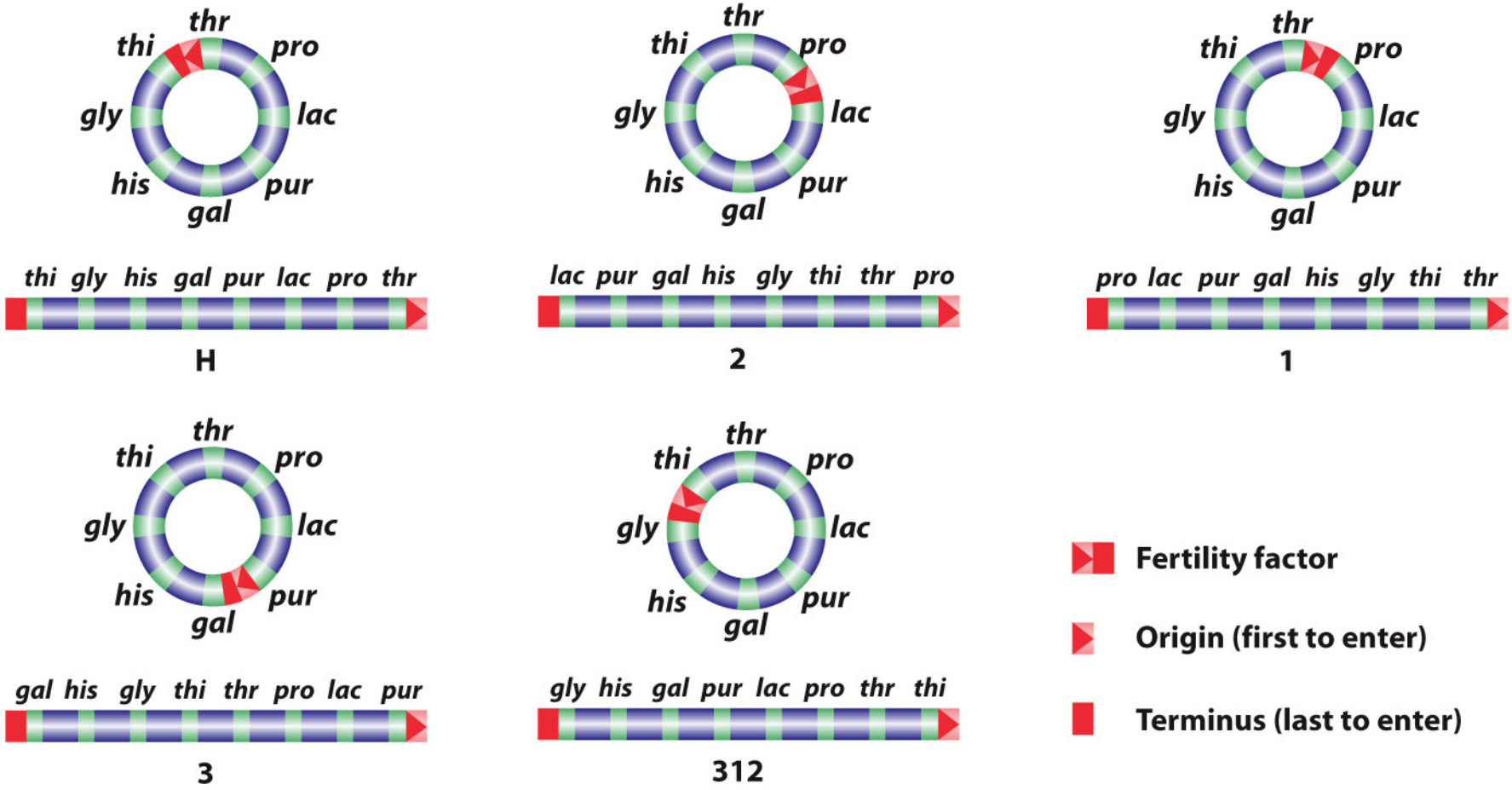

Figure 5-14
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Accompanying Markers in Specific P1 Transductions

TABLE 5-3 Accompanying Markers in Specific P1 Transductions

Experiment	Selected marker	Unselected markers
1	*leu*$^+$	50% are *azi*^{r}; 2% are *thr*$^+$
2	*thr*$^+$	3% are *leu*$^+$; 0% are *ari*^{r}
3	*leu*$^+$ and *thr*$^+$	0% are *azi*^{r}

Table 5-3
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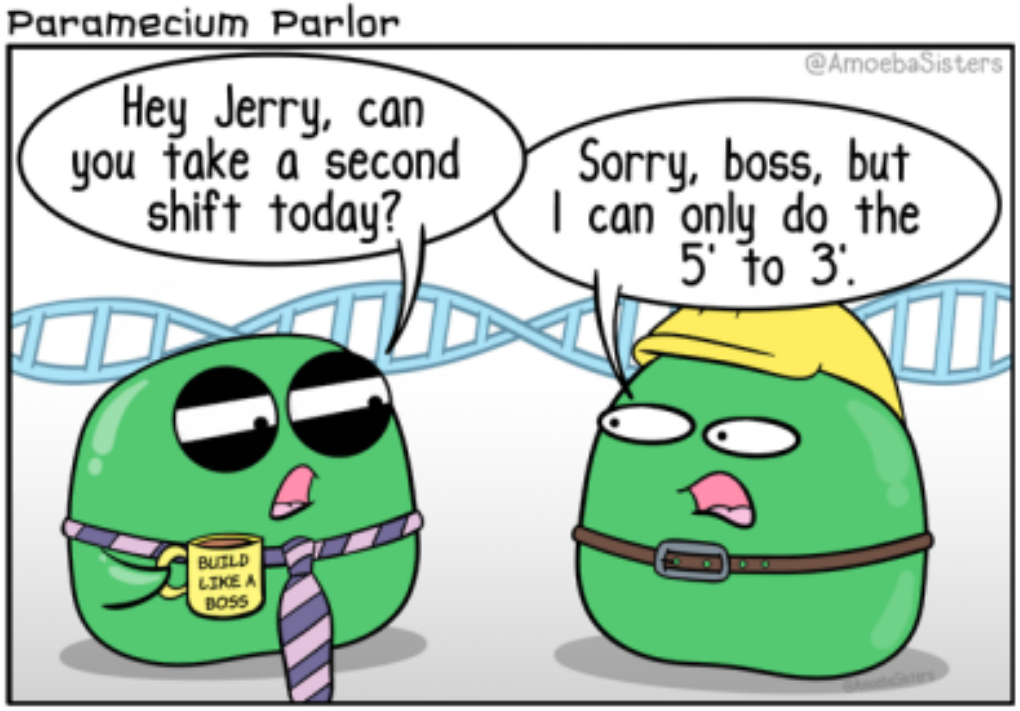
Chapter 7: DNA Structure and Replication



Structure of the four DNA nucleotides

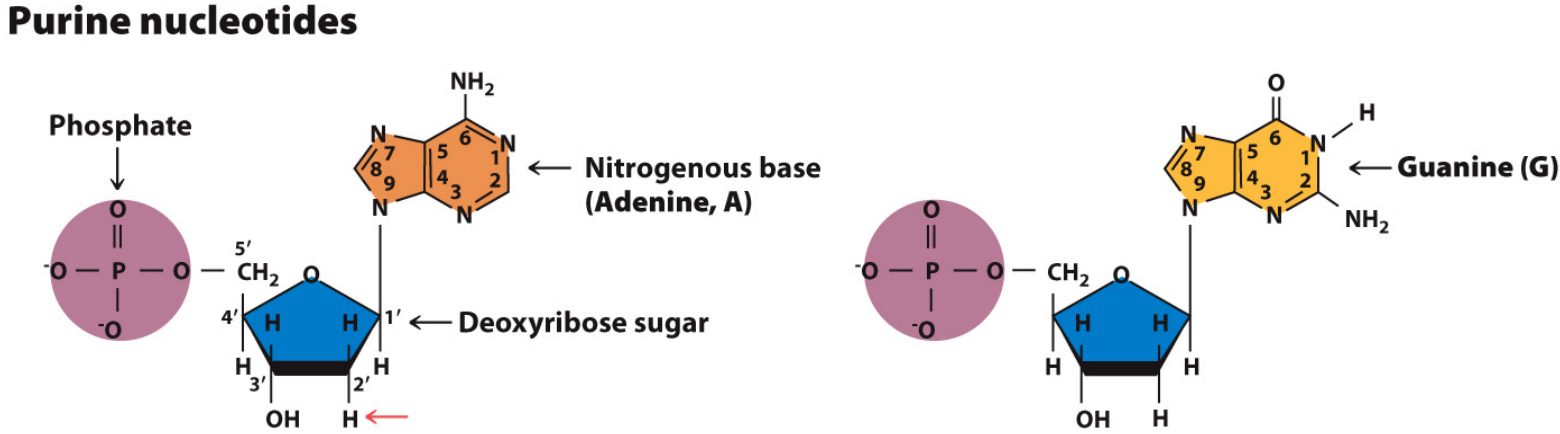


Figure 7-5 part 1
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Structure of the four DNA nucleotides

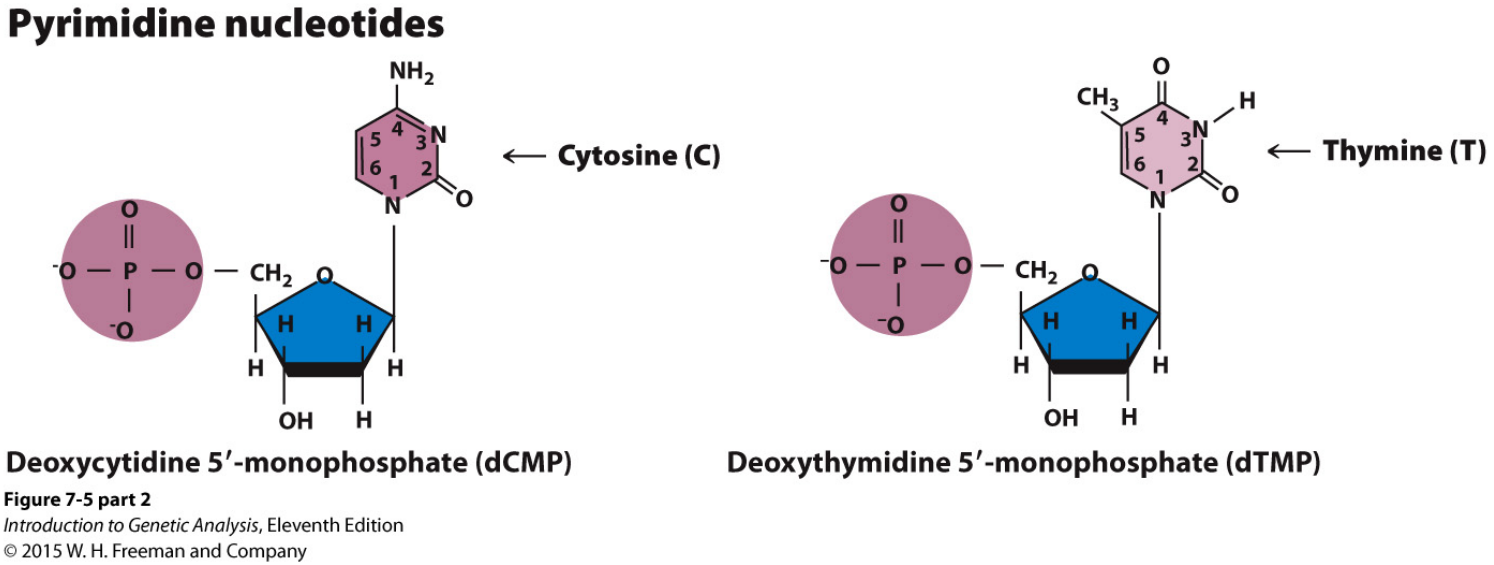

Figure 7-5 part 2
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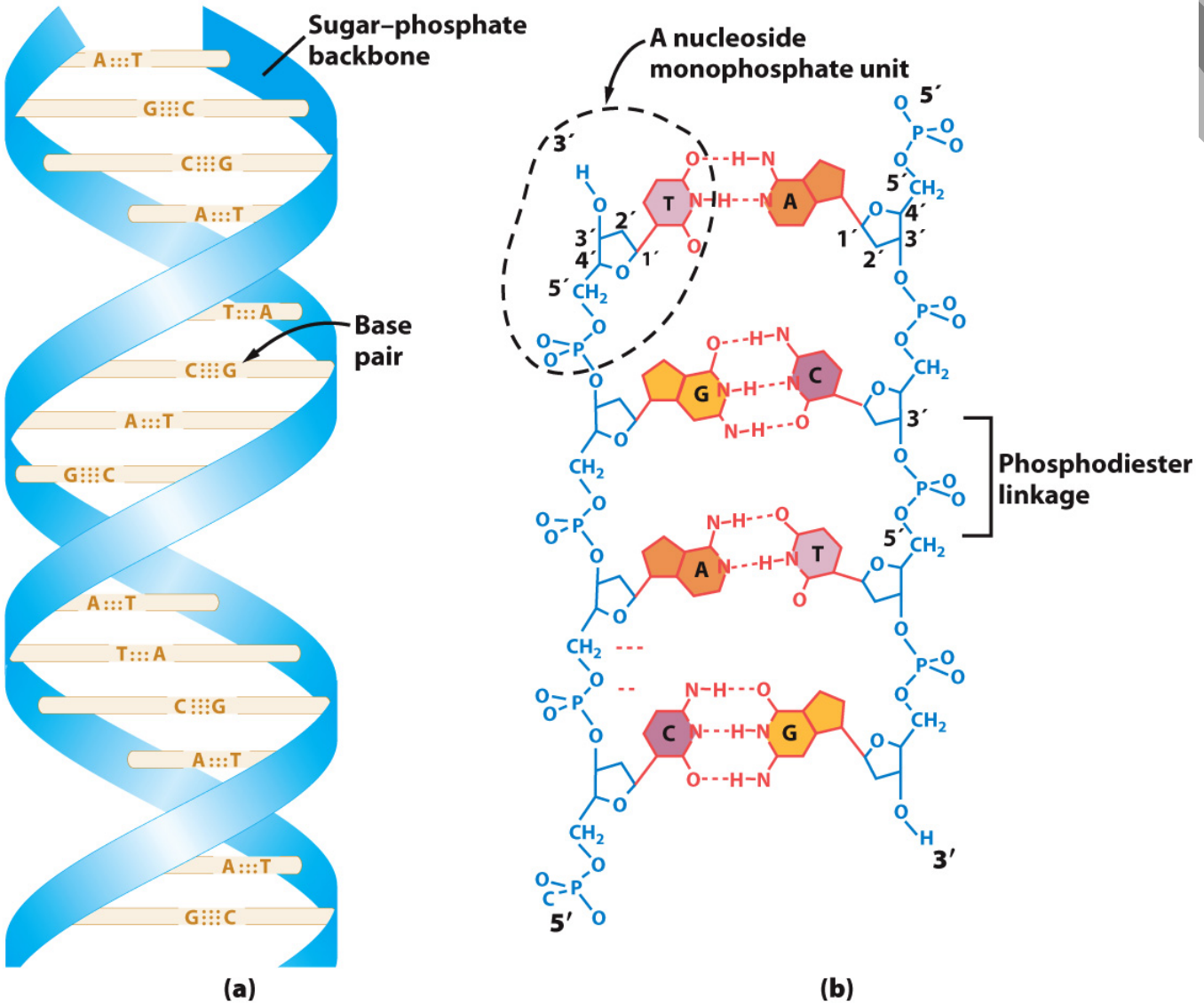

