

Figure 10.1

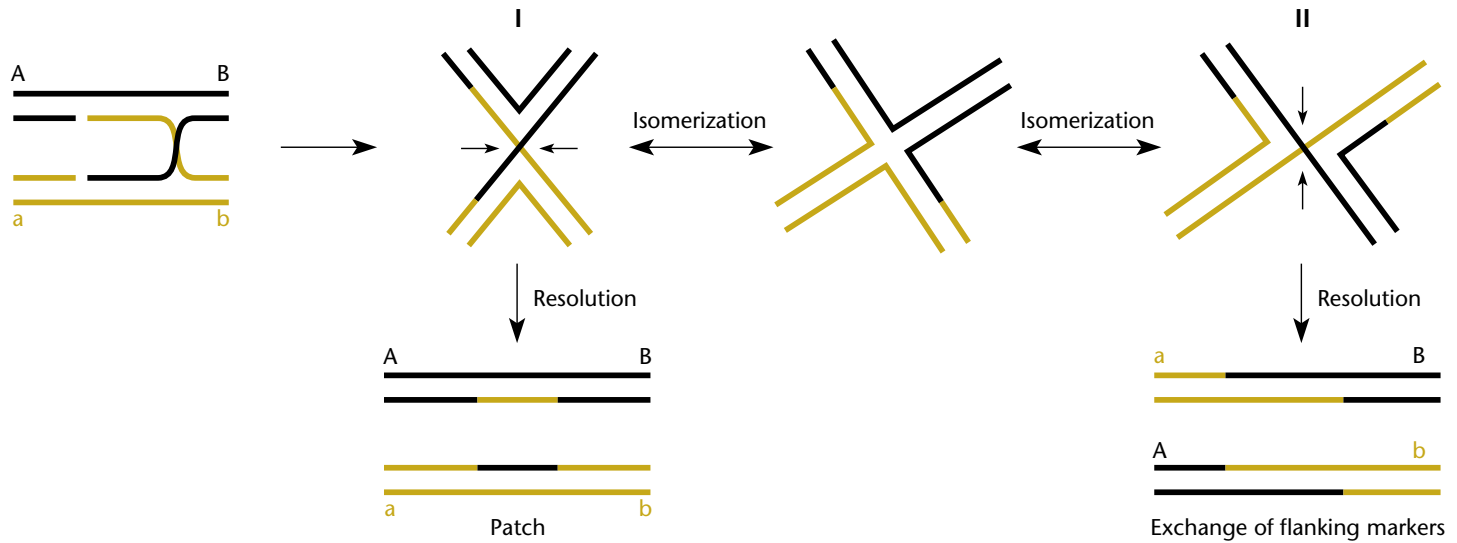


Figure 10.2

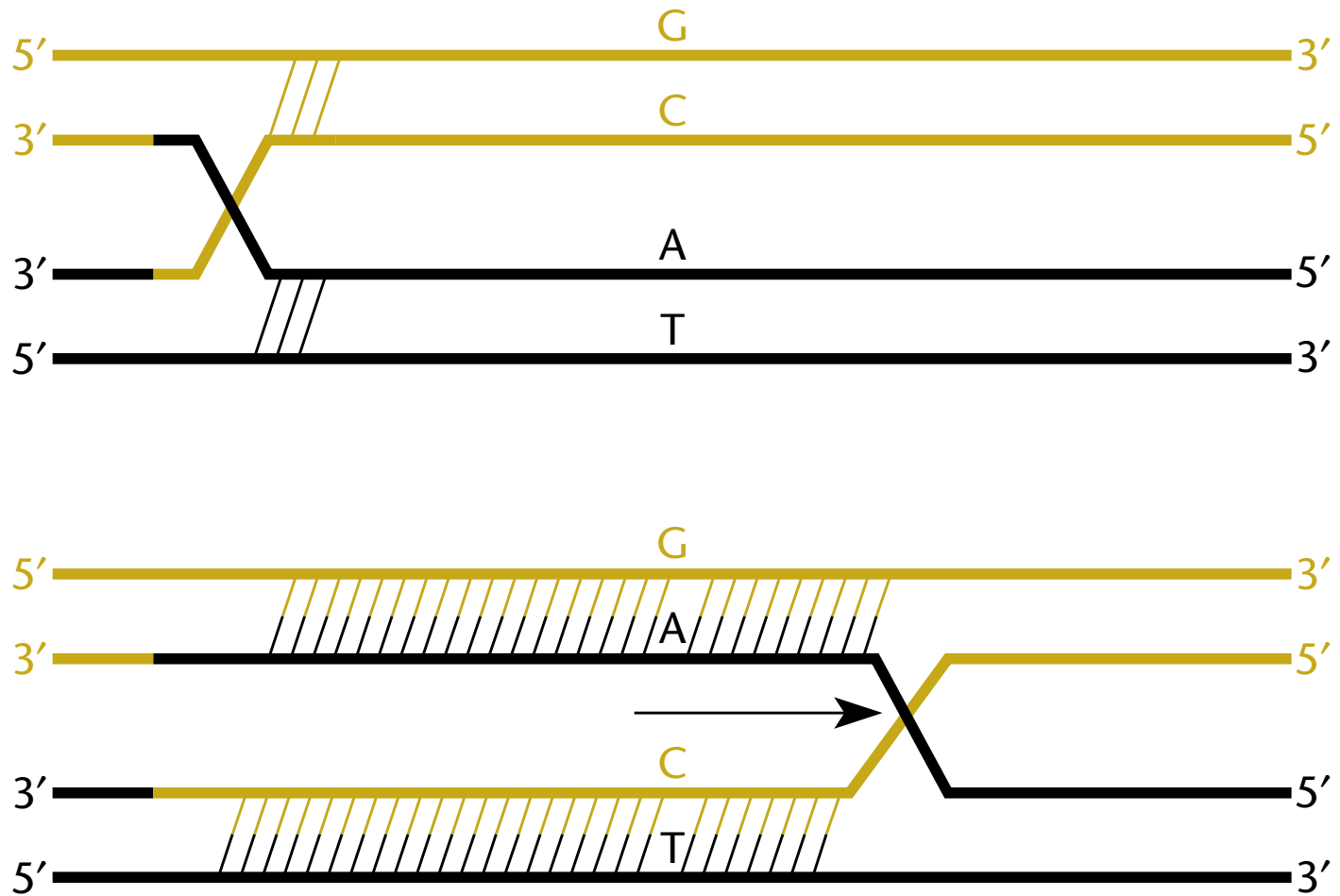


Figure 10.3

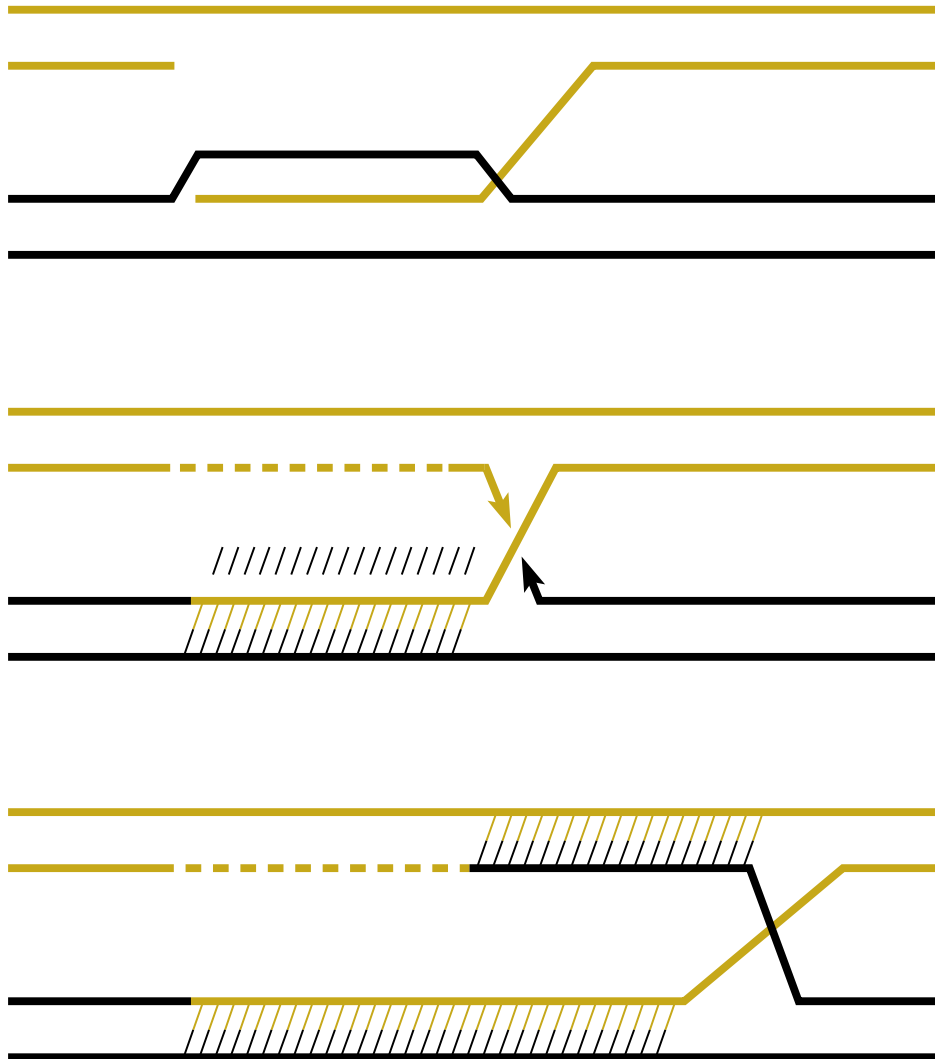


Figure 10.4

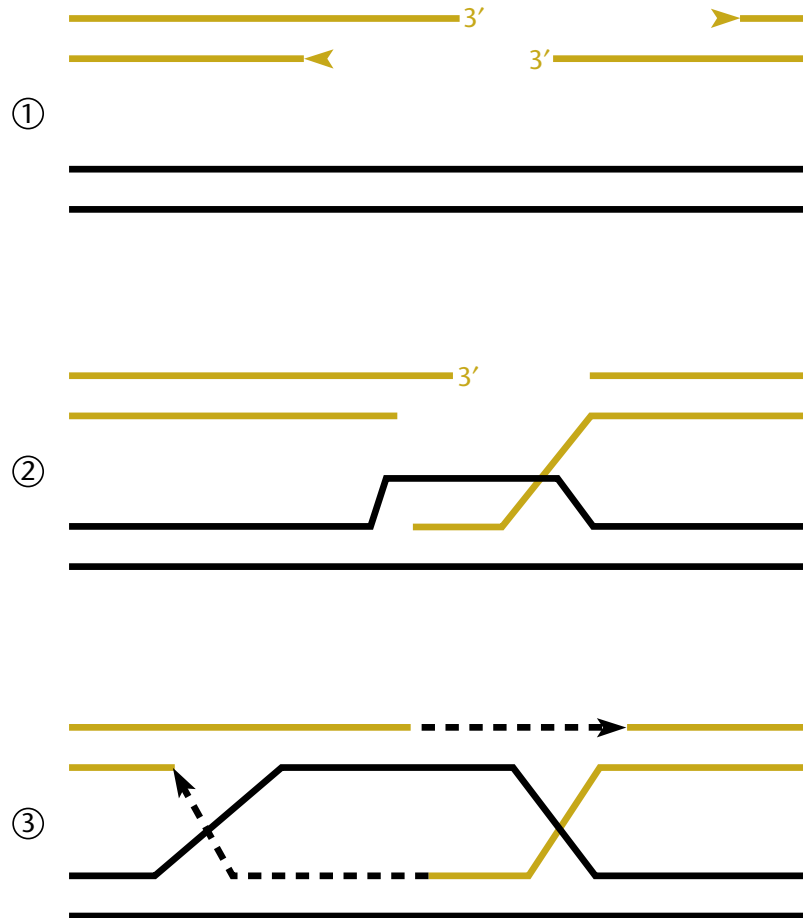


Table 10.1

TABLE 10.1 Some genes encoding recombination functions in <i>E. coli</i>			
Gene	Mutant phenotype	Enzymatic activity	Probable role in recombination
<i>recA</i>	Recombination deficient	Enhanced pairing of homologous DNAs	Synapse formation
