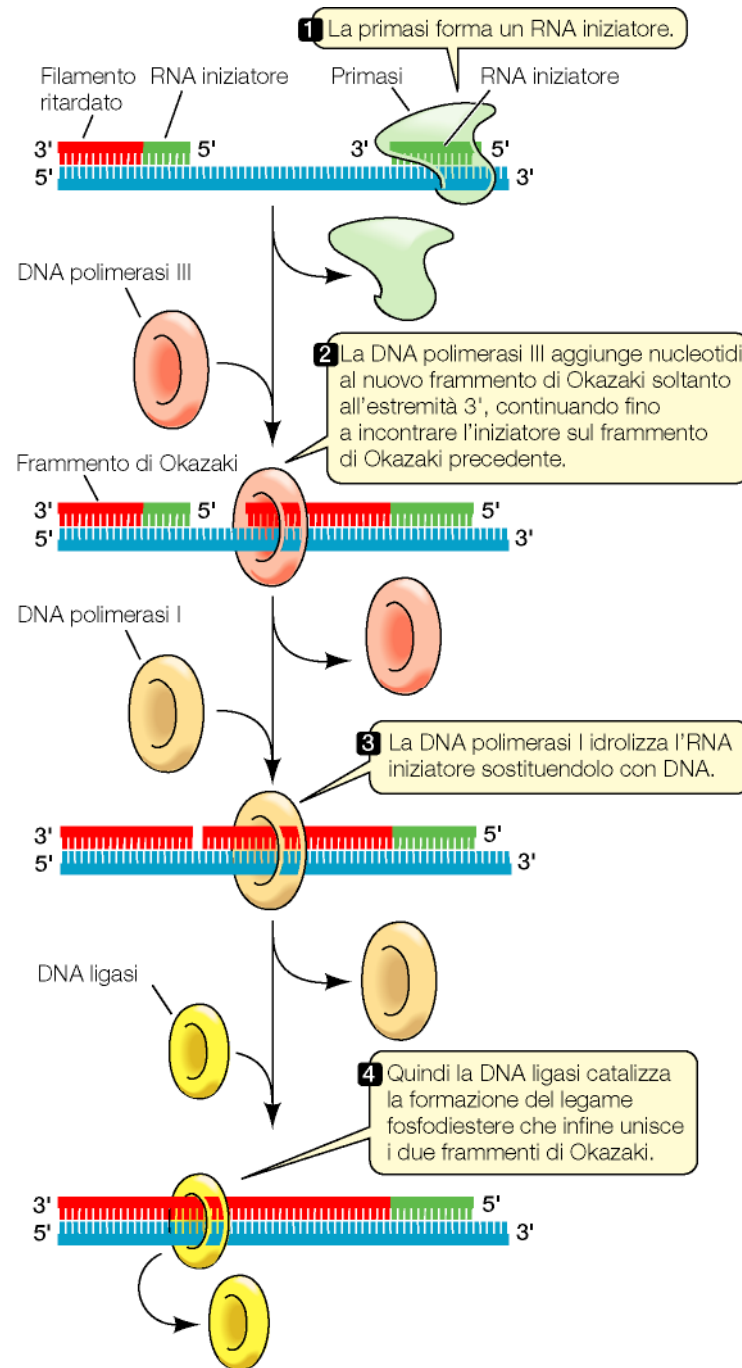
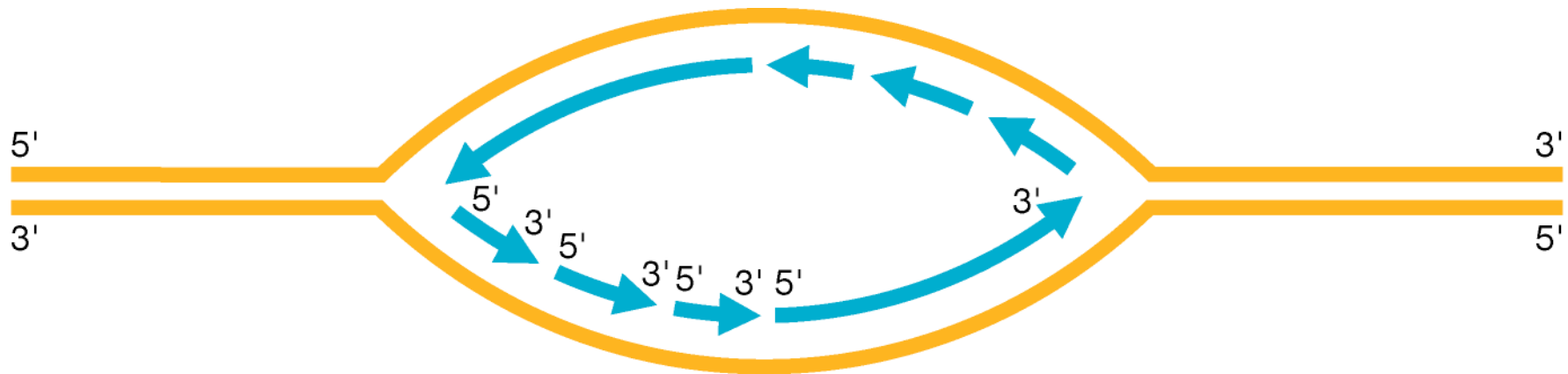


Replicazione del DNA

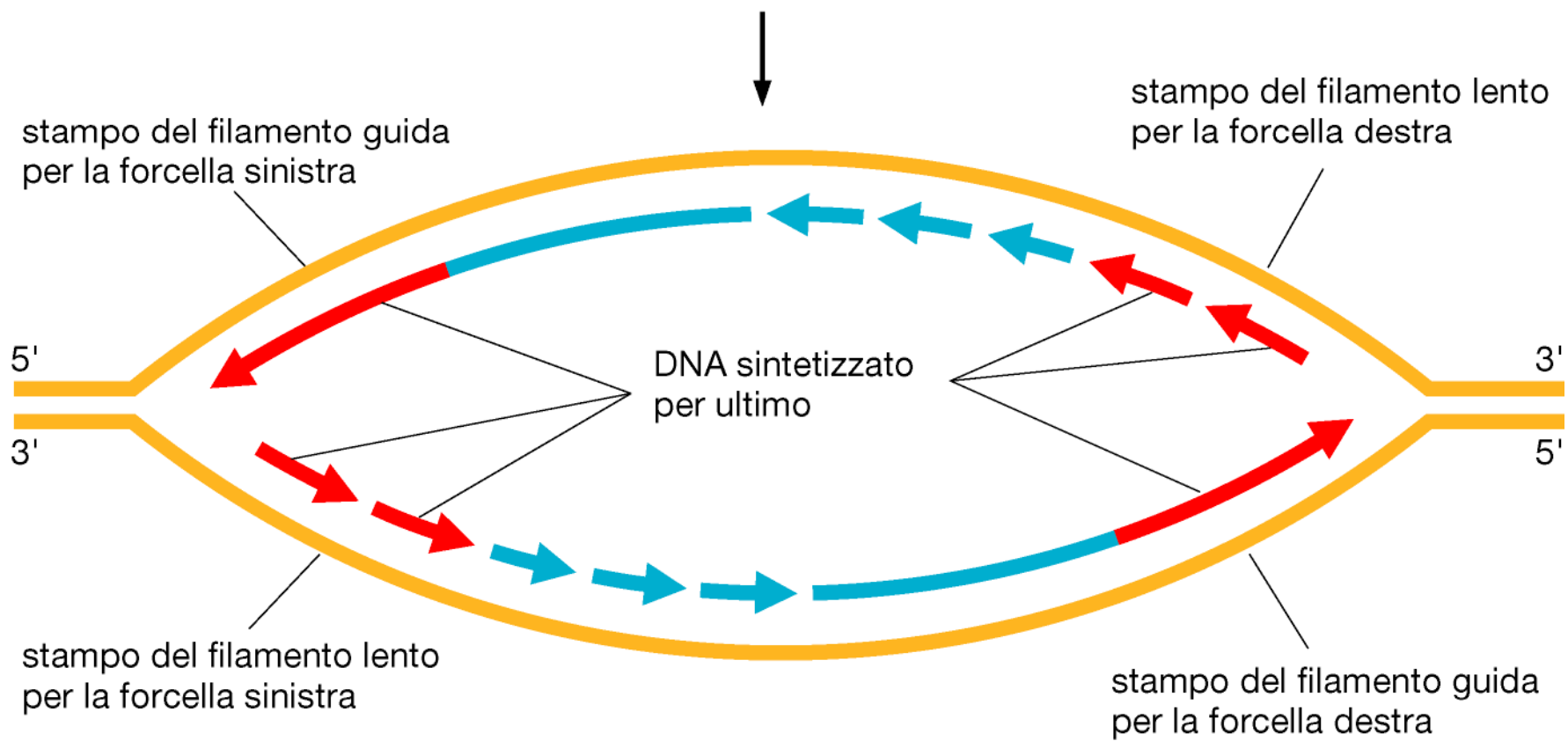
Table 9.1 Comparison of the Structural and Functional Characteristics of the *E. coli* DNA Polymerases I, II, and III