Figure 7-8
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Three alternative models for DNA replication

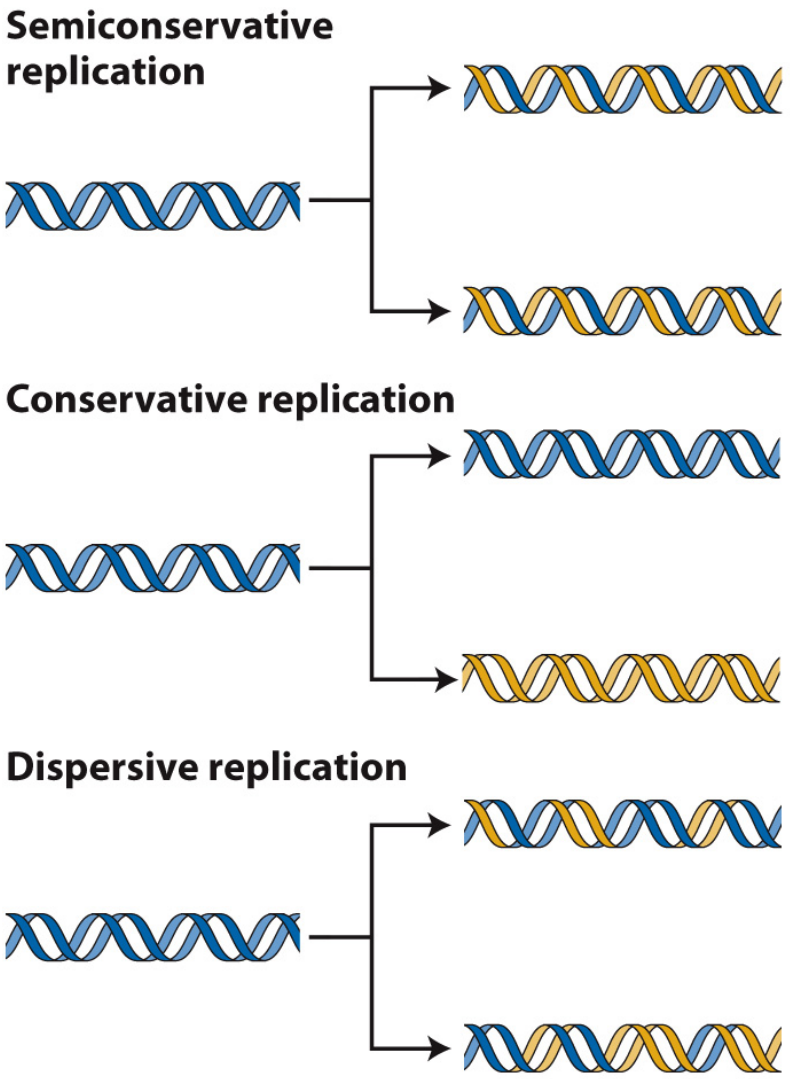

Figure 7-12
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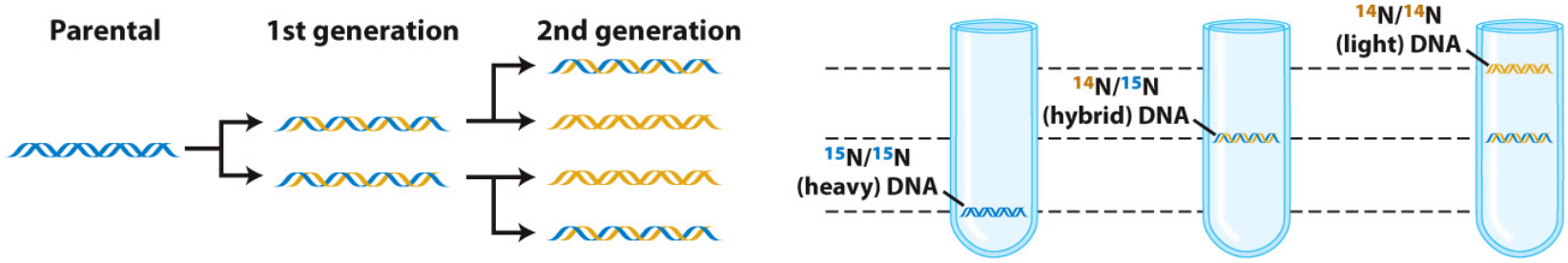
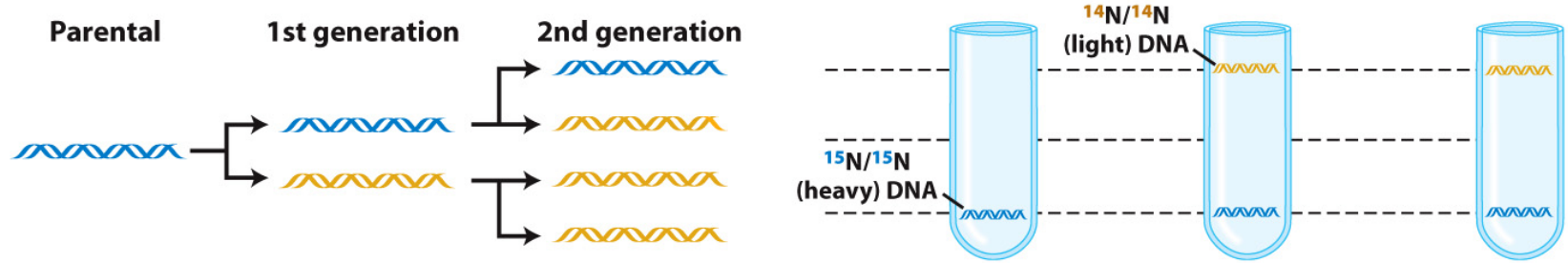
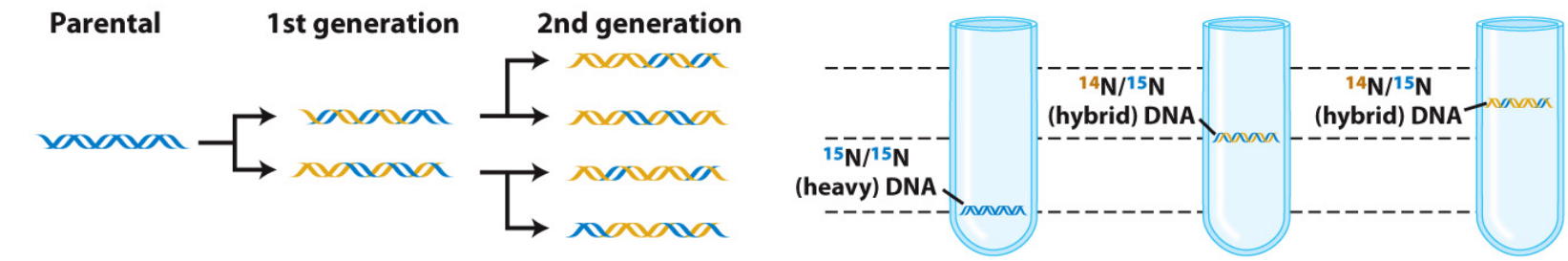
Predictions of semiconservative model



Predictions of conservative model



Predictions of dispersive model



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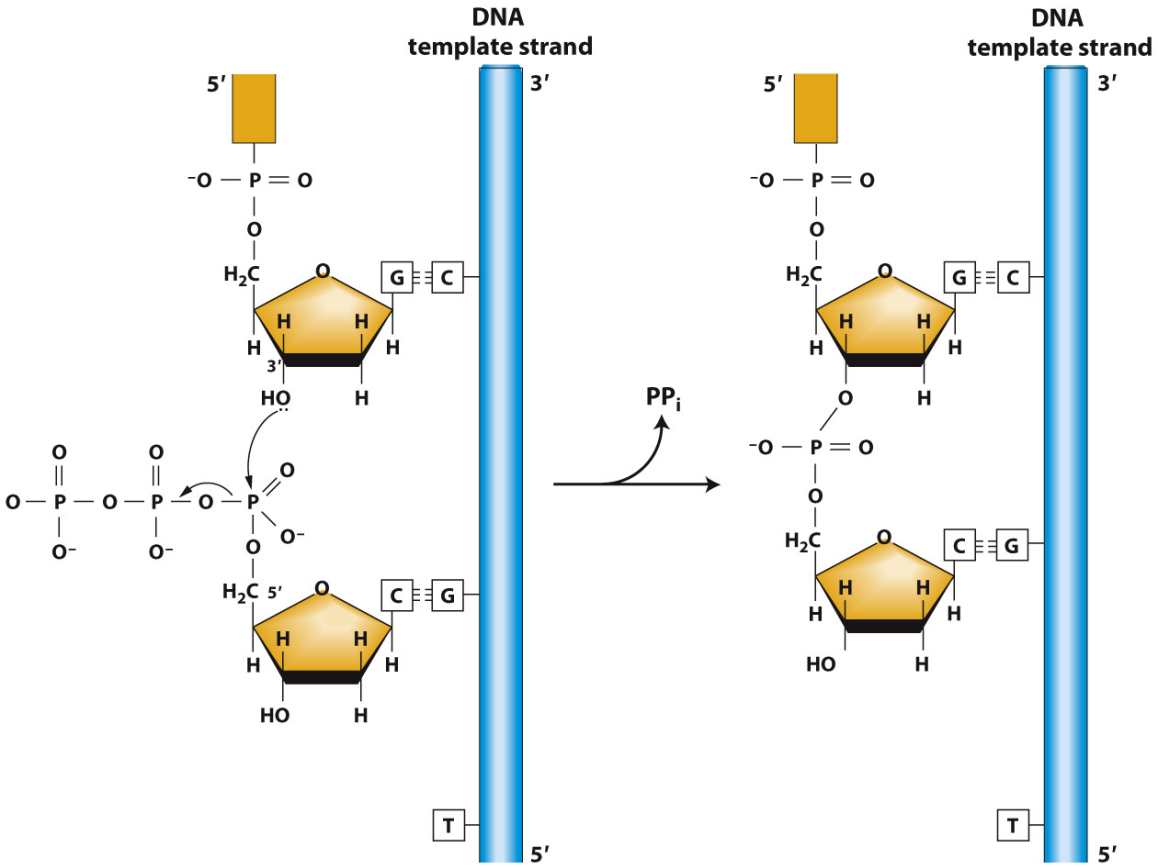
Reaction catalyzed by DNA polymerase



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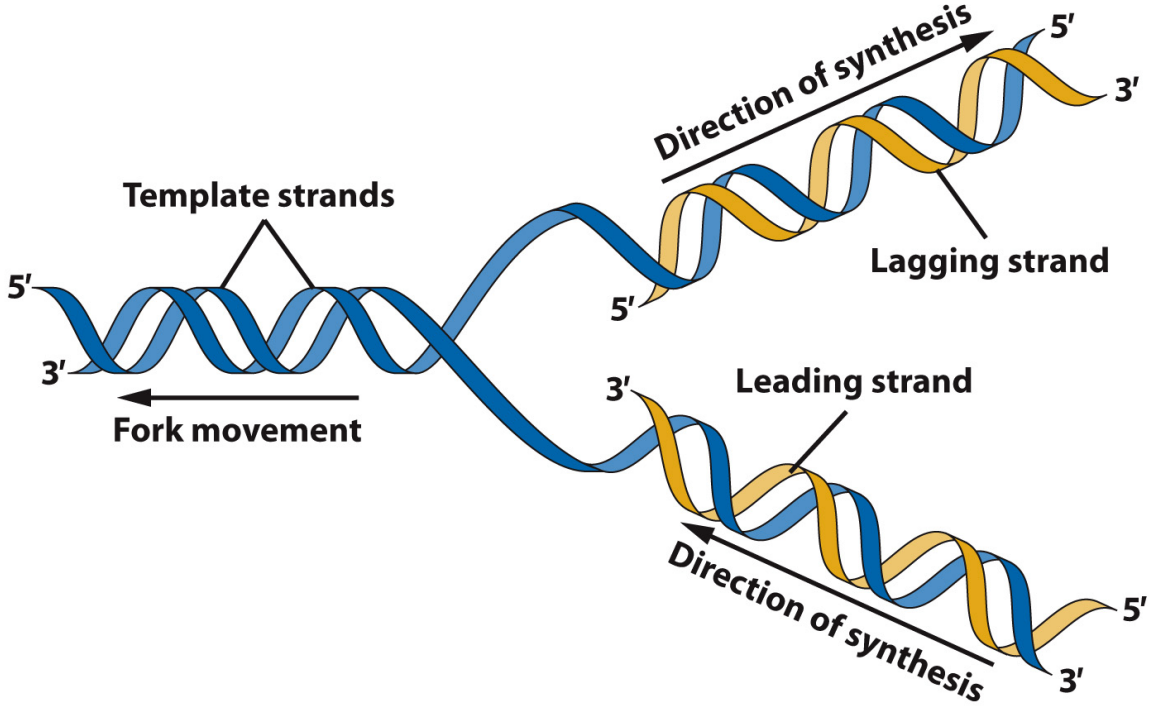
DNA replication at the growing fork



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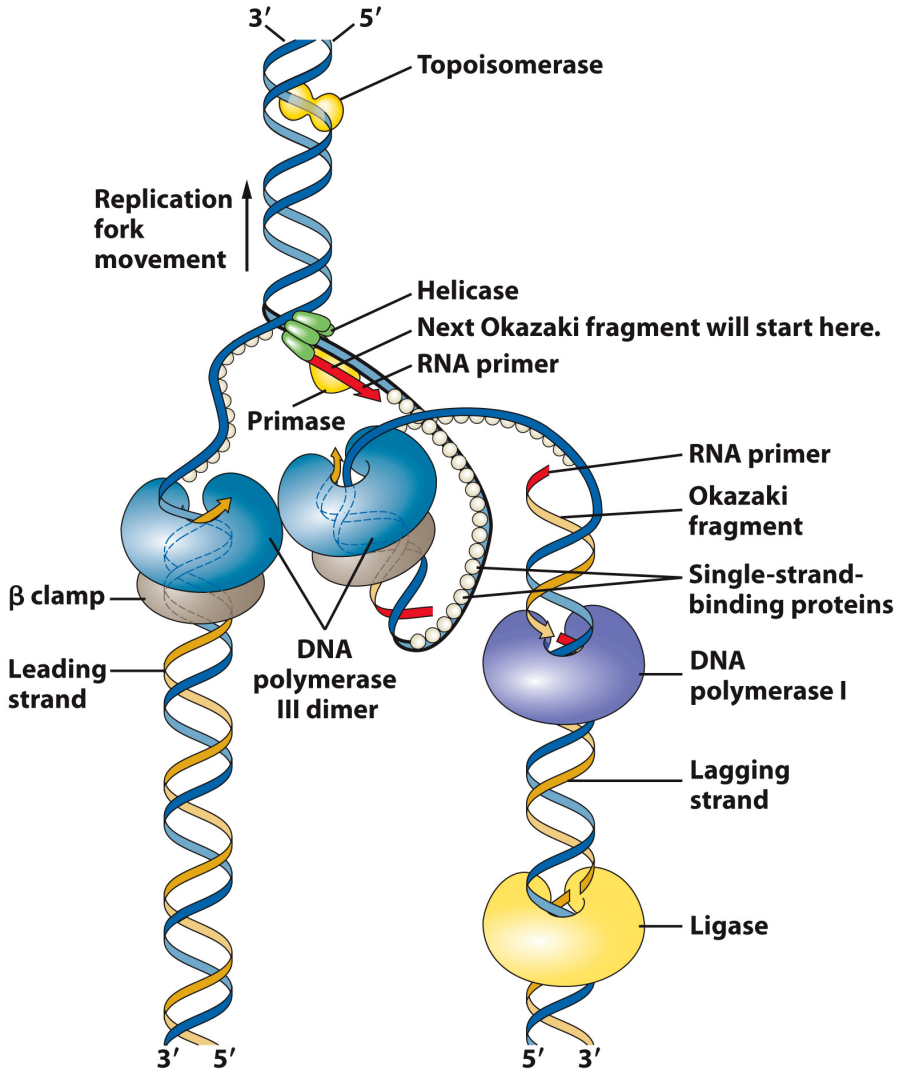
Proteins at work at the replication fork