<i>recBC</i>	Reduced recombination	Exonuclease, ATPase, helicase, <i>chi</i> -specific endonuclease	Initiates recombination by separating strands cutting DNA at the <i>chi</i> site
<i>recD</i>	Rec ⁺ χ independent	Exonuclease	Degrades 3' ends
<i>recF</i>	Reduced plasmid recombination	Binds ATP and single-stranded DNA	Substitutes for RecBCD at gaps
<i>recJ</i>	Reduced recombination in RecBC ⁻	Single-stranded exonuclease	Substitutes for RecBCD at gaps
<i>recN</i>	Reduced recombination in RecBC ⁻	ATP binding	Substitutes for RecBCD at gaps
<i>recO</i>	Reduced recombination in RecBC ⁻	DNA binding and renaturation	Substitutes for RecBCD at gaps
<i>recQ</i>	Reduced recombination in RecBC ⁻	DNA helicase	Substitutes for RecBCD at gaps
<i>recR</i>	Reduced recombination in RecBC ⁻	Binds double-stranded DNA	Substitutes for RecBCD at gaps
<i>recG</i>	Reduced Rec in RuvA ⁻ B ⁻ C ⁻	Branch-specific helicase	Migration of Holliday junctions
<i>ruvA</i>	Reduced recombination in RecG ⁻	Binds to Holliday junctions	Migration of Holliday junctions
<i>ruvB</i>	Reduced recombination in RecG ⁻	Holliday junction-specific helicase	Migration of Holliday junctions
<i>ruvC</i>	Reduced recombination in RecG ⁻	Holliday junction-specific nuclease	Resolution of Holliday junctions
<i>priA, priB, priC, dnaT</i>	Reduced recombination	Helicase?	Reload replication forks