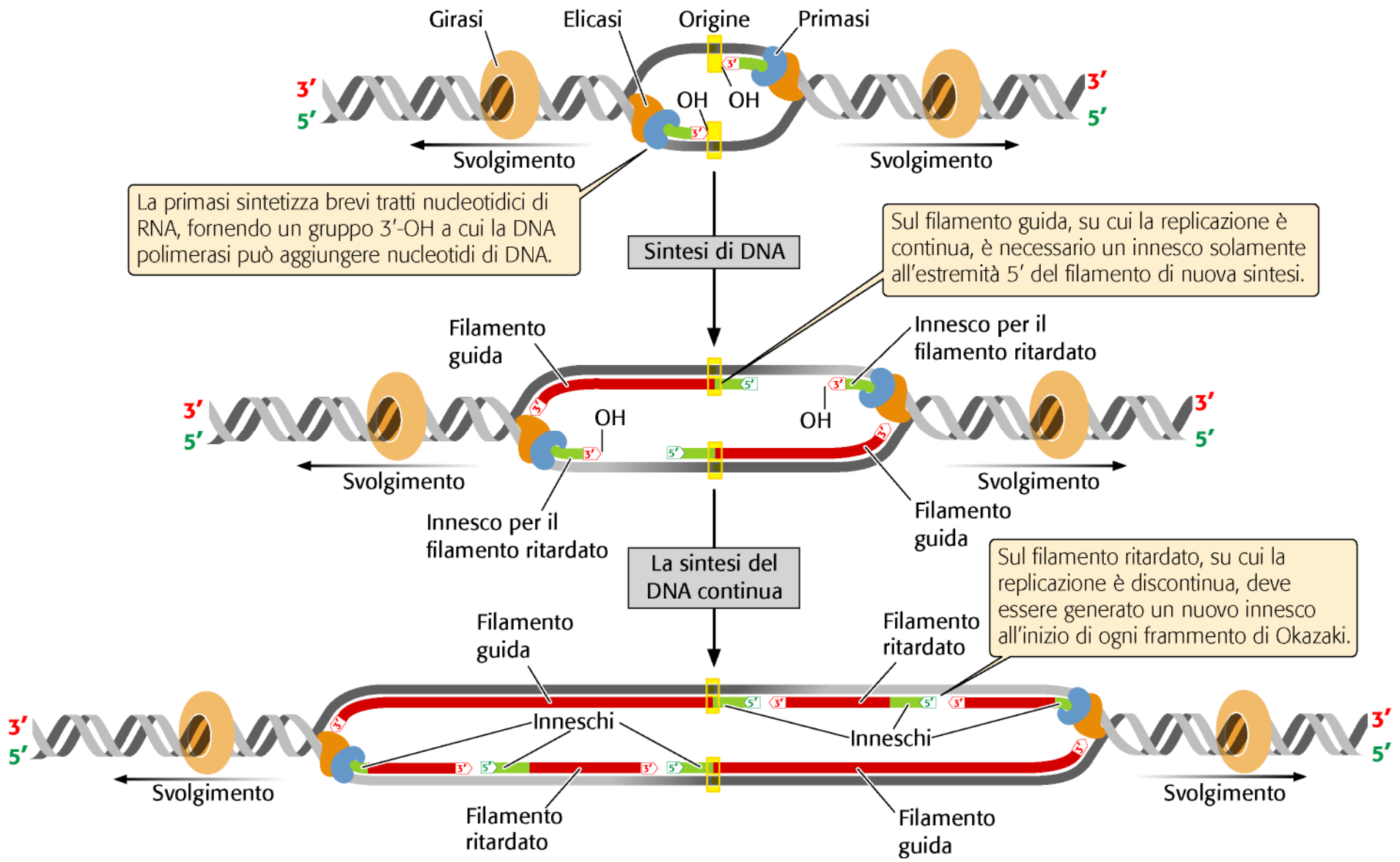
| DNA Polymerase | Polymerization: 5'→3' | Exonuclease: 3'→5' | Exonuclease: 5'→3' | Molecular Weight (daltons) | Molecules per Cell (approximately) |
|-----------------------|----------------------------------|-------------------------------|-------------------------------|--|---|
| I | Yes | Yes | Yes | 103,000 | 400 |
| II | Yes | Yes | No | 90,000 | ? |
| III | Yes | Yes | No | Core of 130,000, 27,500, and 10,000 subunits; 7 other subunits ^a | 10–20 |