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DNA replication proceeds in two directions

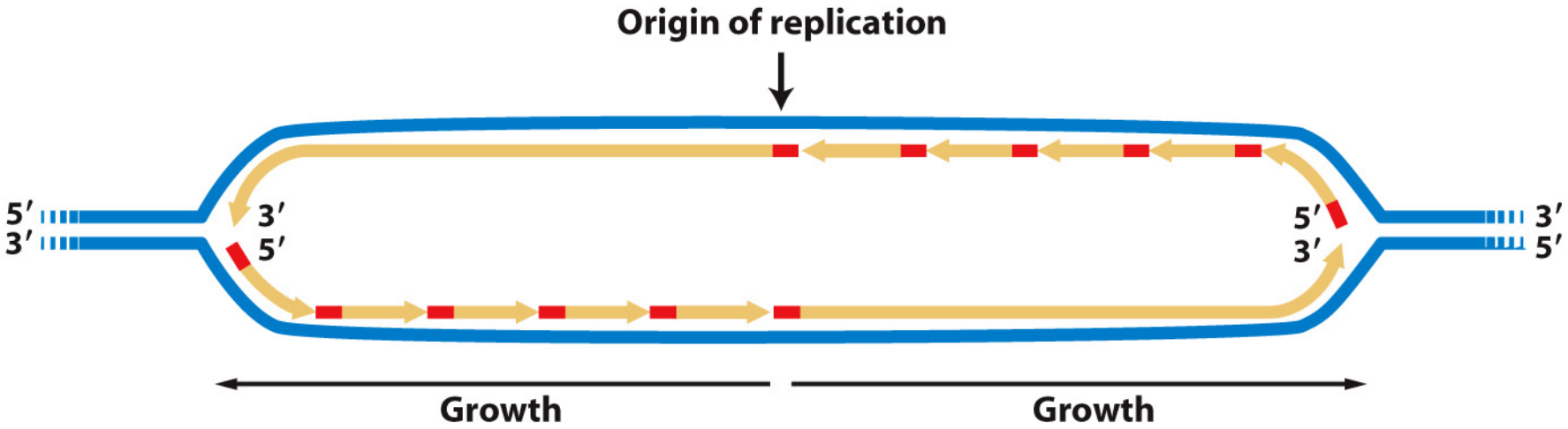

Figure 7-23a
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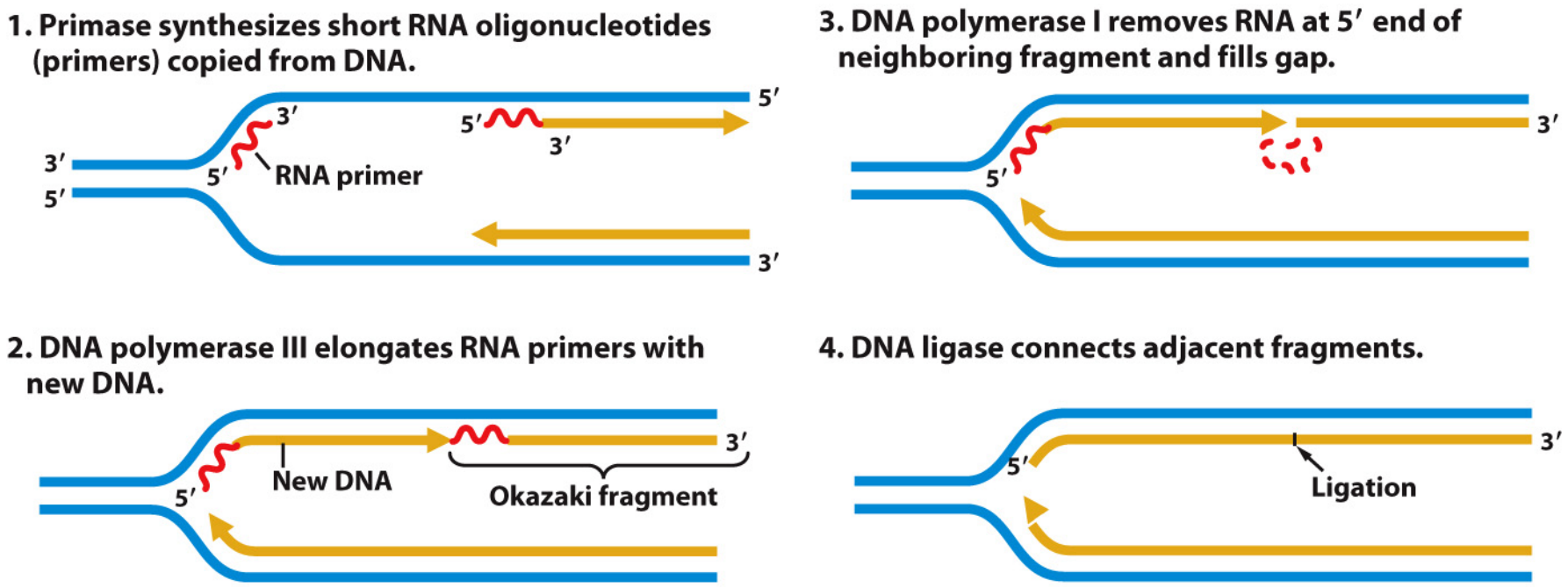
Synthesizing the lagging strand



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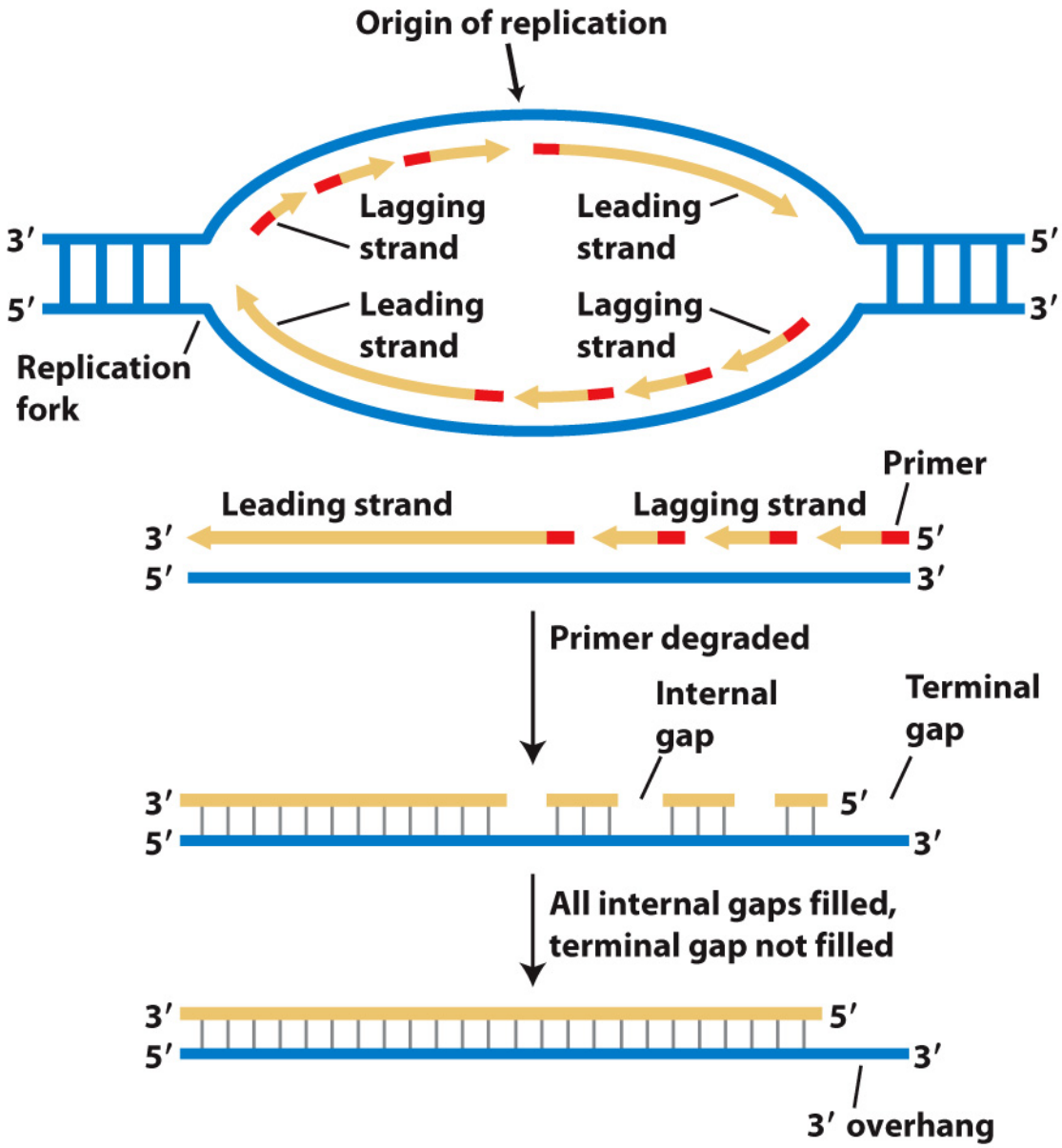
The replication problem at chromosome ends



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Telomere lengthening

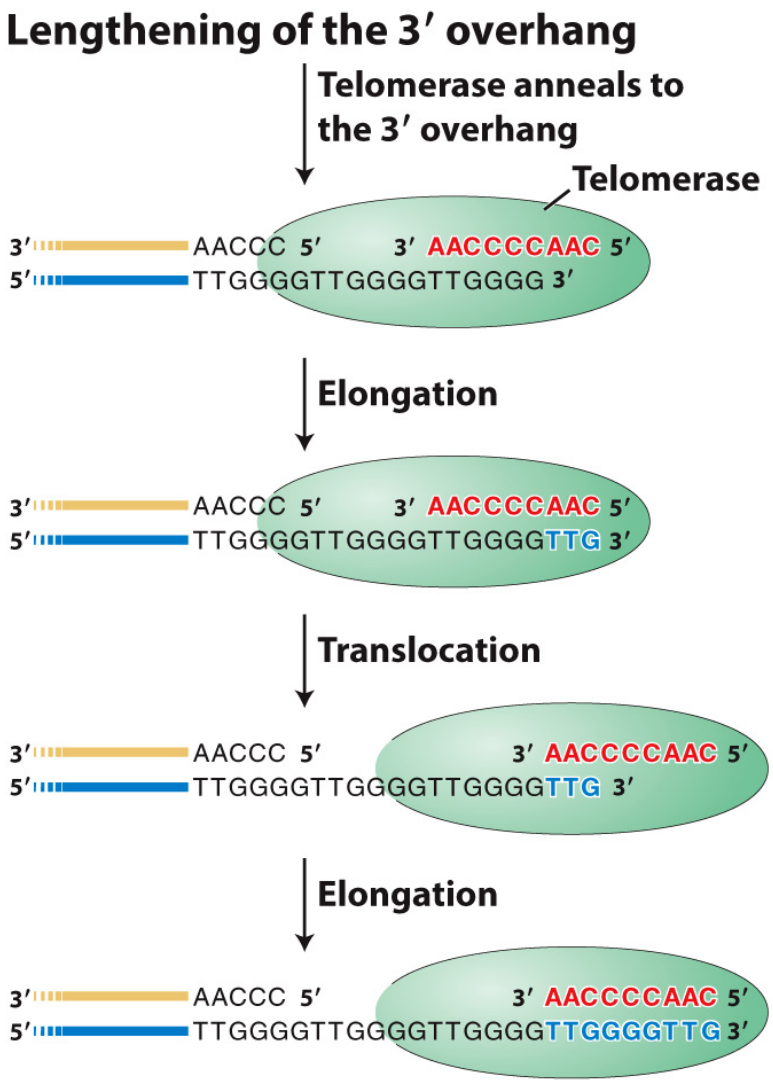

Figure 7-27a
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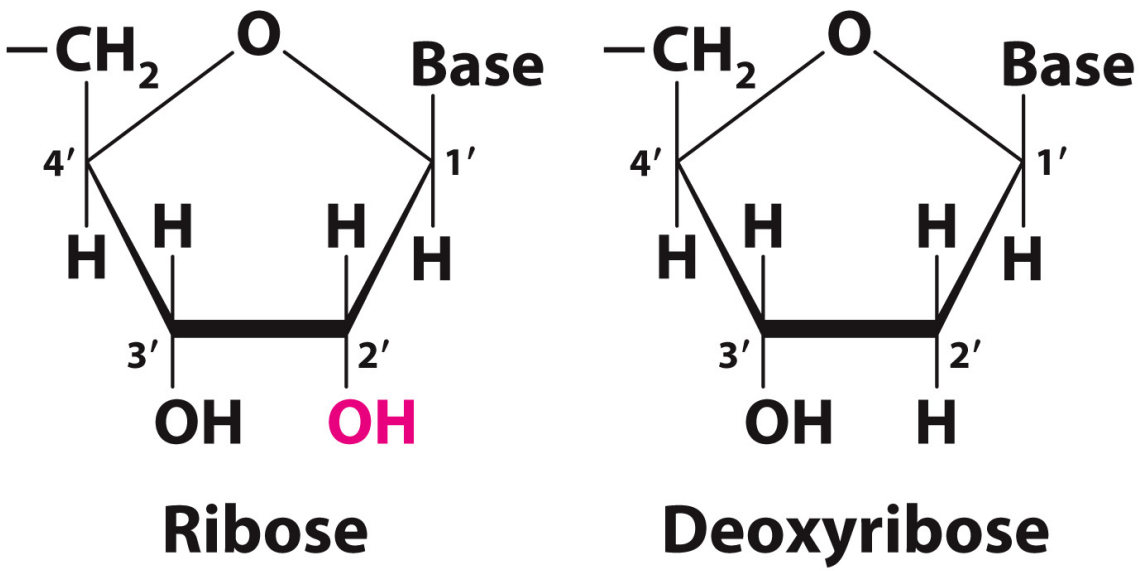
Chapter 8: RNA and Transcription