Figure 10.5

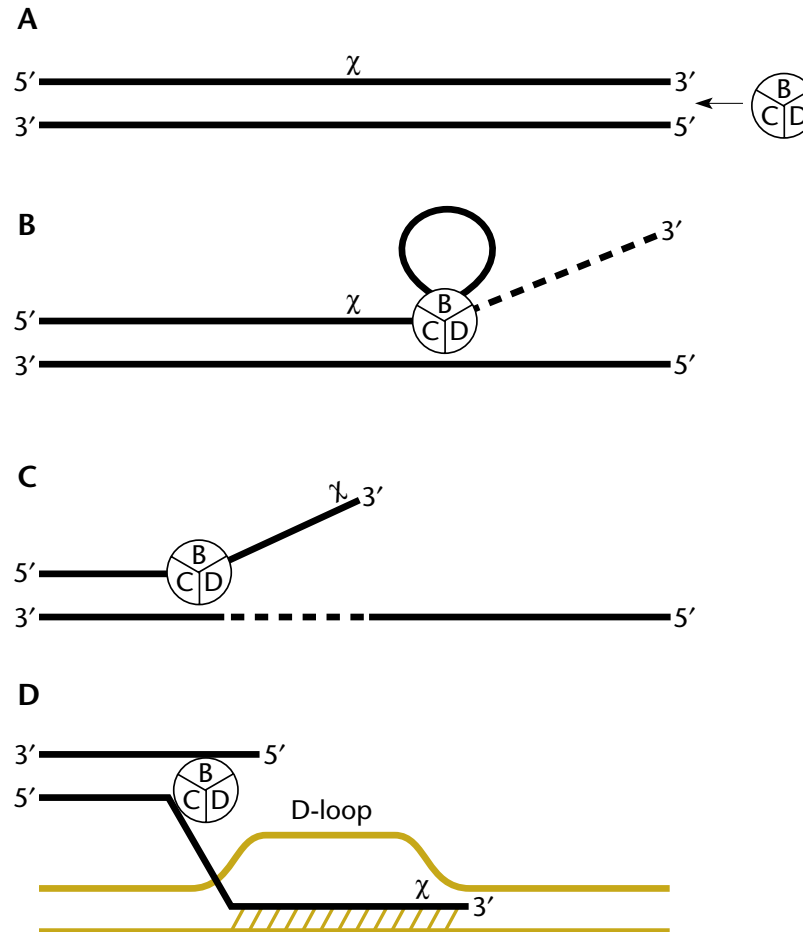


Figure 10.6

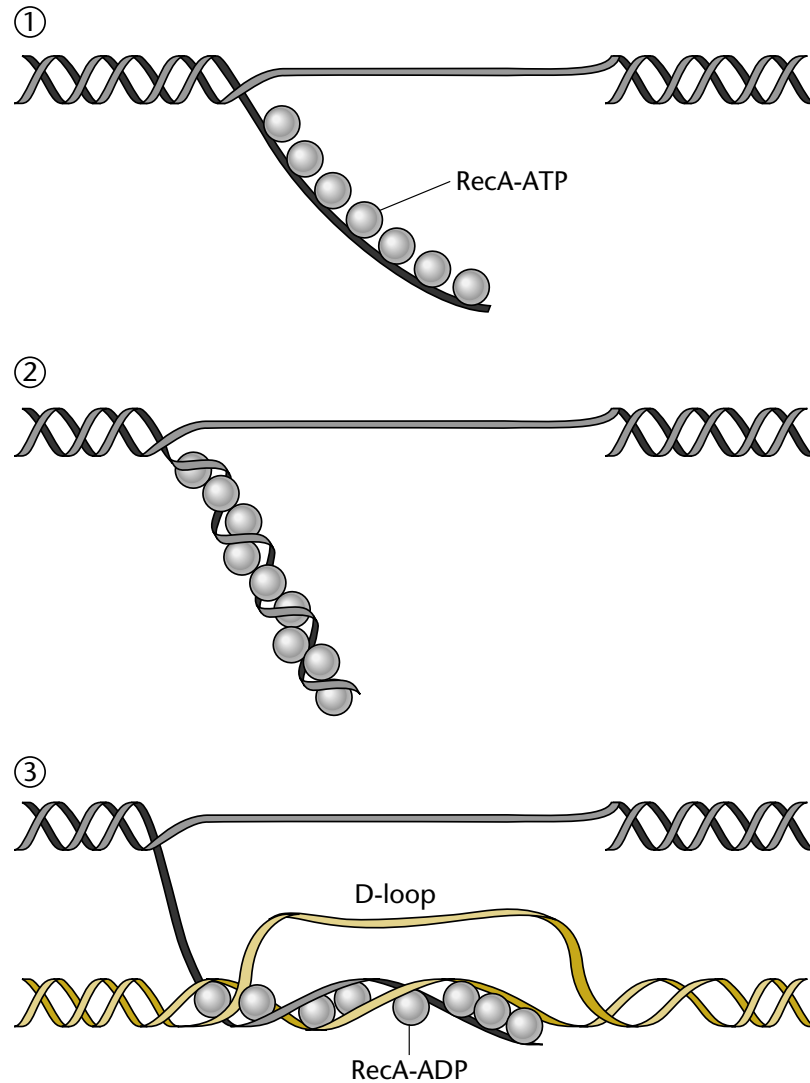


Figure 10.7

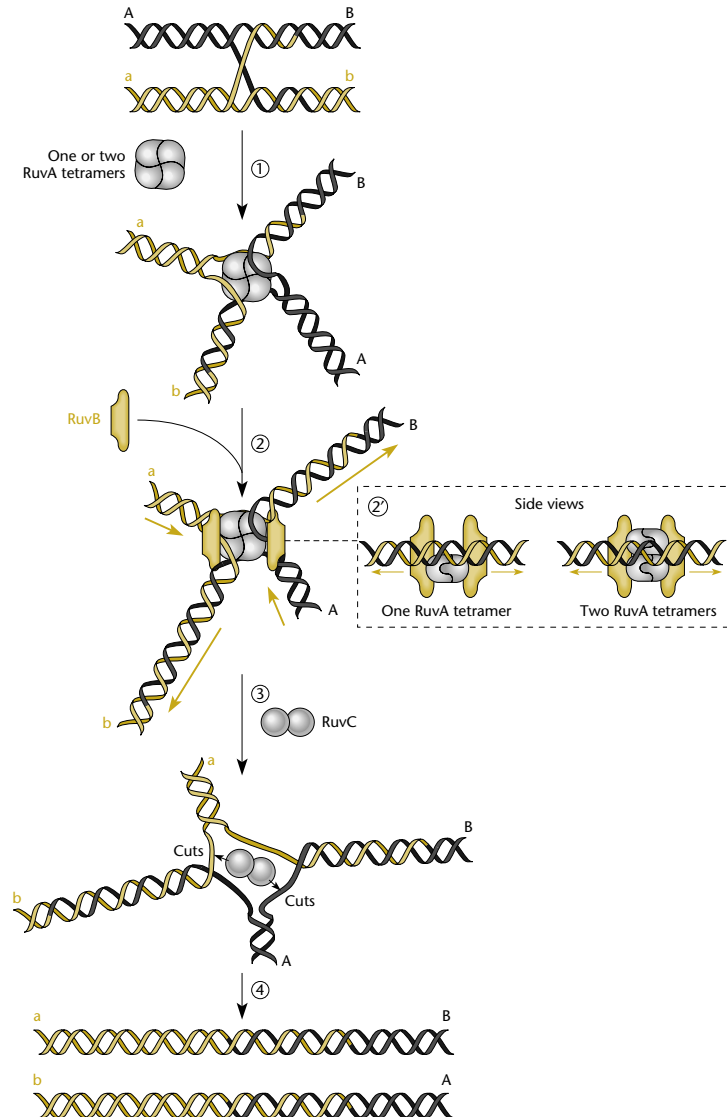
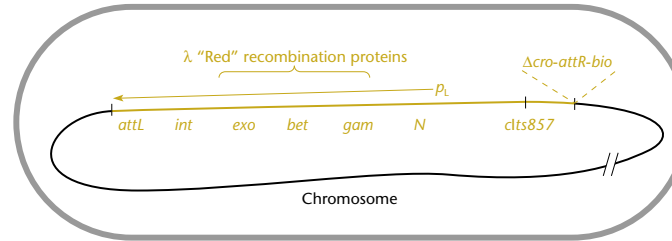


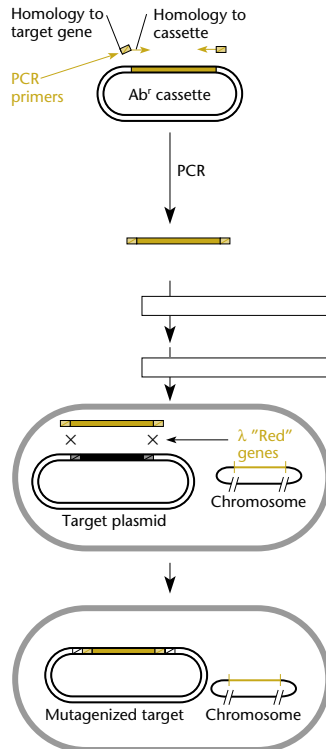
Table 10.2

TABLE 10.2	
Analogy between phage and host recombination functions	
Phage function	Analogous <i>E. coli</i> function
T4 UvsX	RecA
T4 gene 49	RuvC
T7 gene 3	RuvC
T4 genes 46 and 47	RecBCD
λ ORF in <i>nin</i> region	RecO, RecR, RecF
Rac <i>recE</i> gene	RecJ, RecQ
λ <i>gam</i>	Inhibits RecBCD
λ <i>exo</i>	RecBCD, RecJ
λ <i>bet</i>	RecA
<i>rusA</i> (DLP12 prophage)	RuvC