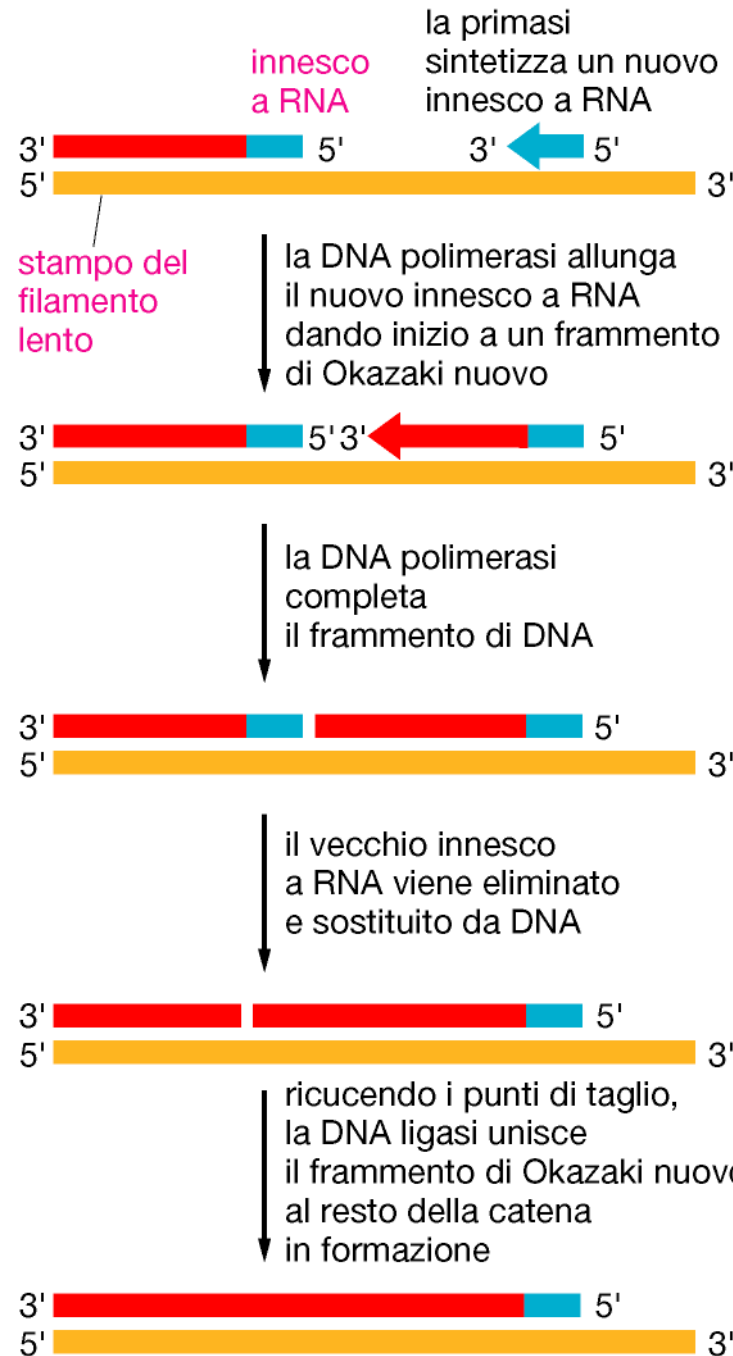




← direzione di spostamento della forcella replicativa →







Fase di Termine

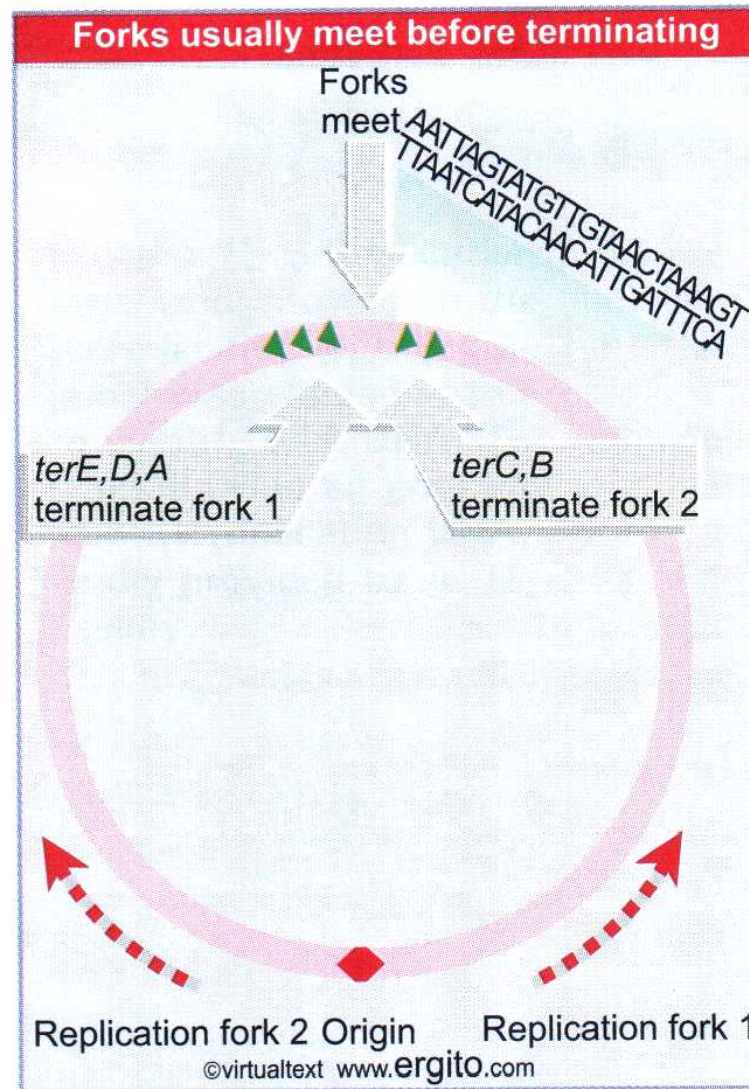
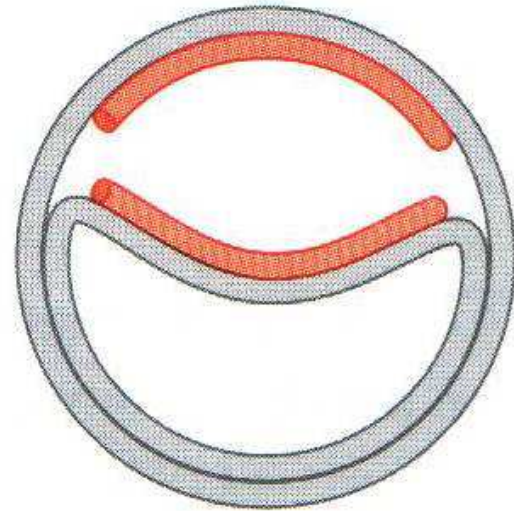
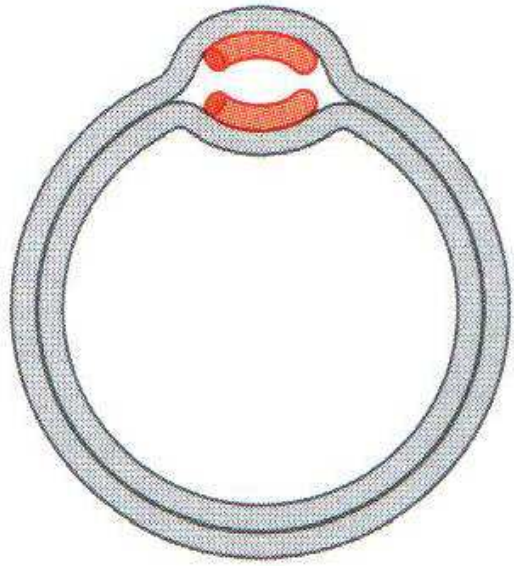
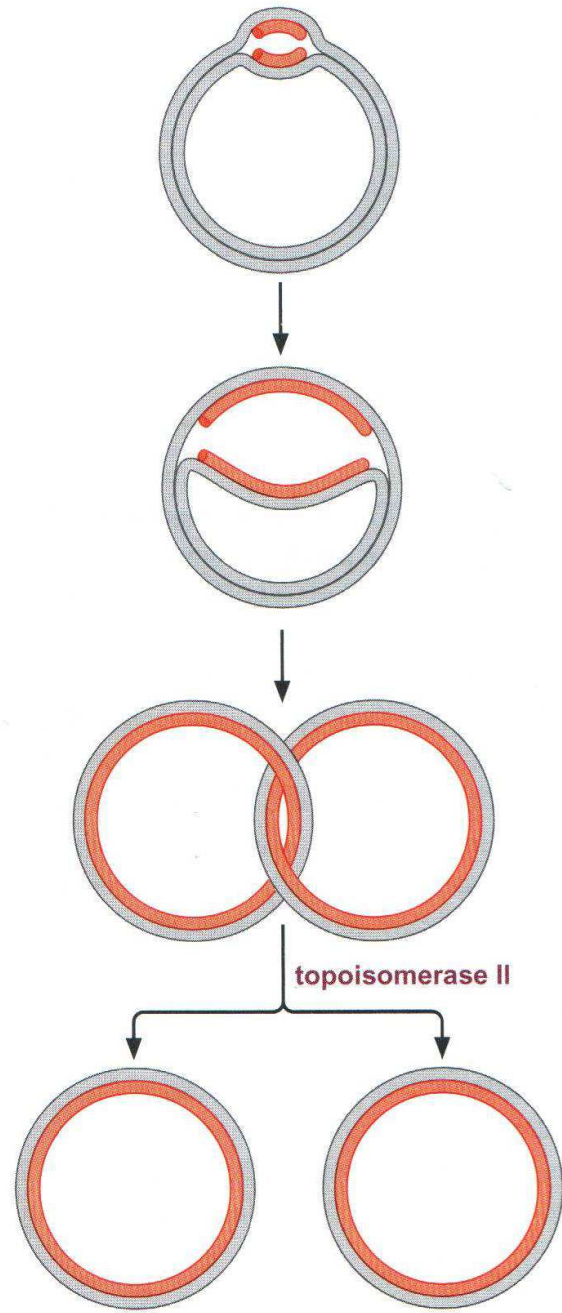