Deoxyribose versus ribose sugars



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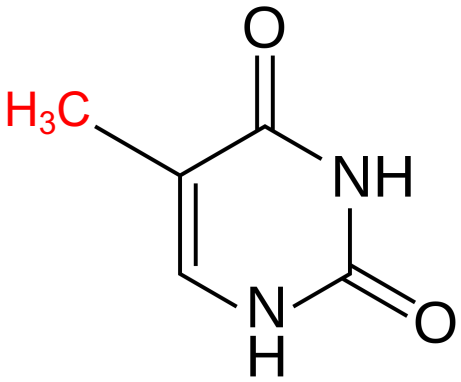
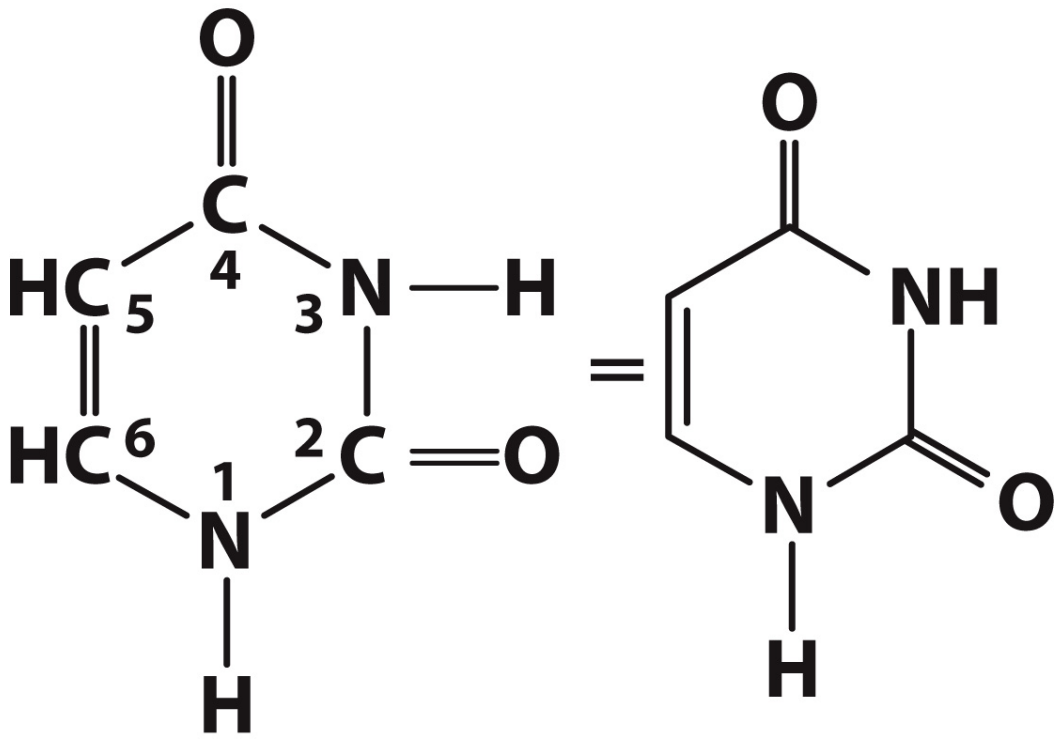
Uracil replaces thymine



Thymine



Uracil

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The four ribonucleotides found in RNA

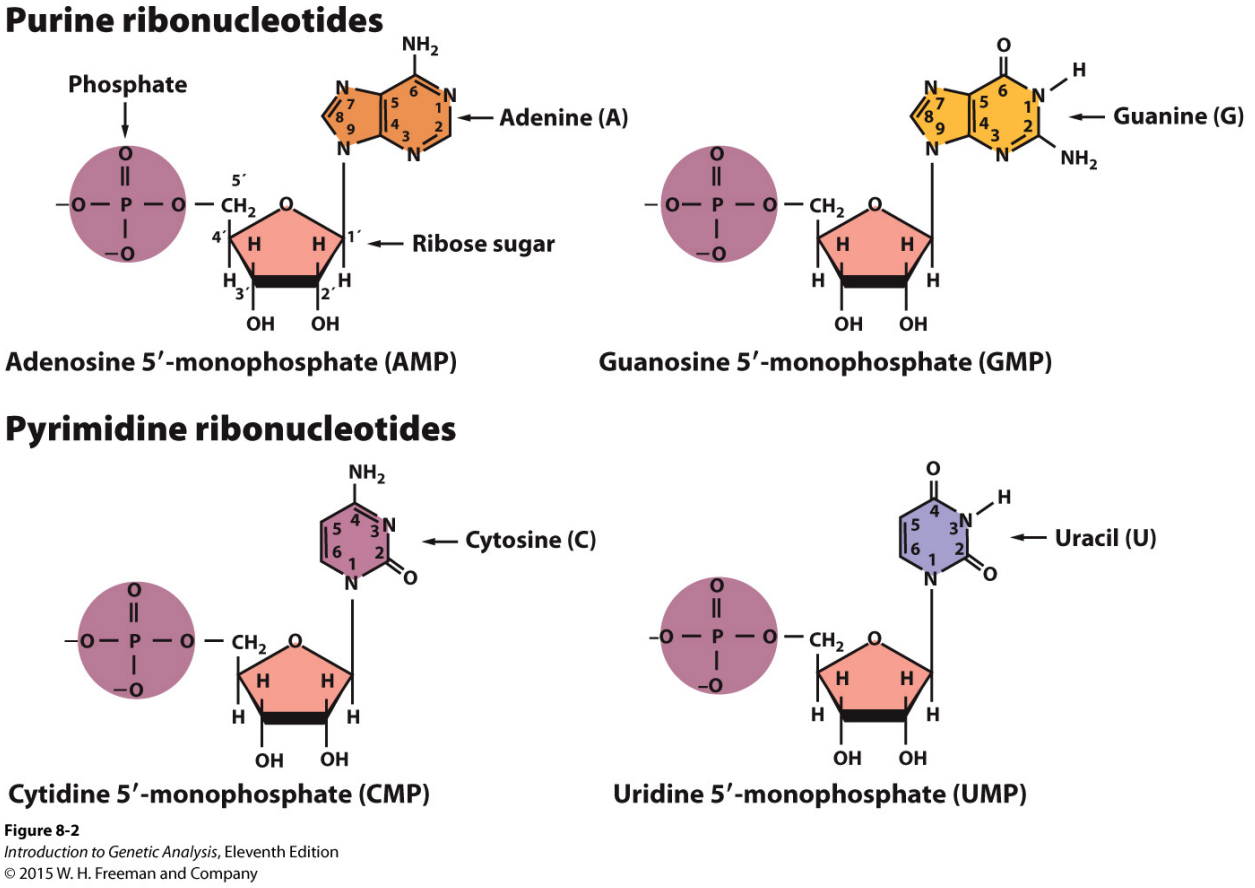

Figure 8-2
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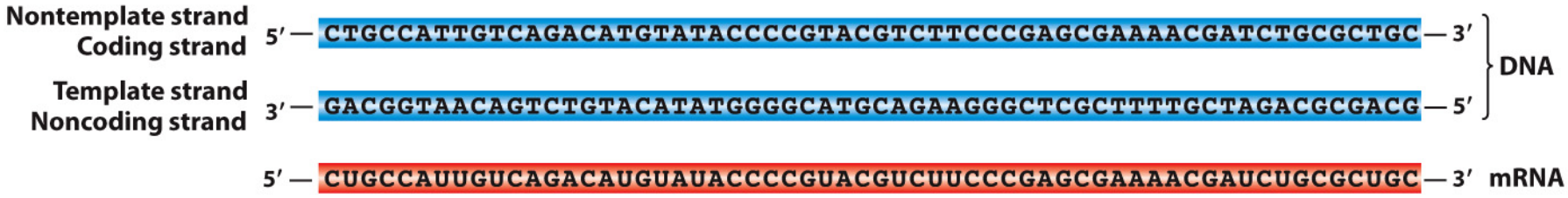
Sequences of DNA and transcribed RNA



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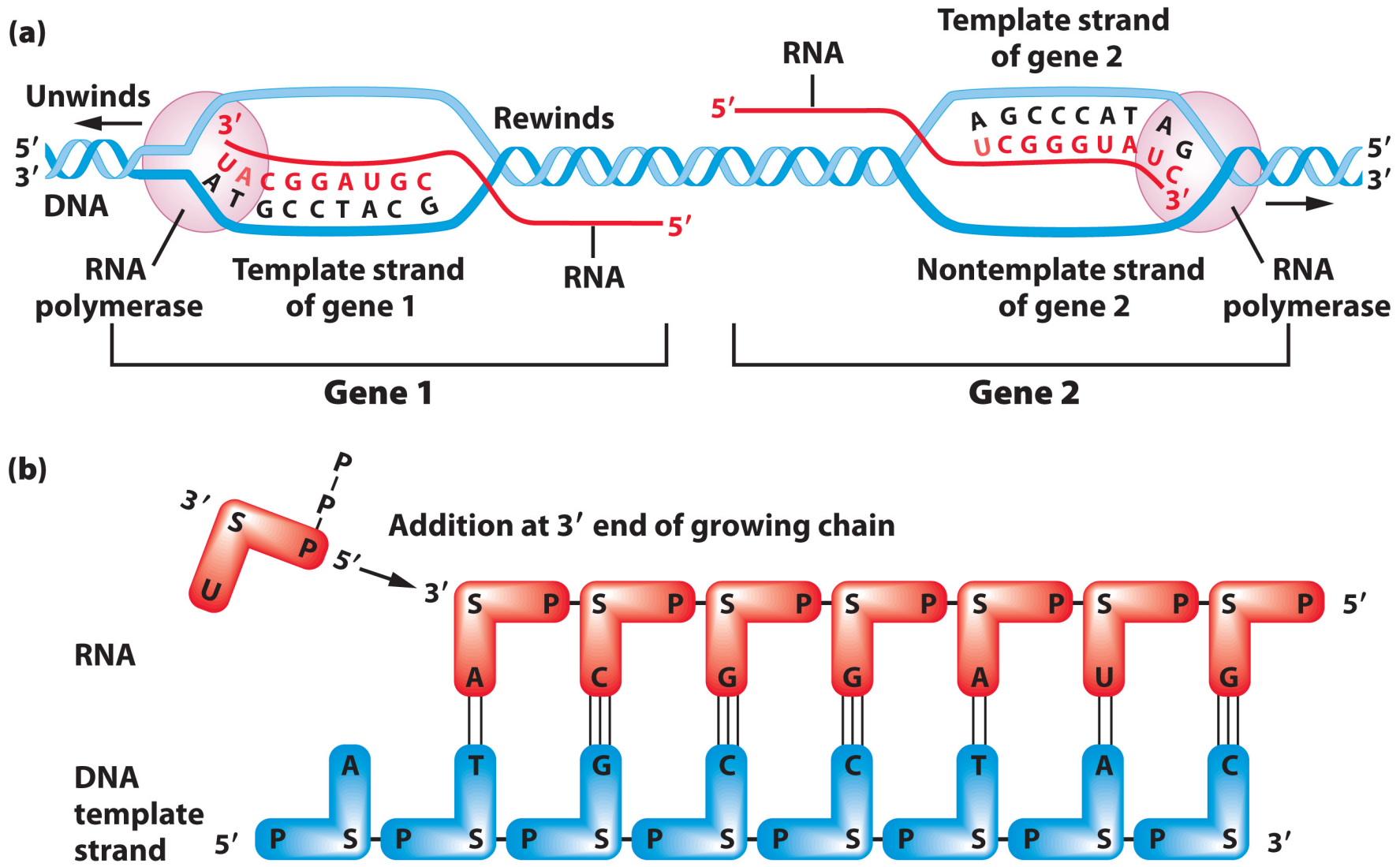
Overview of transcription



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Transcription initiation in prokaryotes

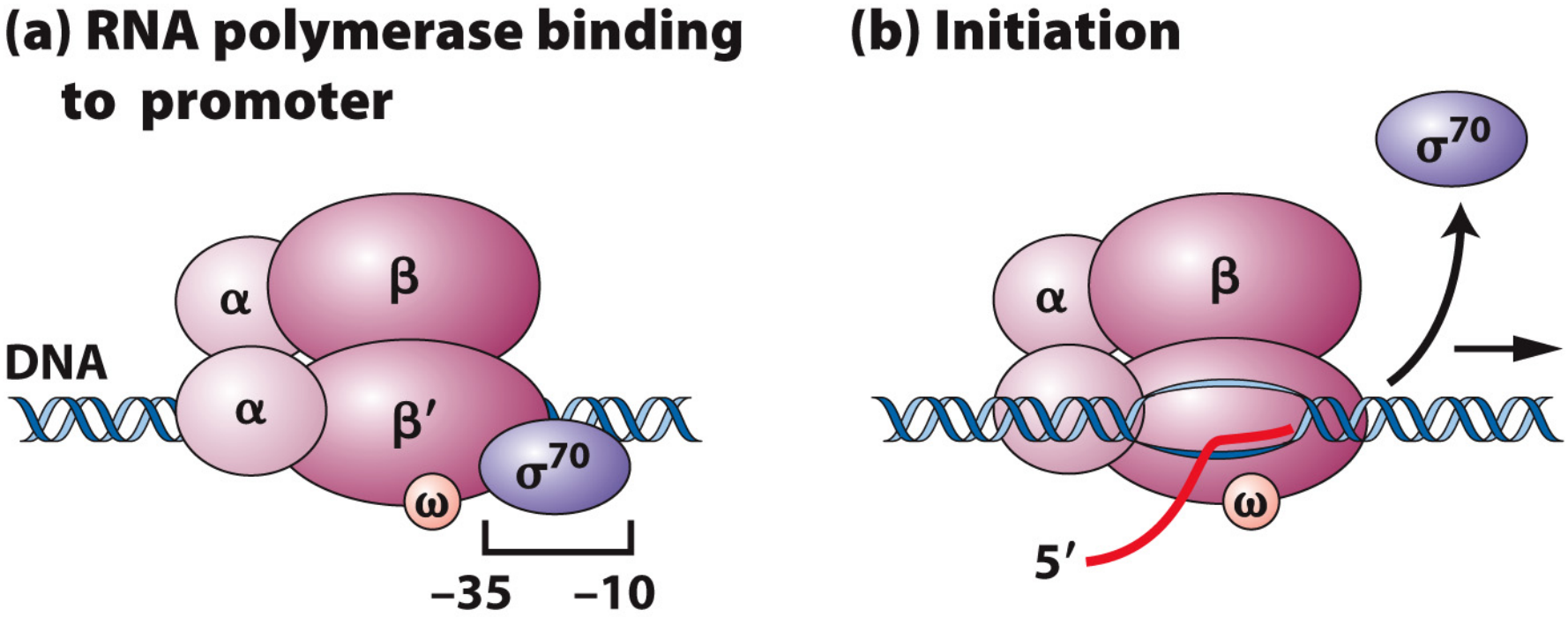

Figure 8-8
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Elongation

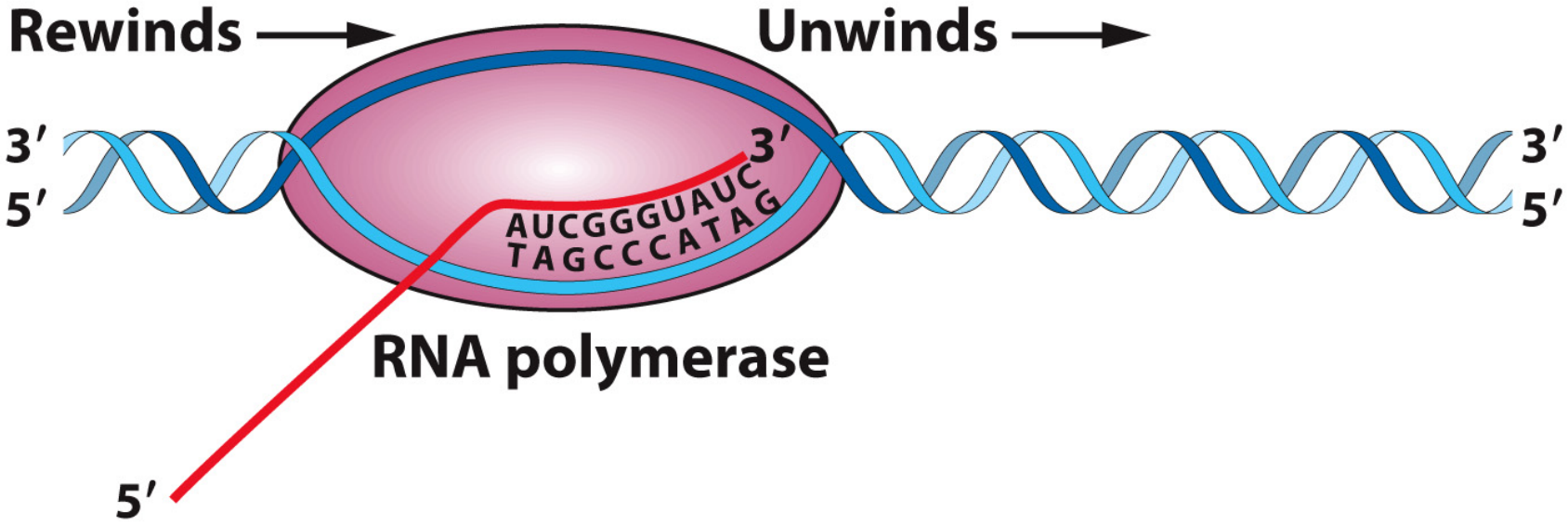

Figure 8-9a
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Termination: intrinsic mechanism