Box 10.3

A *E. coli* (λ d1857 Δ cro-bio)

B Replacement with double-stranded DNA fragment



C Replacement with single-stranded oligonucleotide

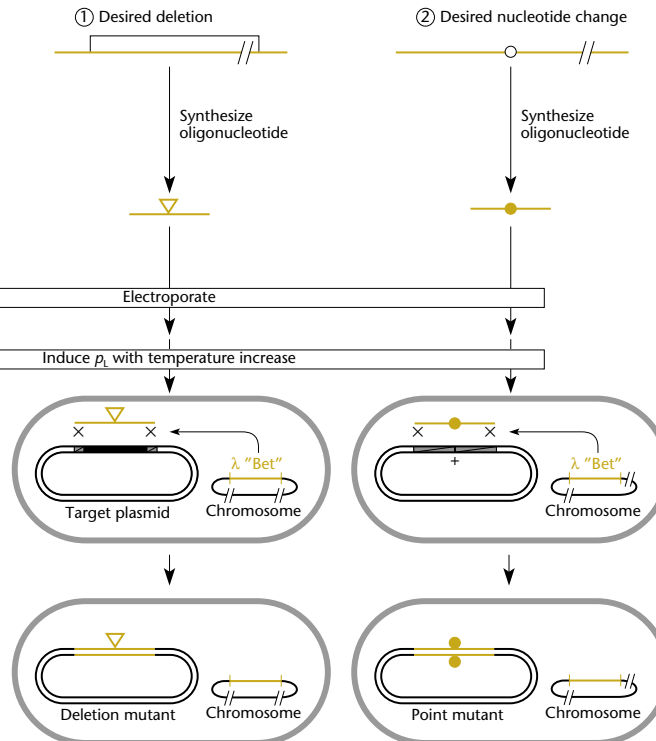


Figure 10.9

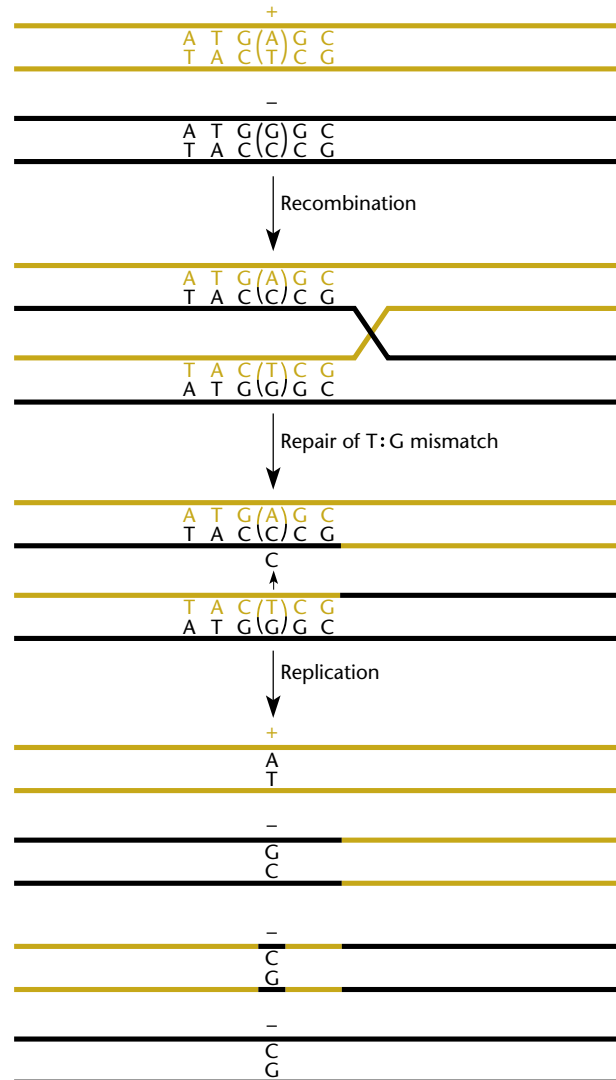


Figure 10.10

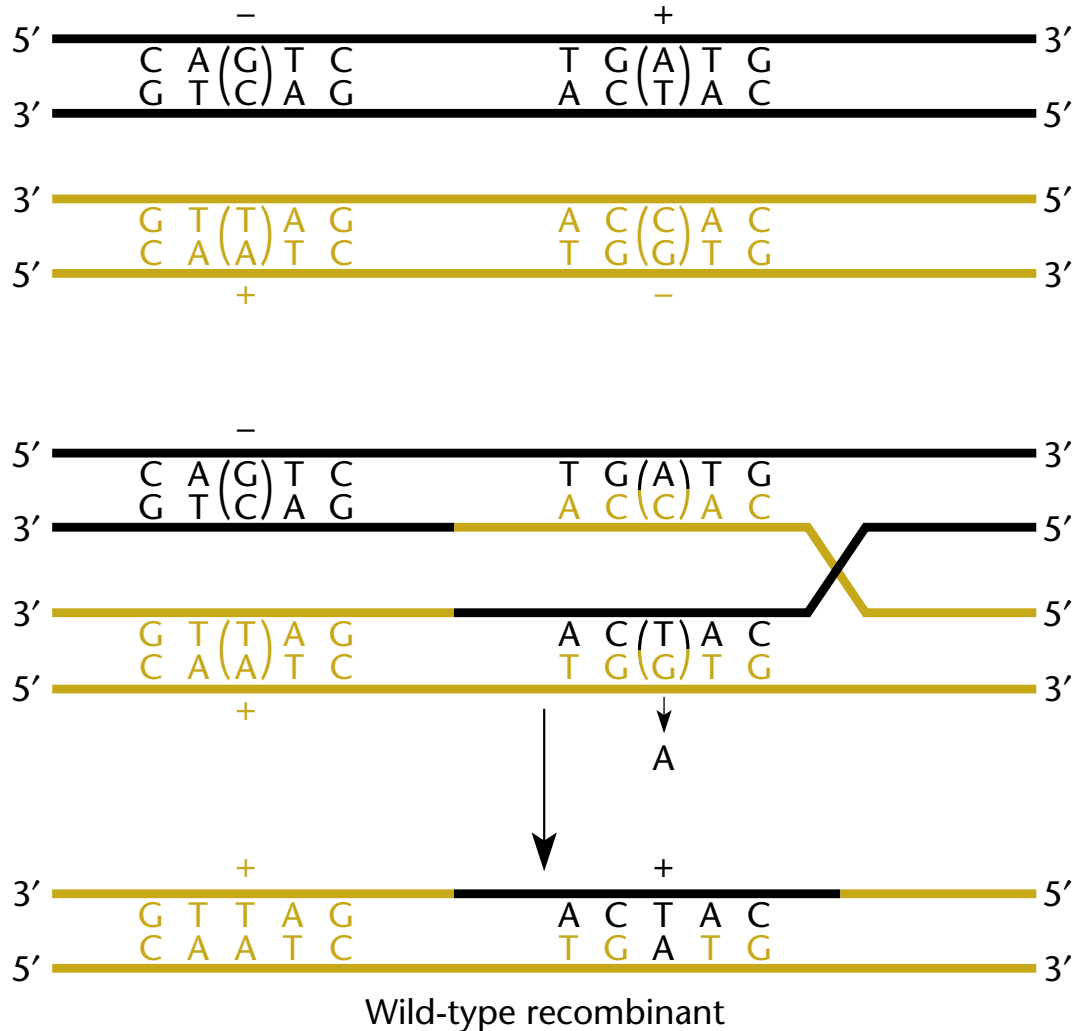


Figure 10.11