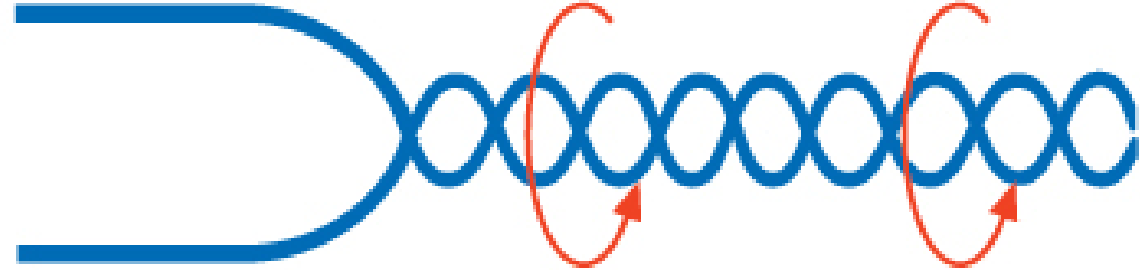
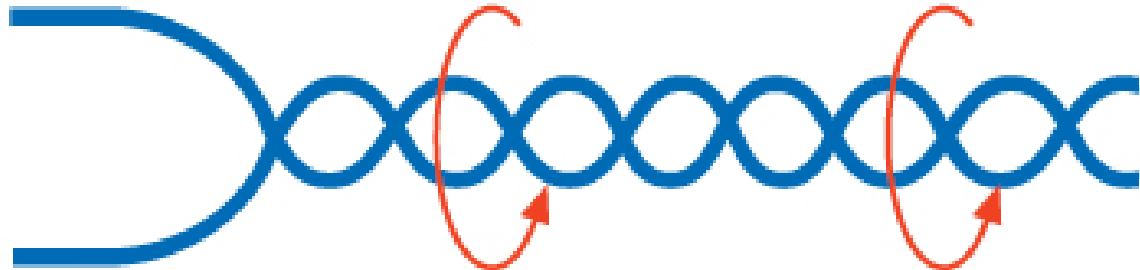
Figure 13.7 Replication termini in *E. coli* are located beyond the point at which the replication forks actually meet.

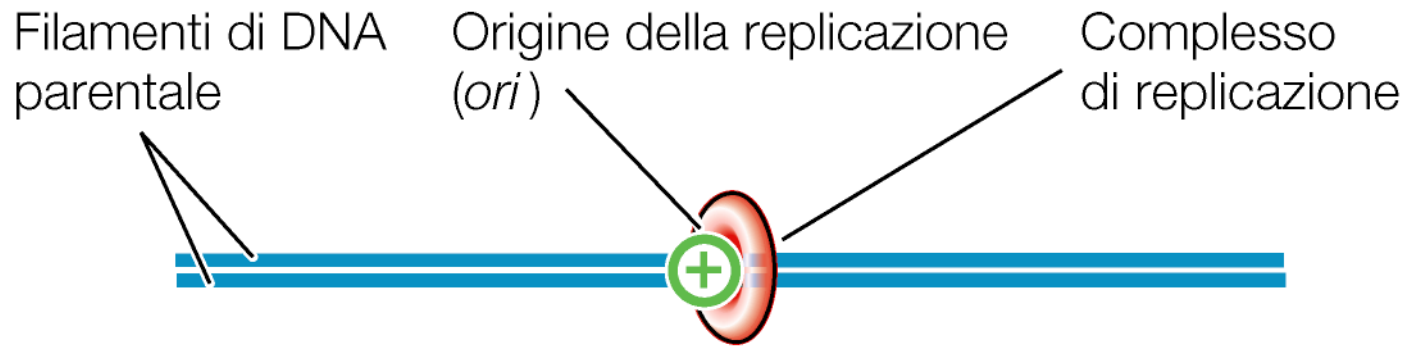




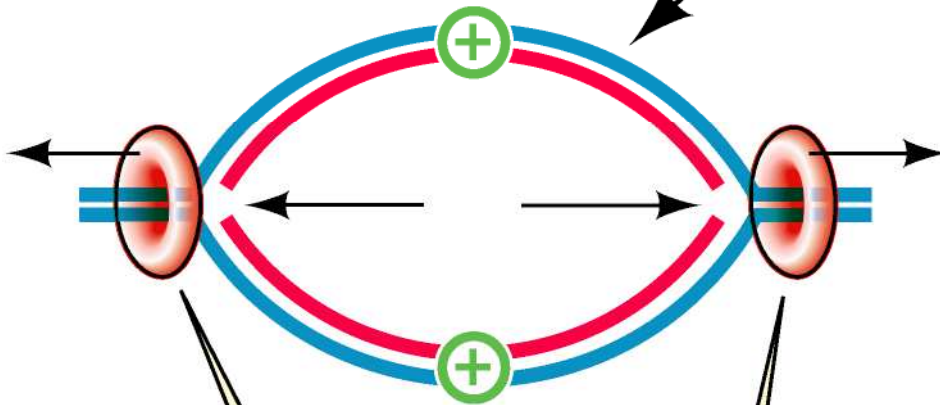
■ FIGURA 4.10 “Figura θ ” (theta), intermedio della replicazione del cromosoma circolare di *E. coli*.