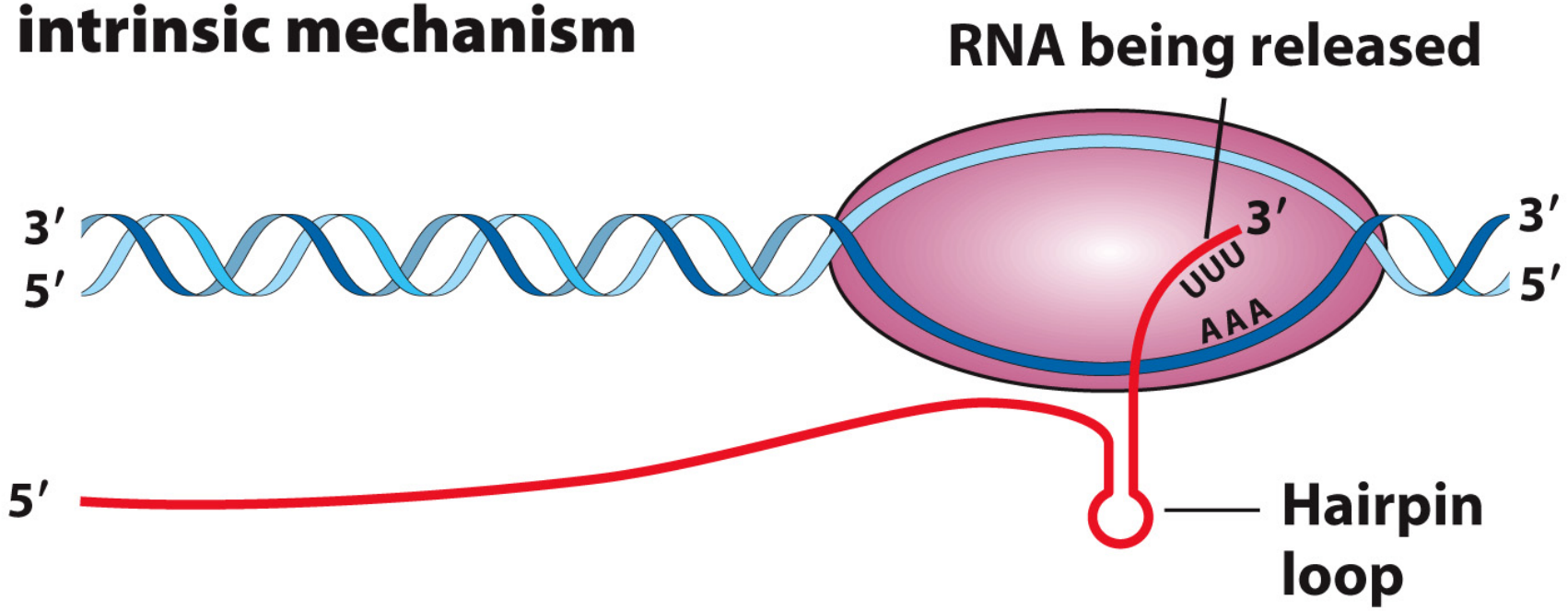

Figure 8-9b
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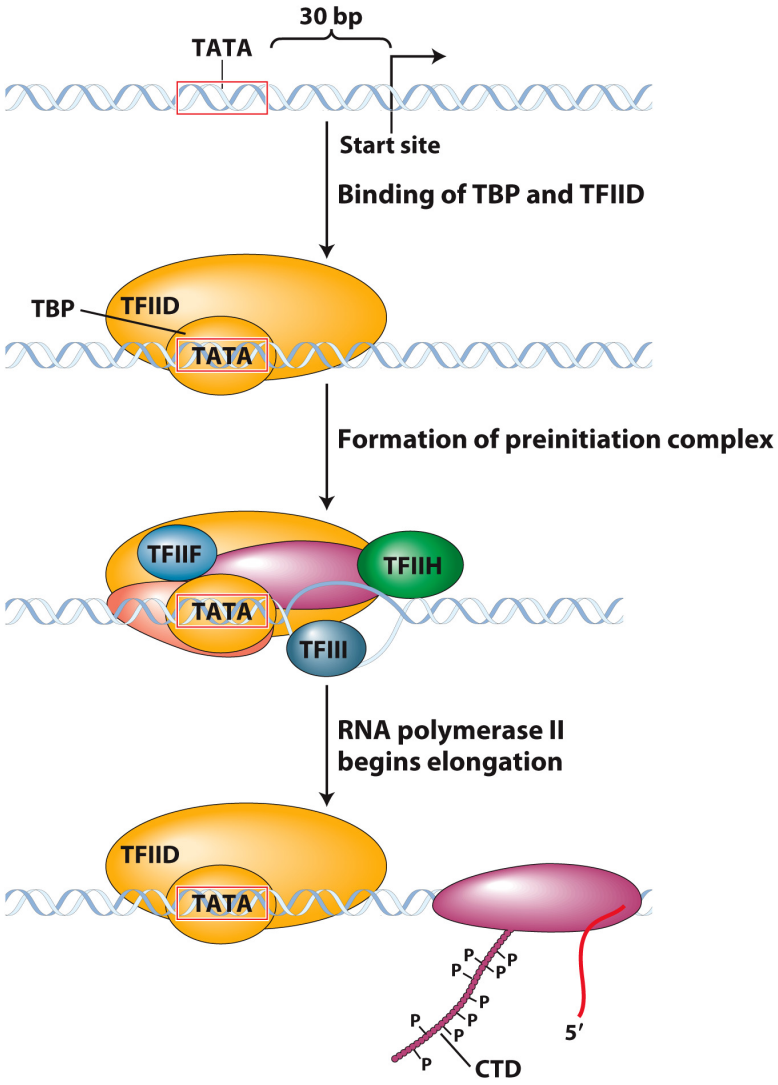
Transcription initiation in eukaryotes



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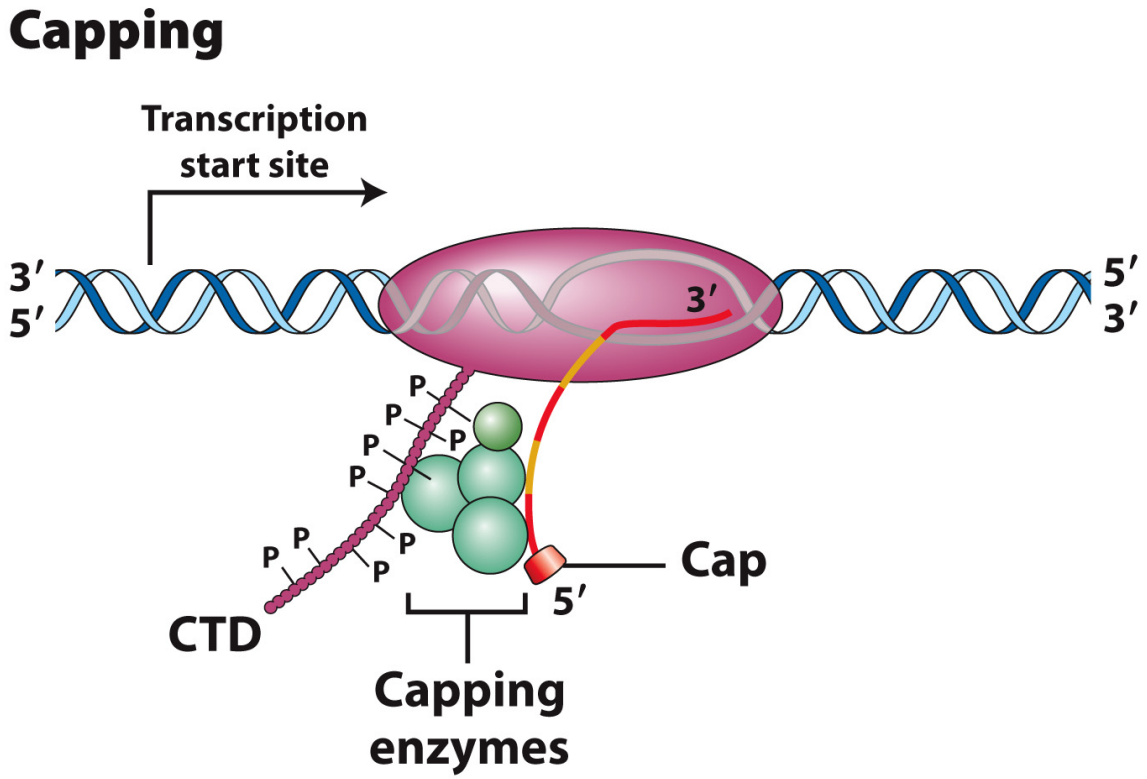
Cotranscriptional processing of RNA



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Cotranscriptional processing of RNA

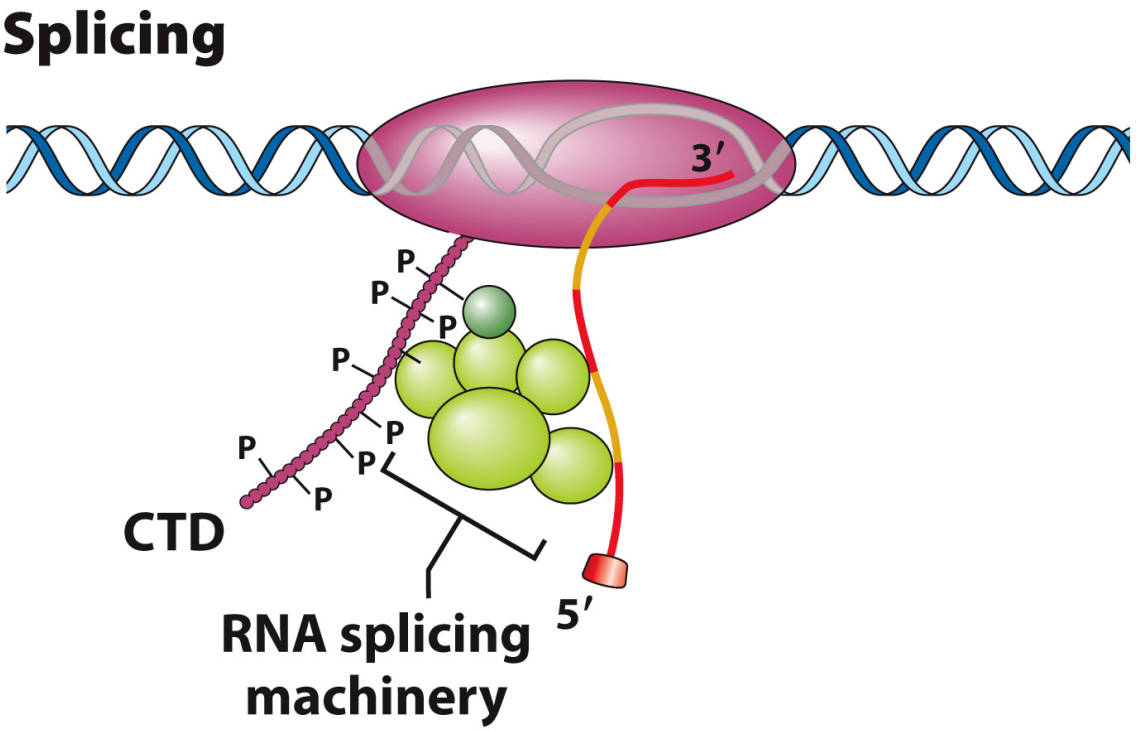

Figure 8-13b
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Cotranscriptional processing of RNA

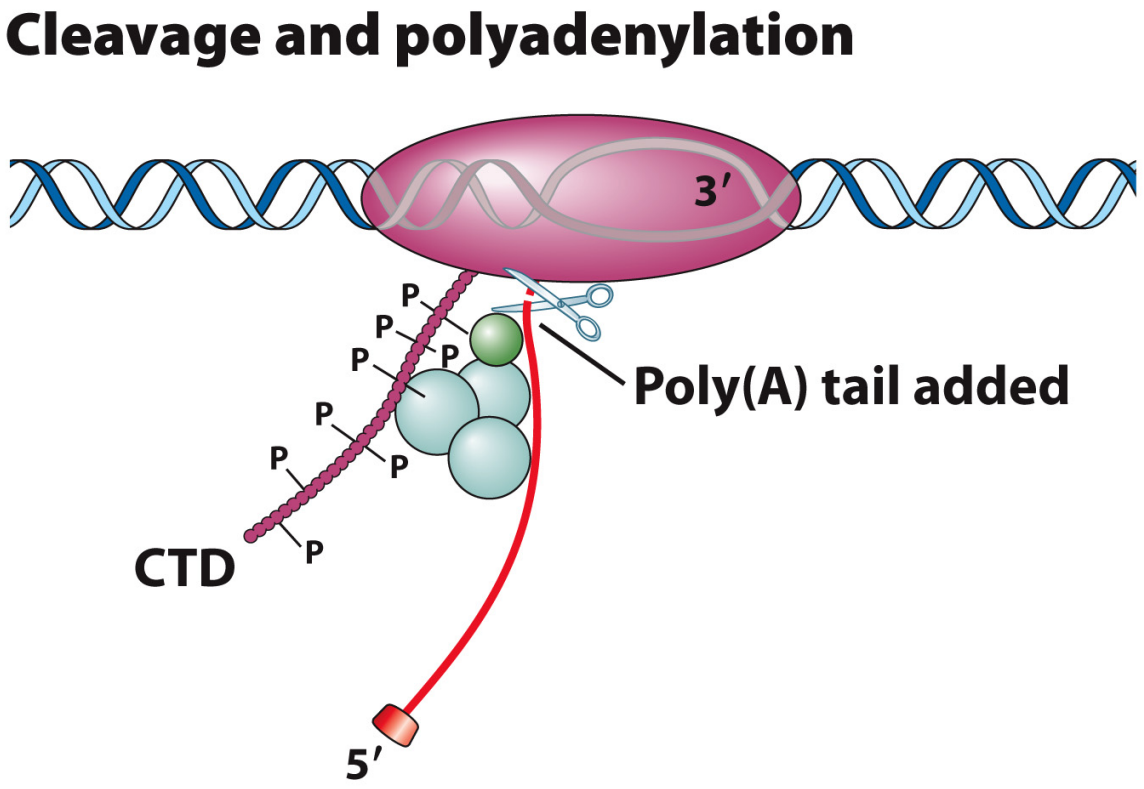

Figure 8-13c
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Cotranscriptional processing of RNA

Figure 8-13d
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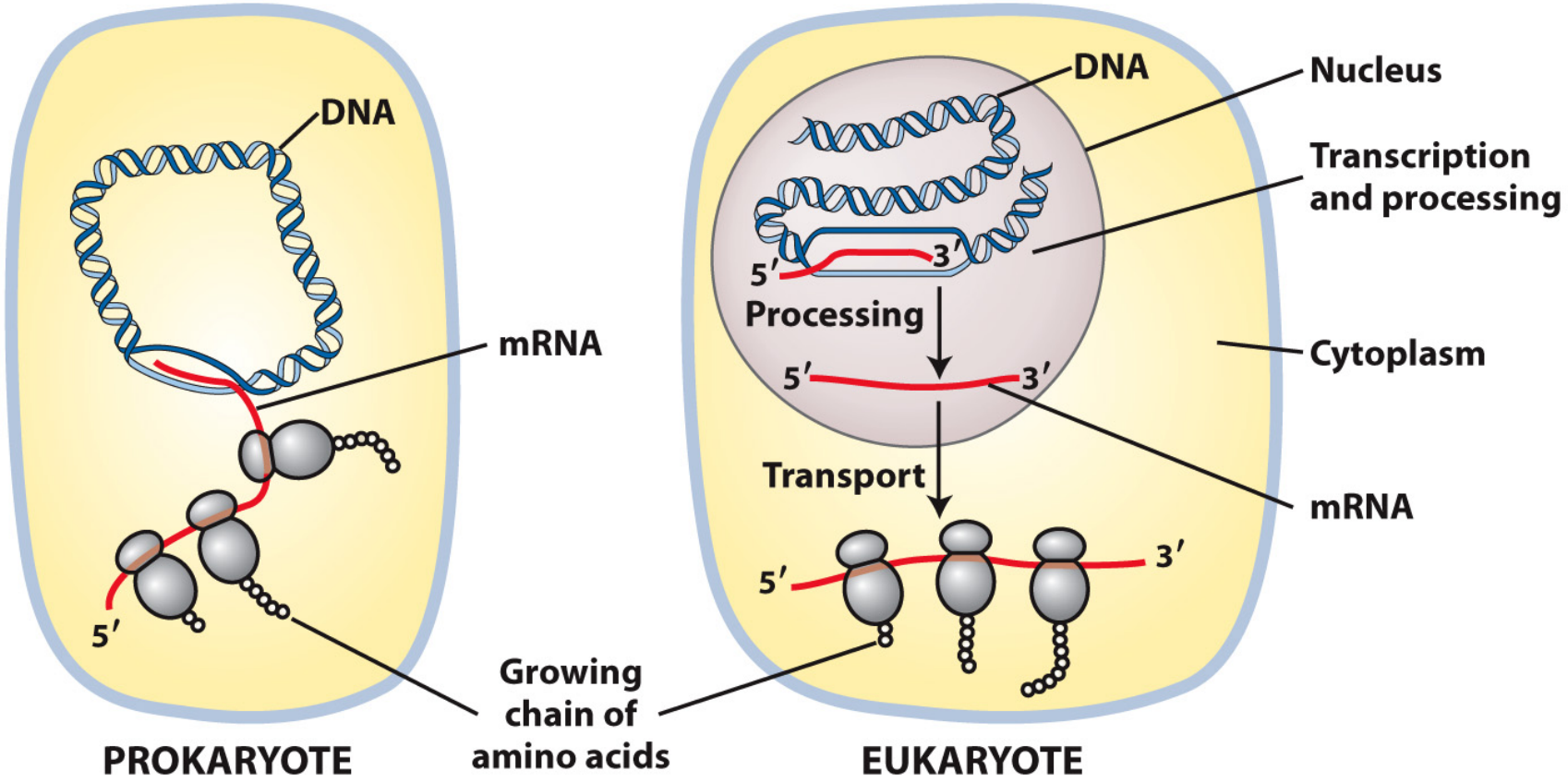

Figure 8-11
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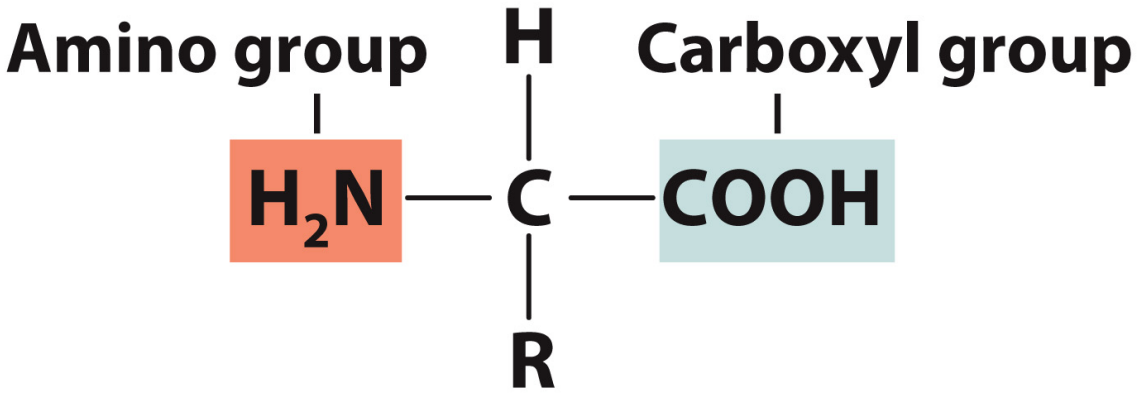
Chapter 9: Proteins and the Genetic Code

Amino acid structure



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The peptide bond

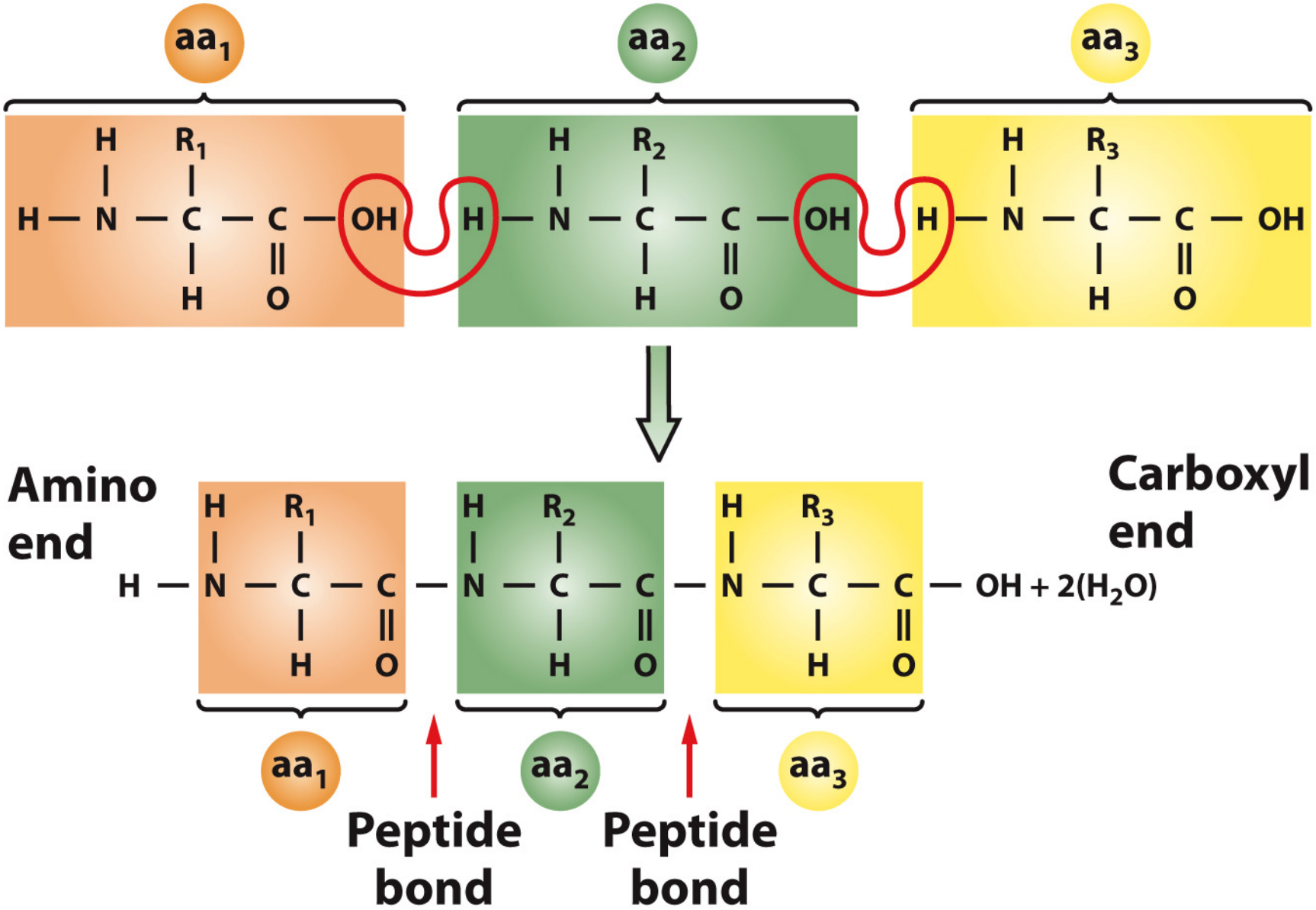

Figure 9-2a
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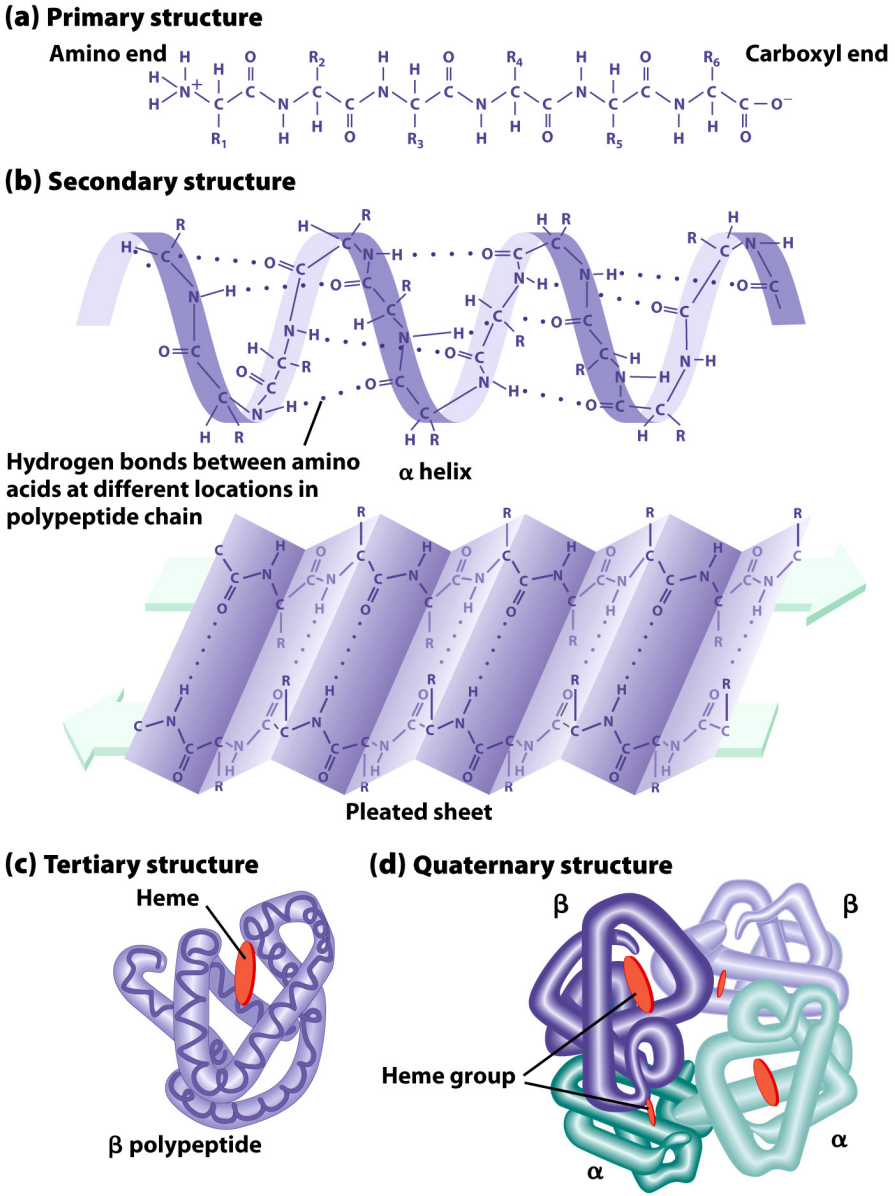
Levels of protein structure



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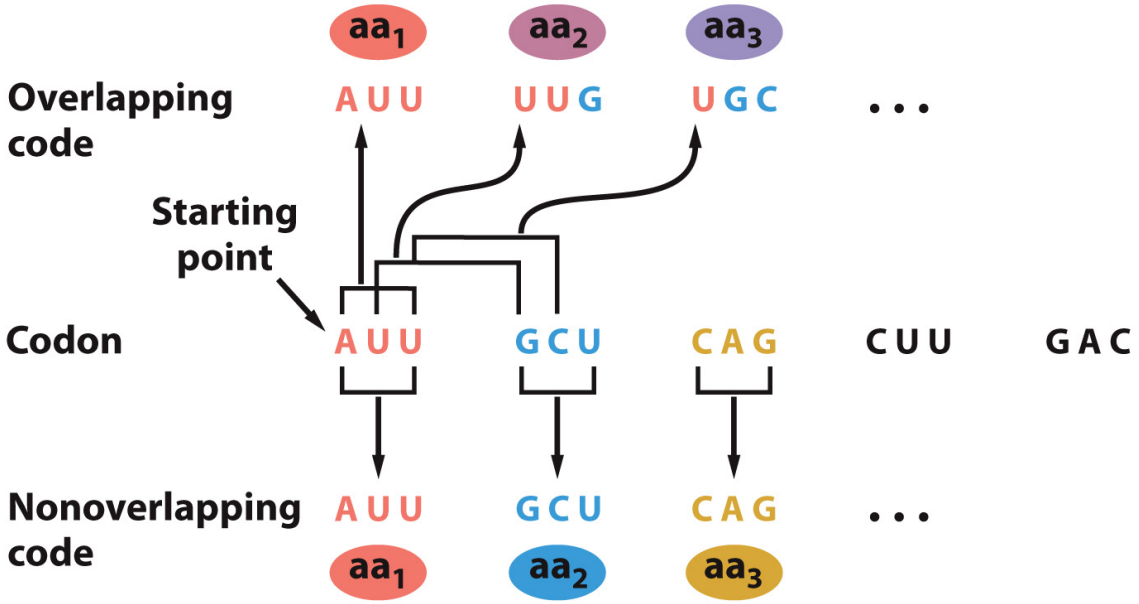
Overlapping versus nonoverlapping genetic codes