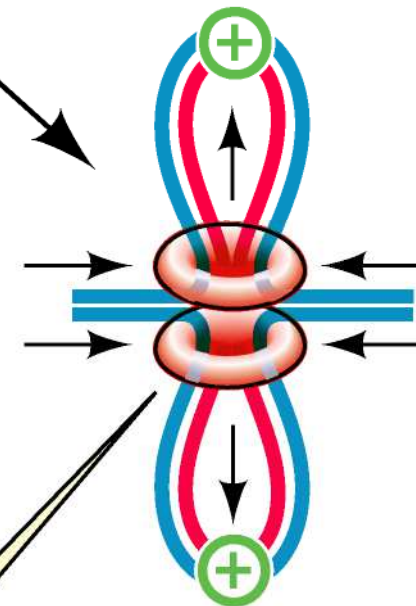


(a) Il complesso di replicazione si muove

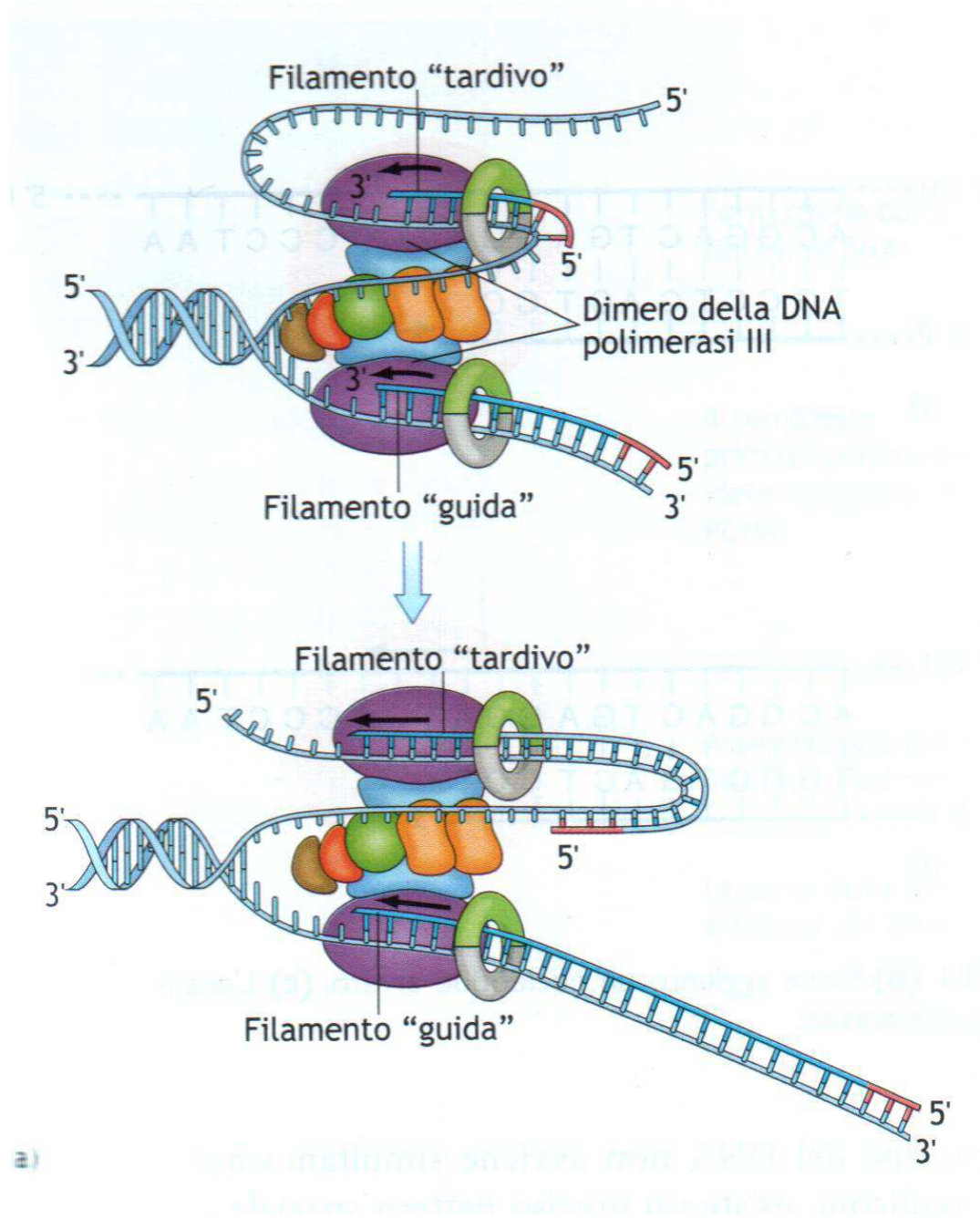


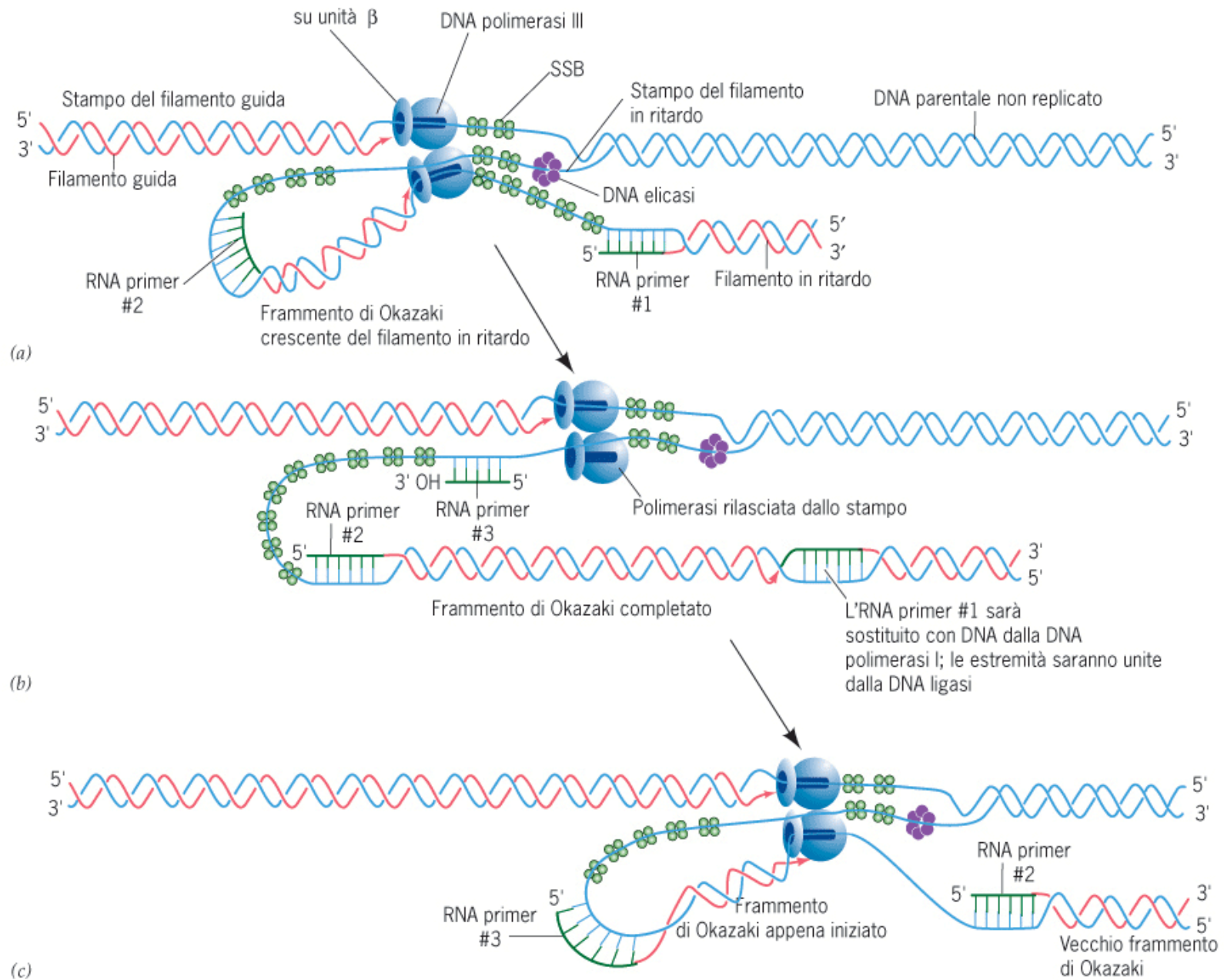
Quando il DNA si replica, due complessi di replicazione si muovono in direzioni opposte allontanandosi dall'origine.