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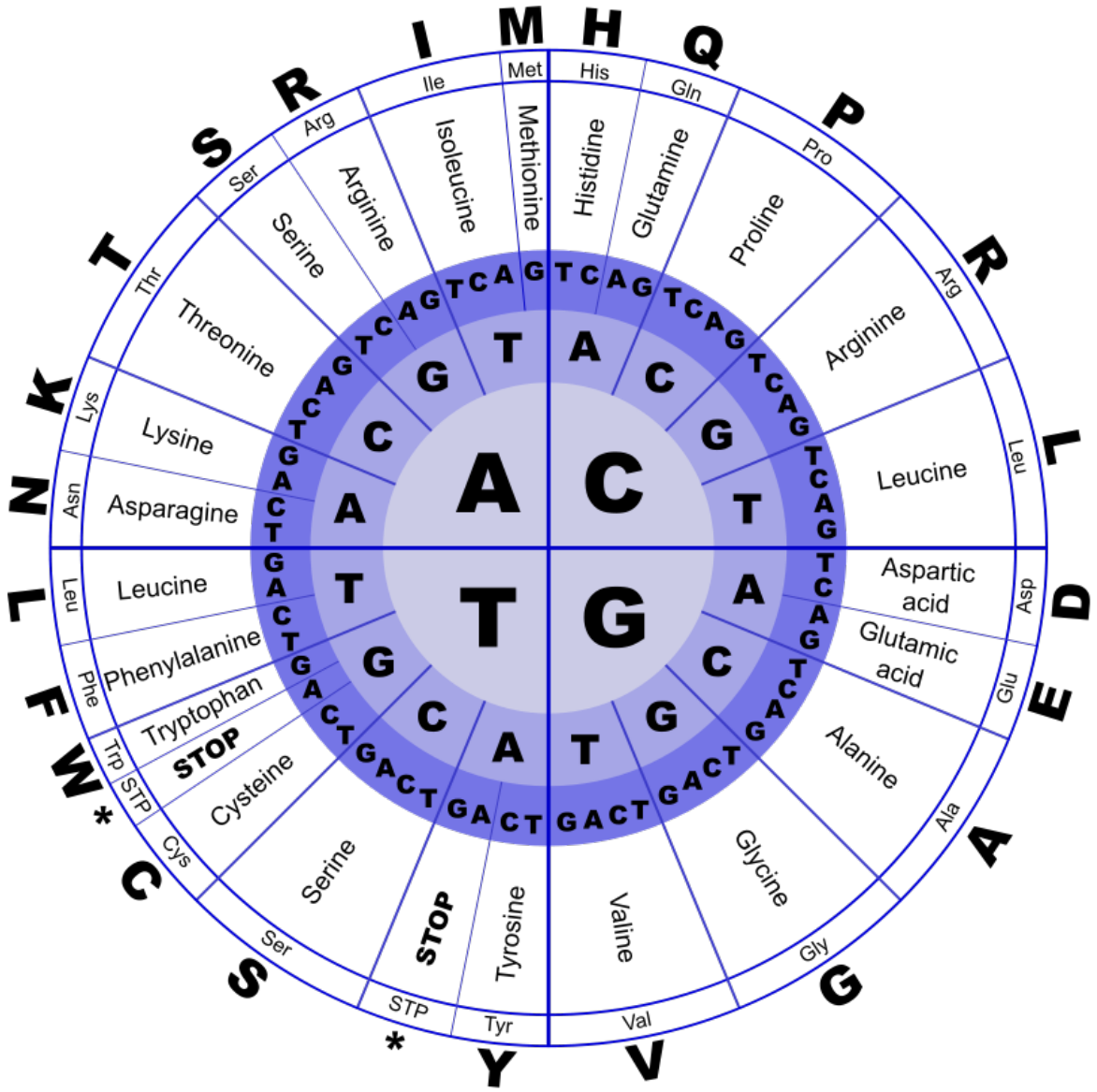
The genetic code



The structure of tRNA

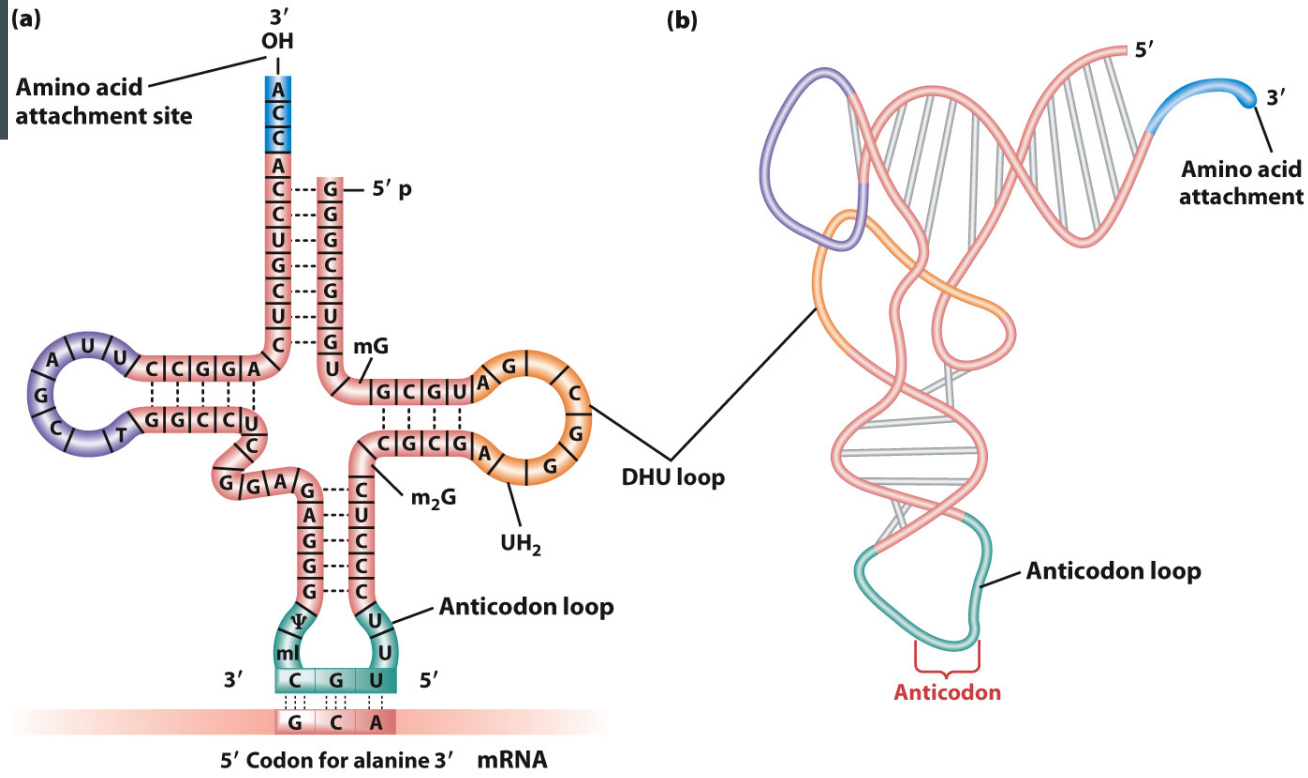


Figure 9-6
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Two subunits of ribosomes are composed of rRNA and many proteins

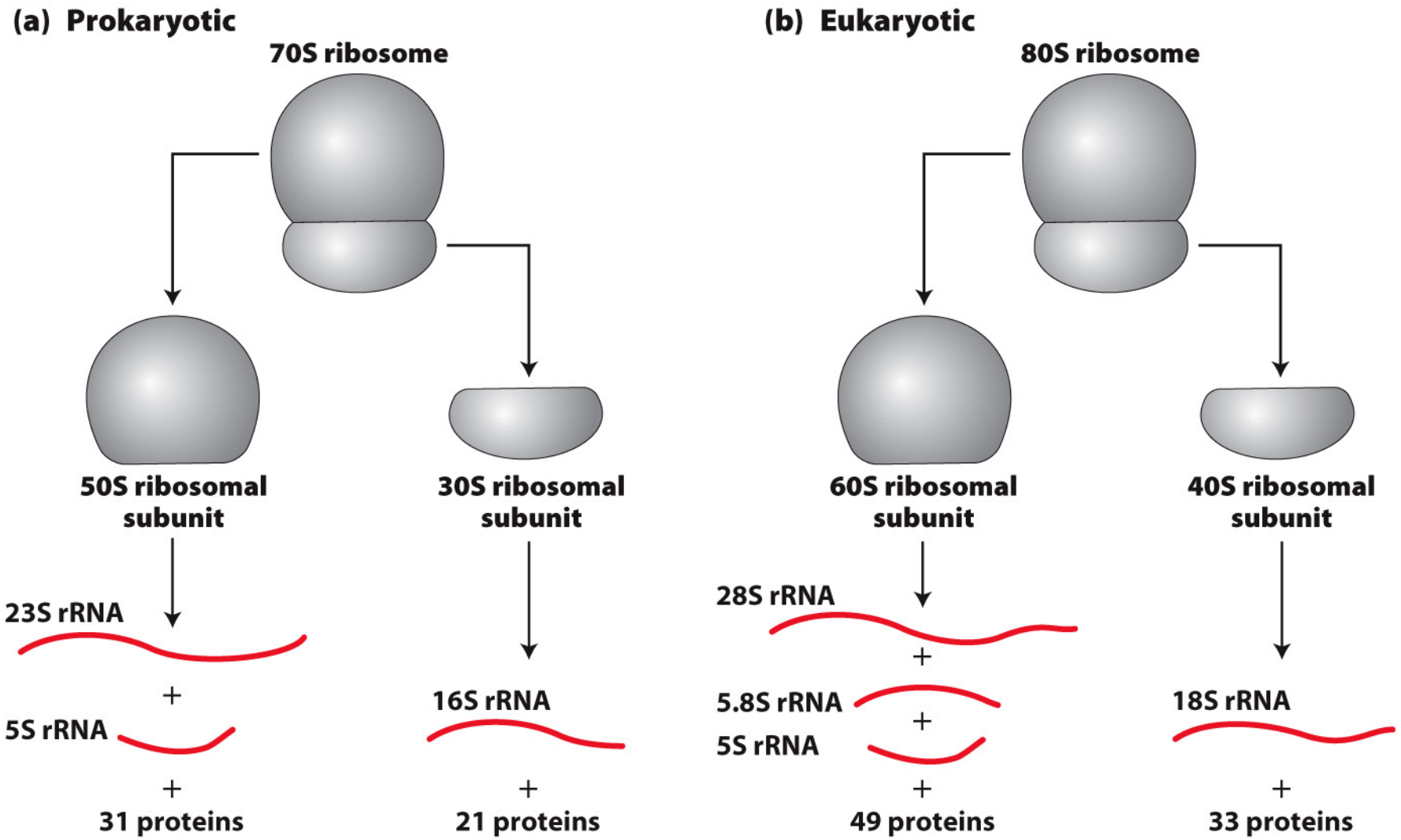

Figure 9-10
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Schematic model

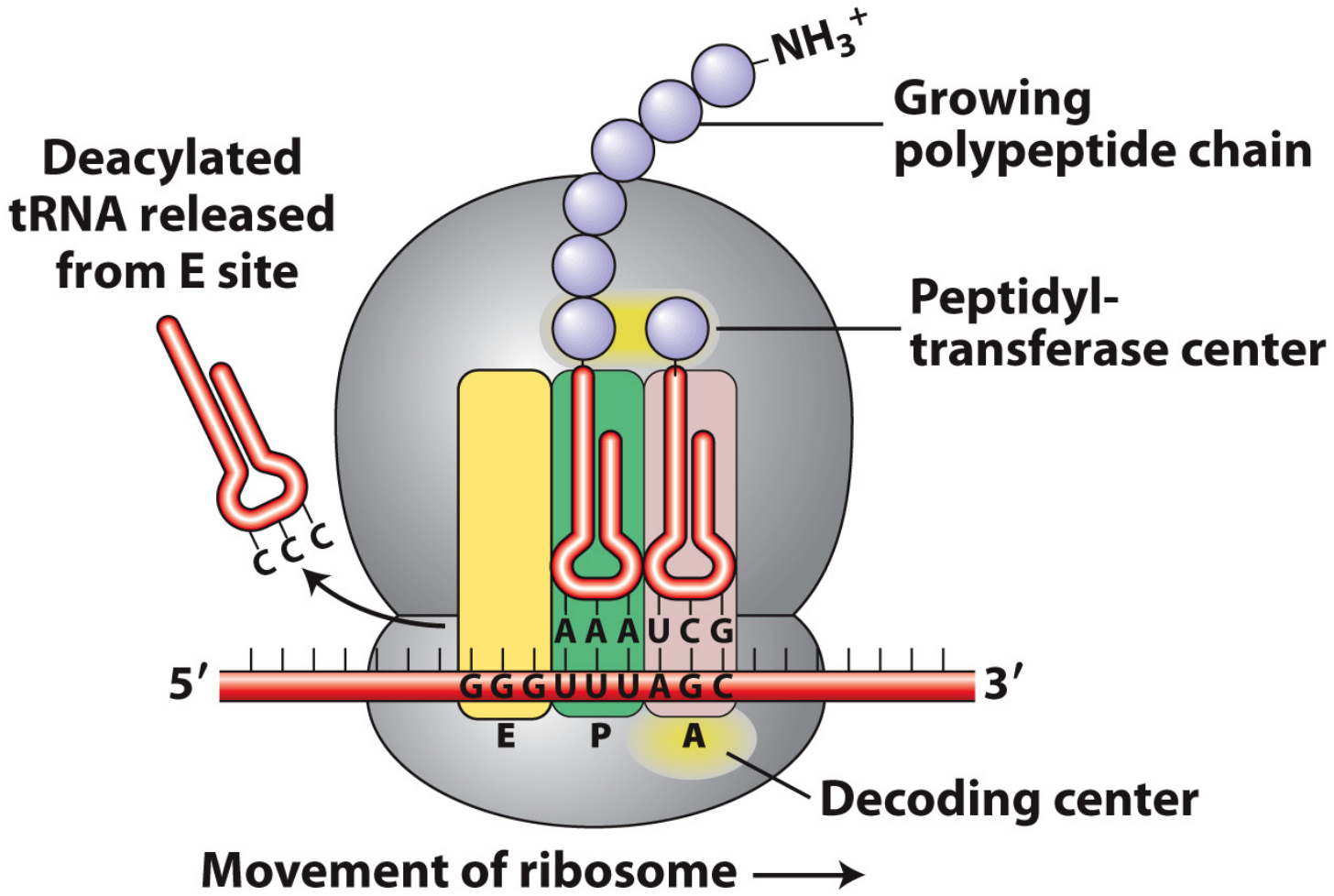

Figure 9-12b
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Translation initiation in prokaryotes

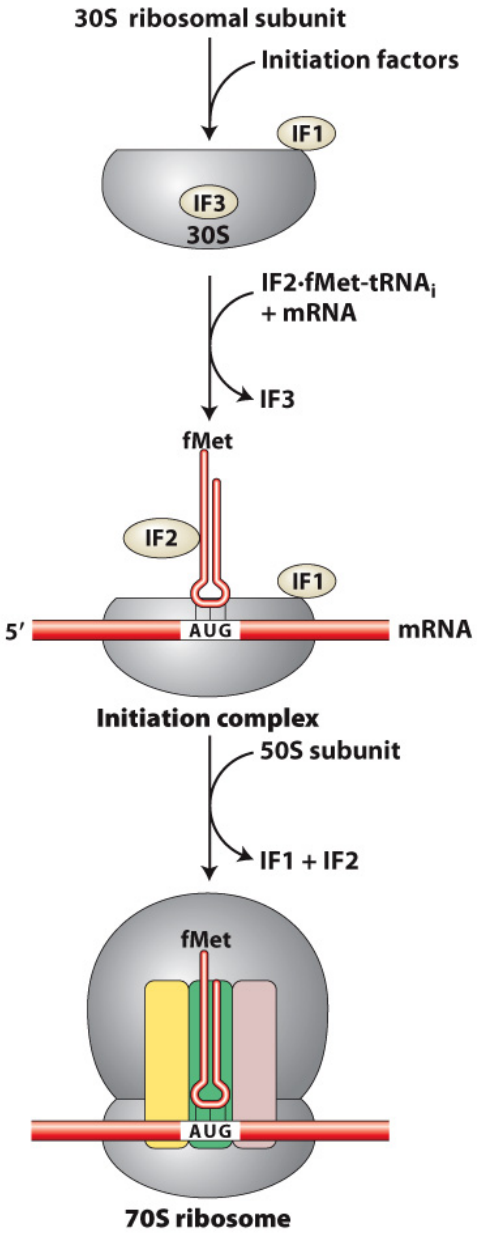

Figure 9-14
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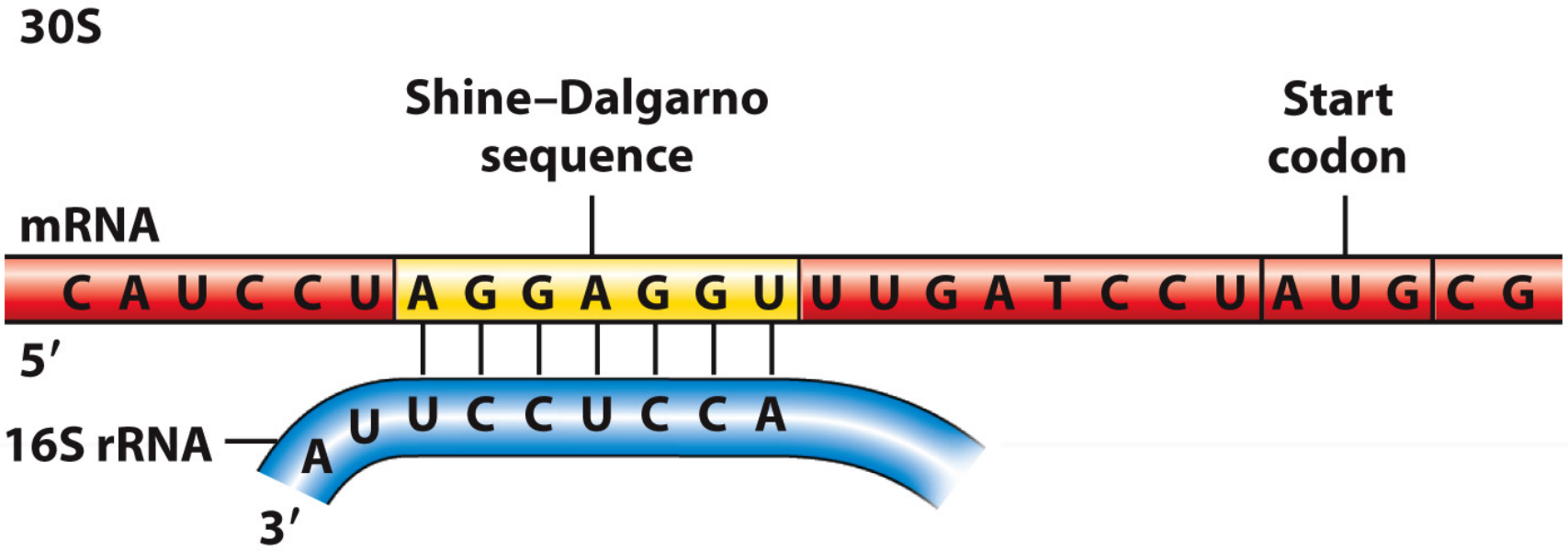

Figure 9-13
Introduction to Genetic Analysis, Eleventh Edition

Translation initiation in eukaryotes

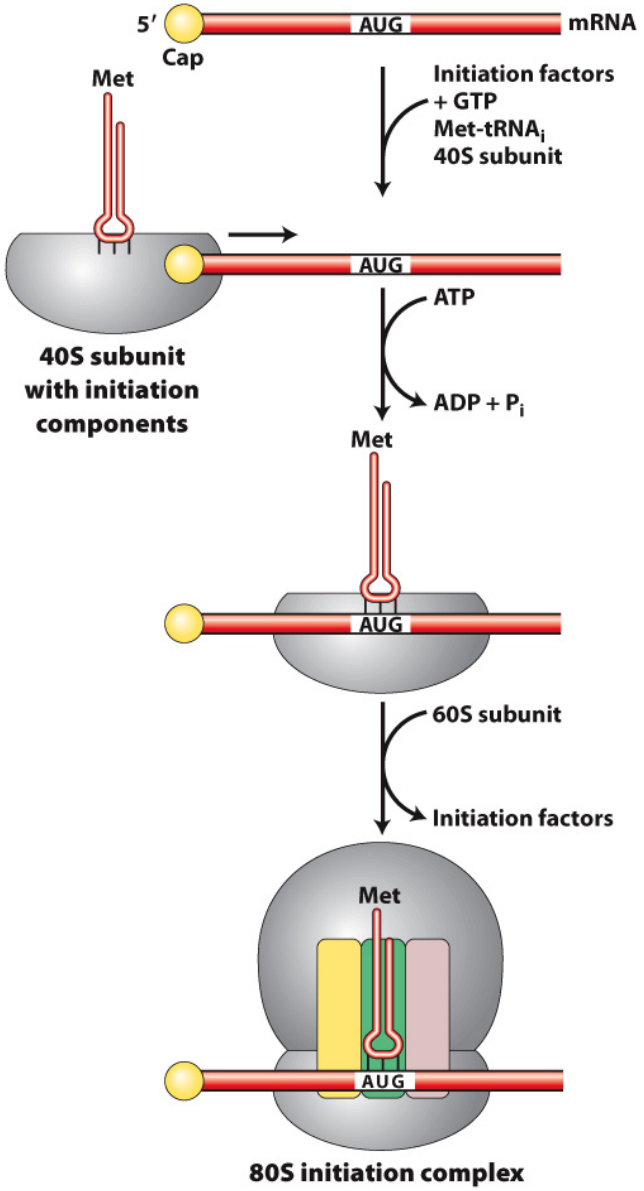

Figure 9-15
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Steps in translation elongation

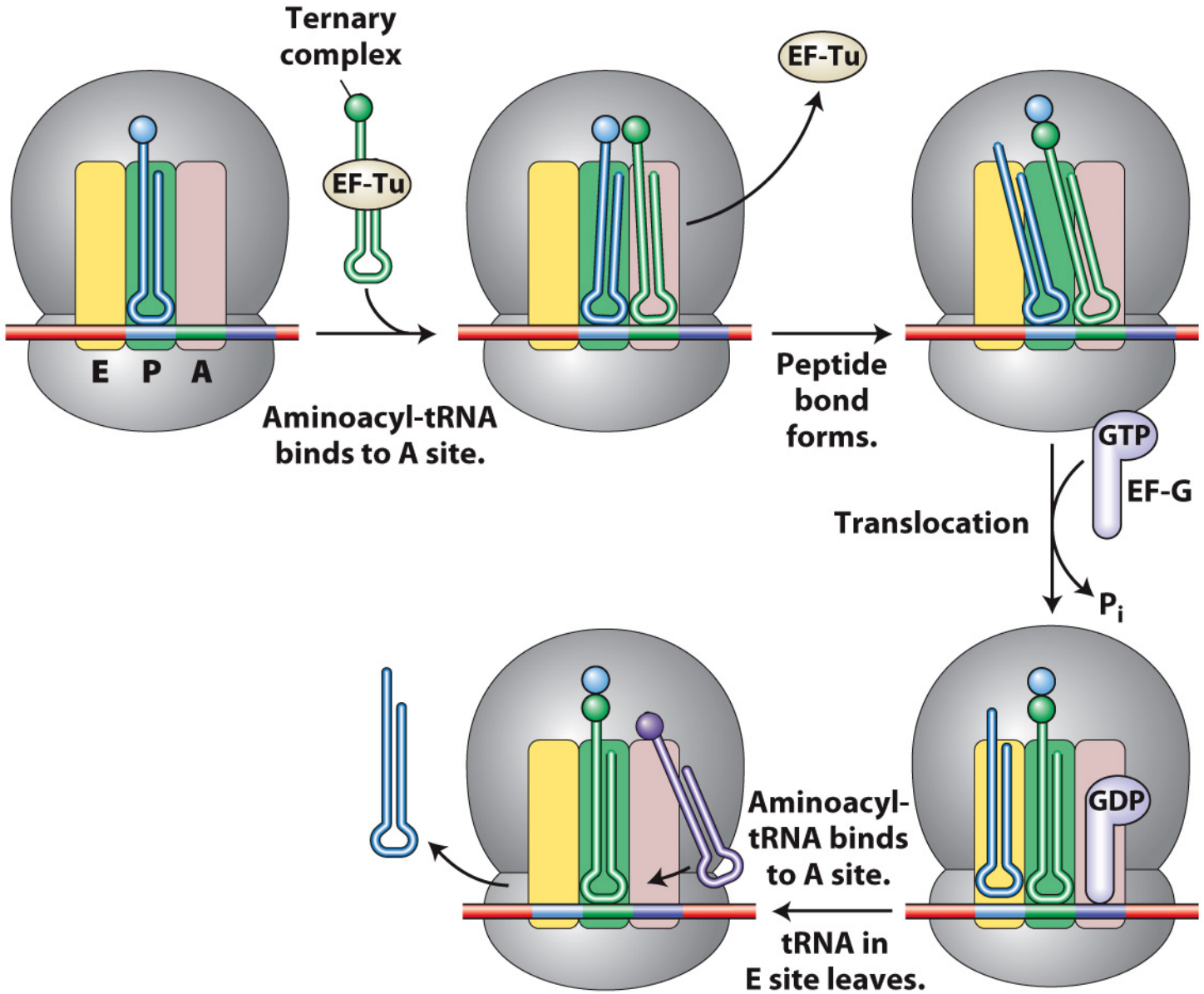

Figure 9-16
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Termination of translation

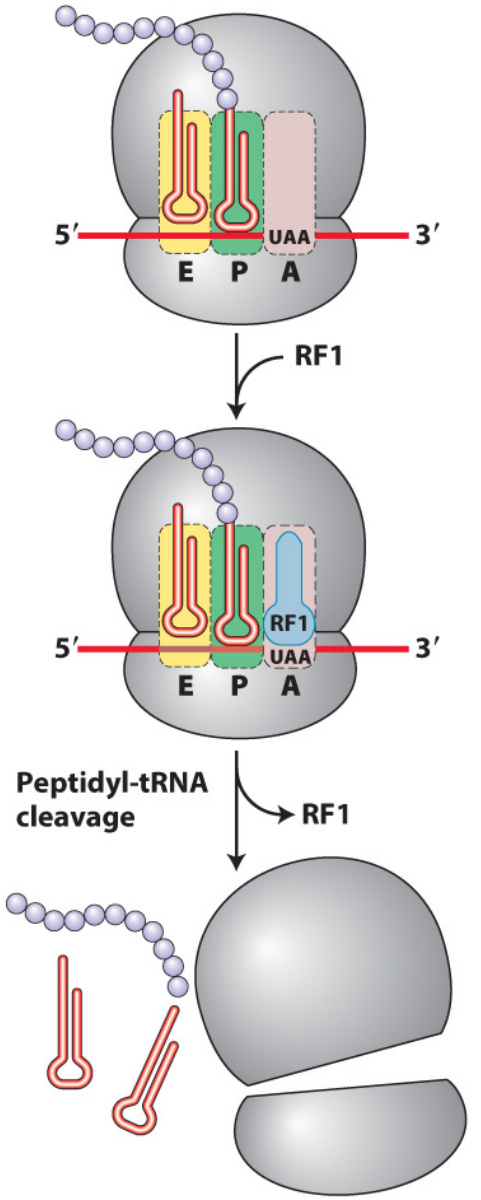

Figure 9-17
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Nonsense suppressor mutation

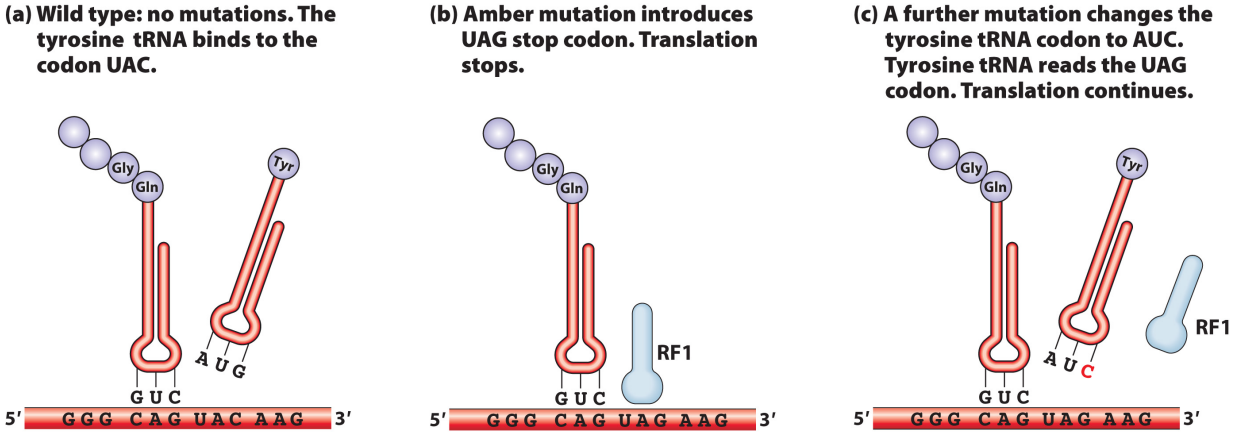

Figure 9-18
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GOOD LUCK !
YOU ROCK !