(b) Il DNA si muove



I complessi di replicazione sono fermi e il DNA scorre attraverso essi.





Replicazione del DNA

In Eucarioti

| Eukaryotic | Number of subunits | Function |
|----------------|--------------------|--|
| Pol α | 4 | Primer synthesis during DNA replication |
| Pol β | 1 | Base excision repair |
| Pol γ | 3 | Mitochondrial DNA replication and repair |
| Pol δ | 2–3 | DNA replication; nucleotide and base excision repair |
| Pol ϵ | 4 | DNA replication; nucleotide and base excision repair |
| Pol θ | 1 | DNA repair of crosslinks |
| Pol ζ | 1 | Translesion synthesis (TLS) |
| Pol λ | 1 | Meiosis-associated DNA repair |
| Pol μ | 1 | Somatic hypermutation |
| Pol κ | 1 | TLS |
| Pol η | 1 | Relatively accurate TLS past <i>cis-syn</i> cyclobutane dimers |
| Pol ι | 1 | TLS, somatic hypermutation |
| Rev1 | 1 | TLS |

Time

Origins of replication units

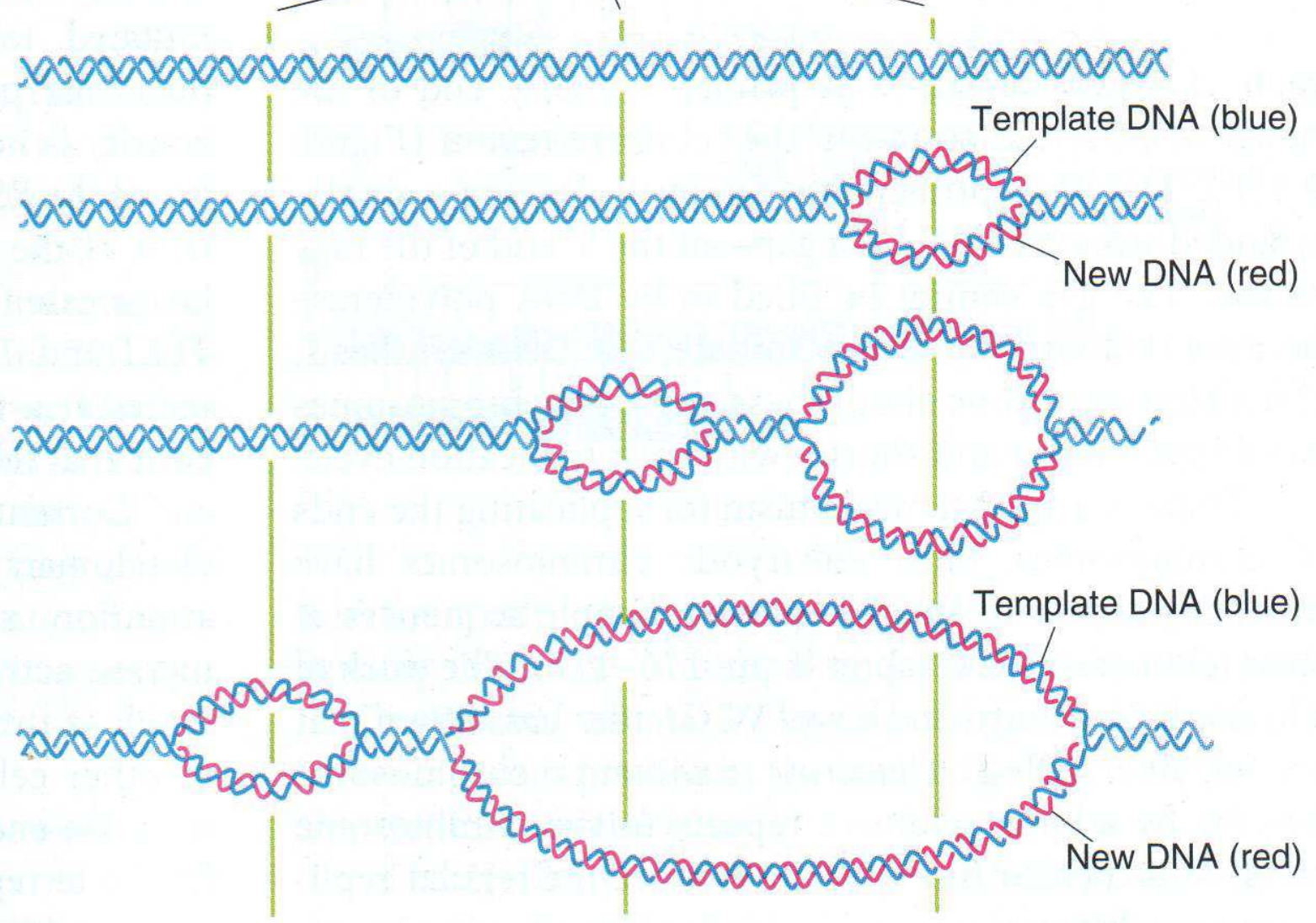
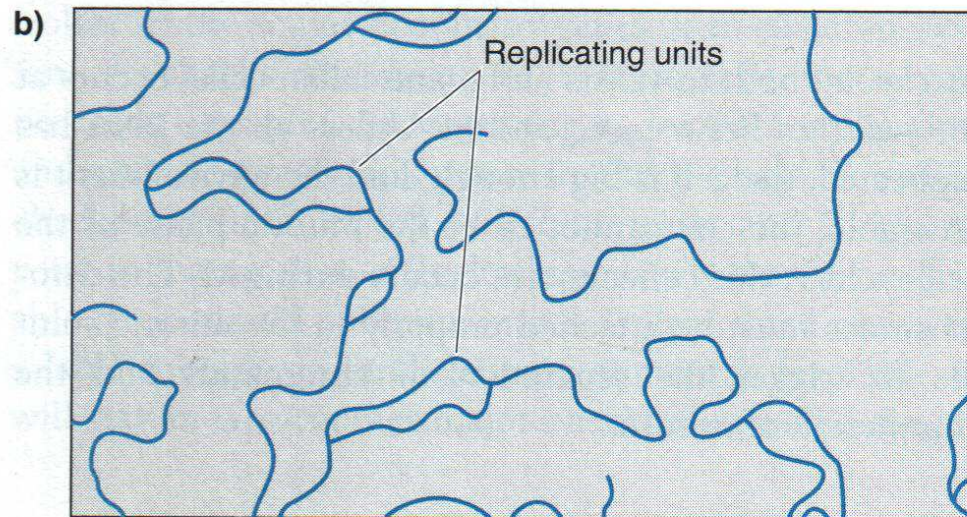
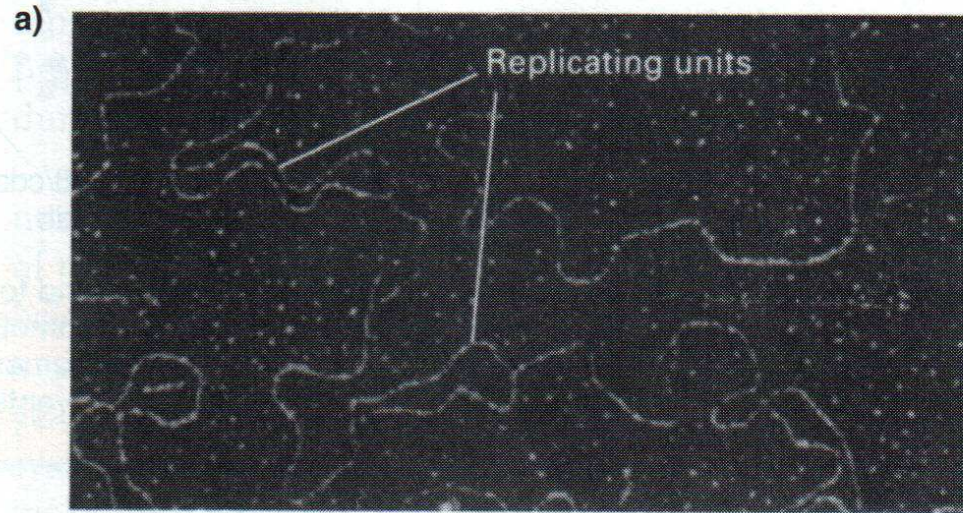
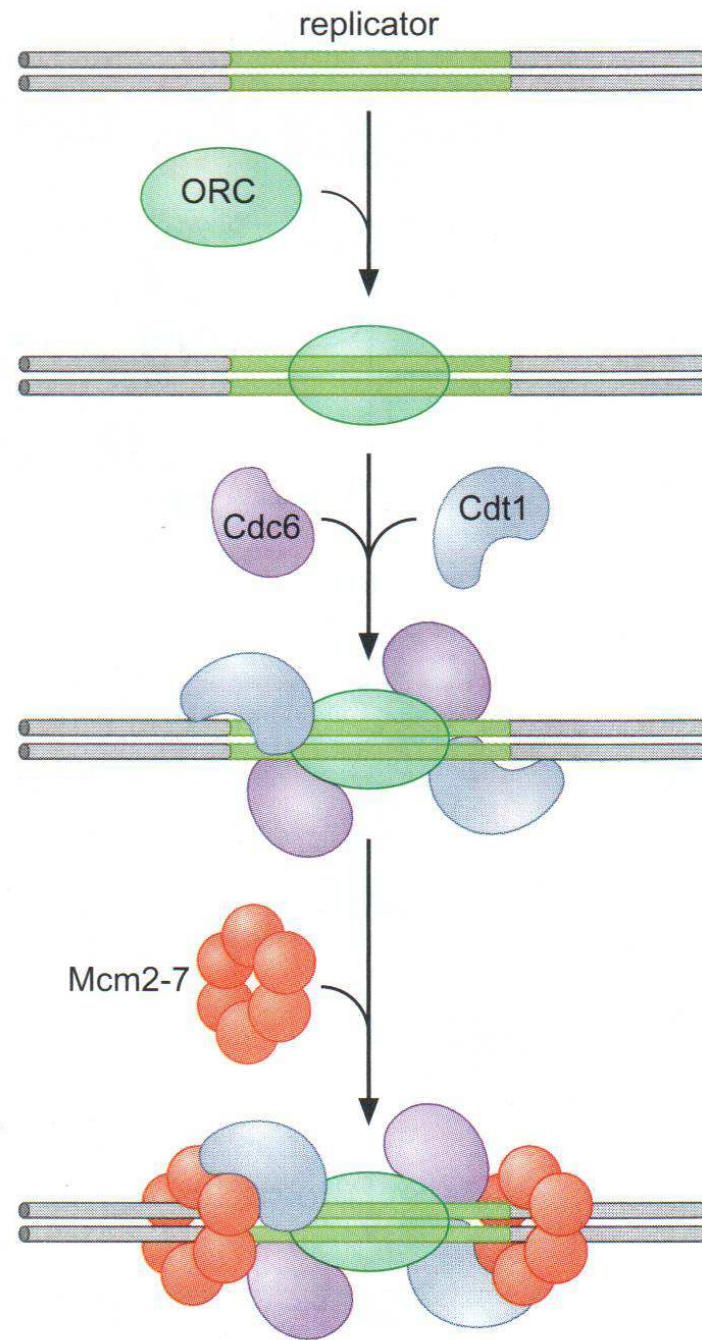
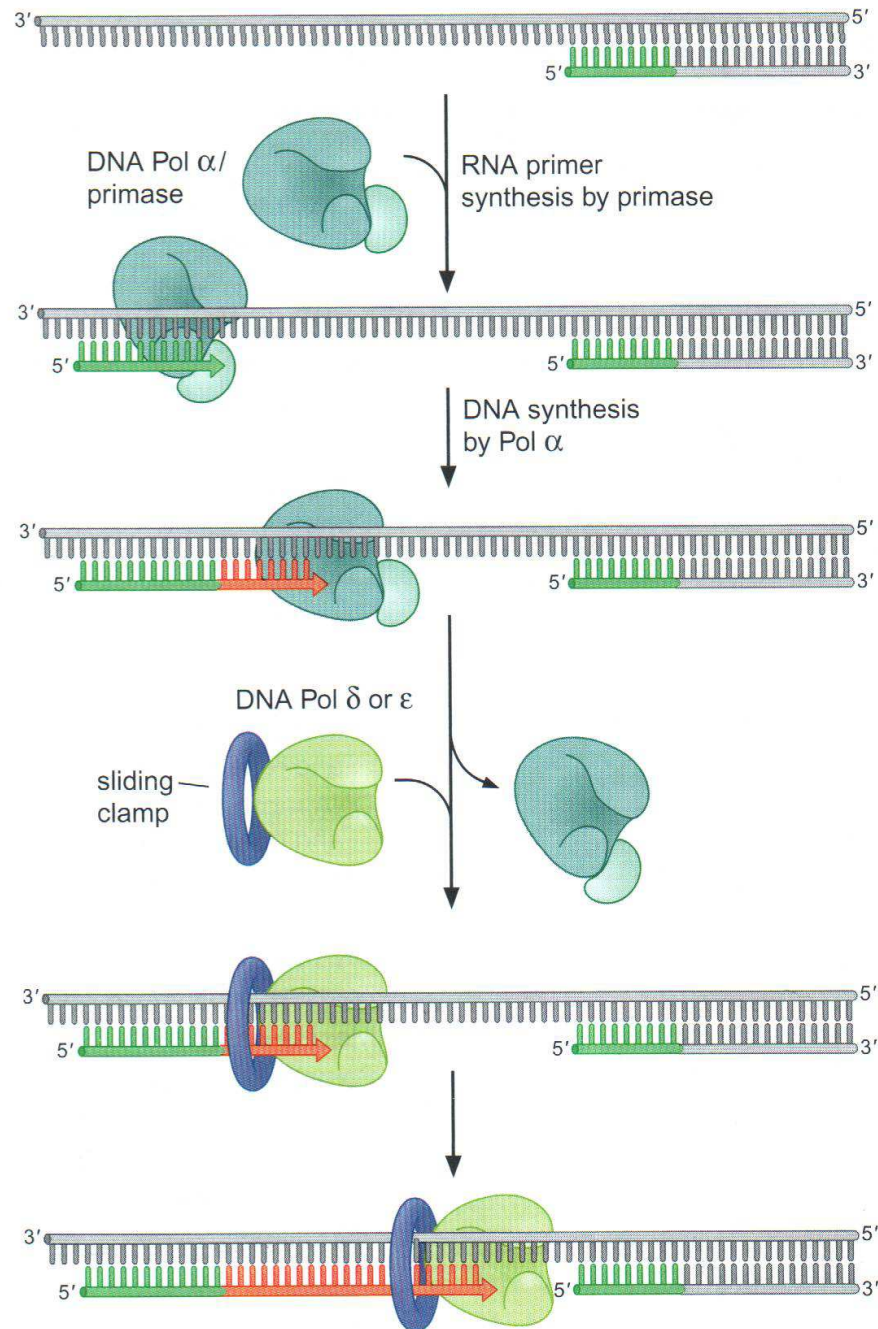


Figure 9.9

Replicating DNA of *Drosophila melanogaster*. (a) Electron micrograph showing replication units (replicons). (b) An interpretation of the electron micrograph shown in (a).







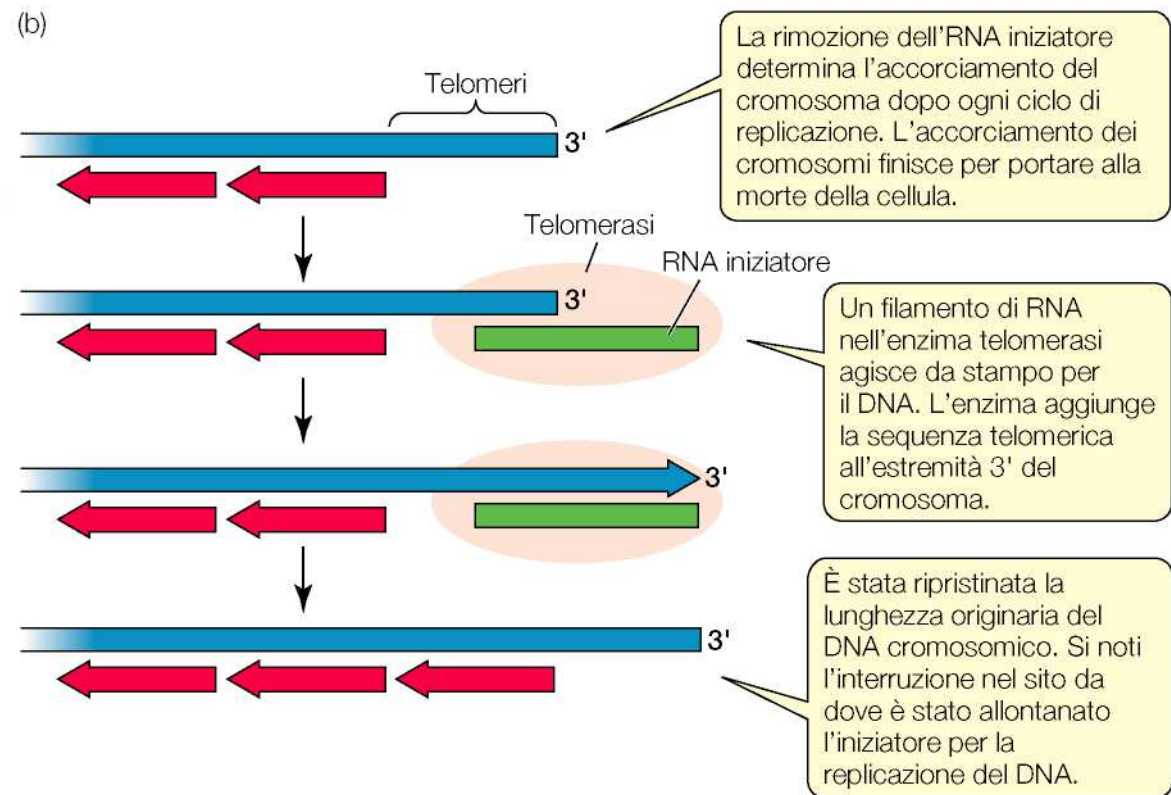
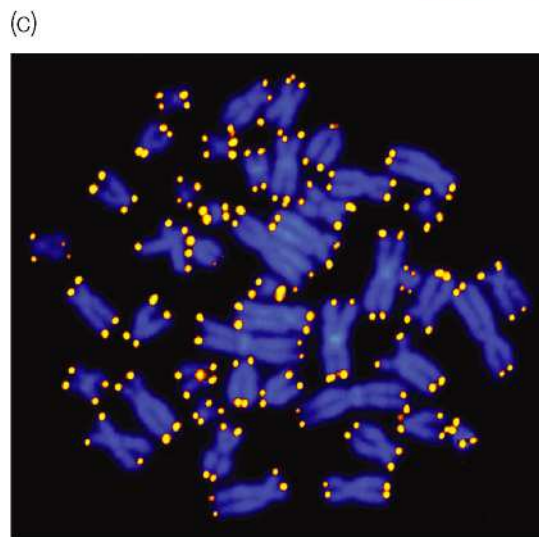
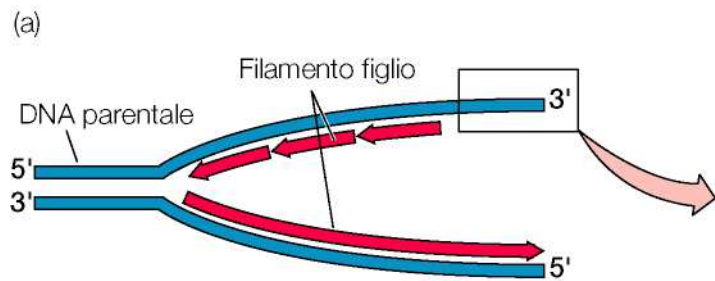




FIGURE 7-9 The structure of a typical telomere. The repeated sequence (from human cells) is shown in a representative box. Note that the region of ssDNA at the 3' end of the chromosome can be hundreds of bases long.

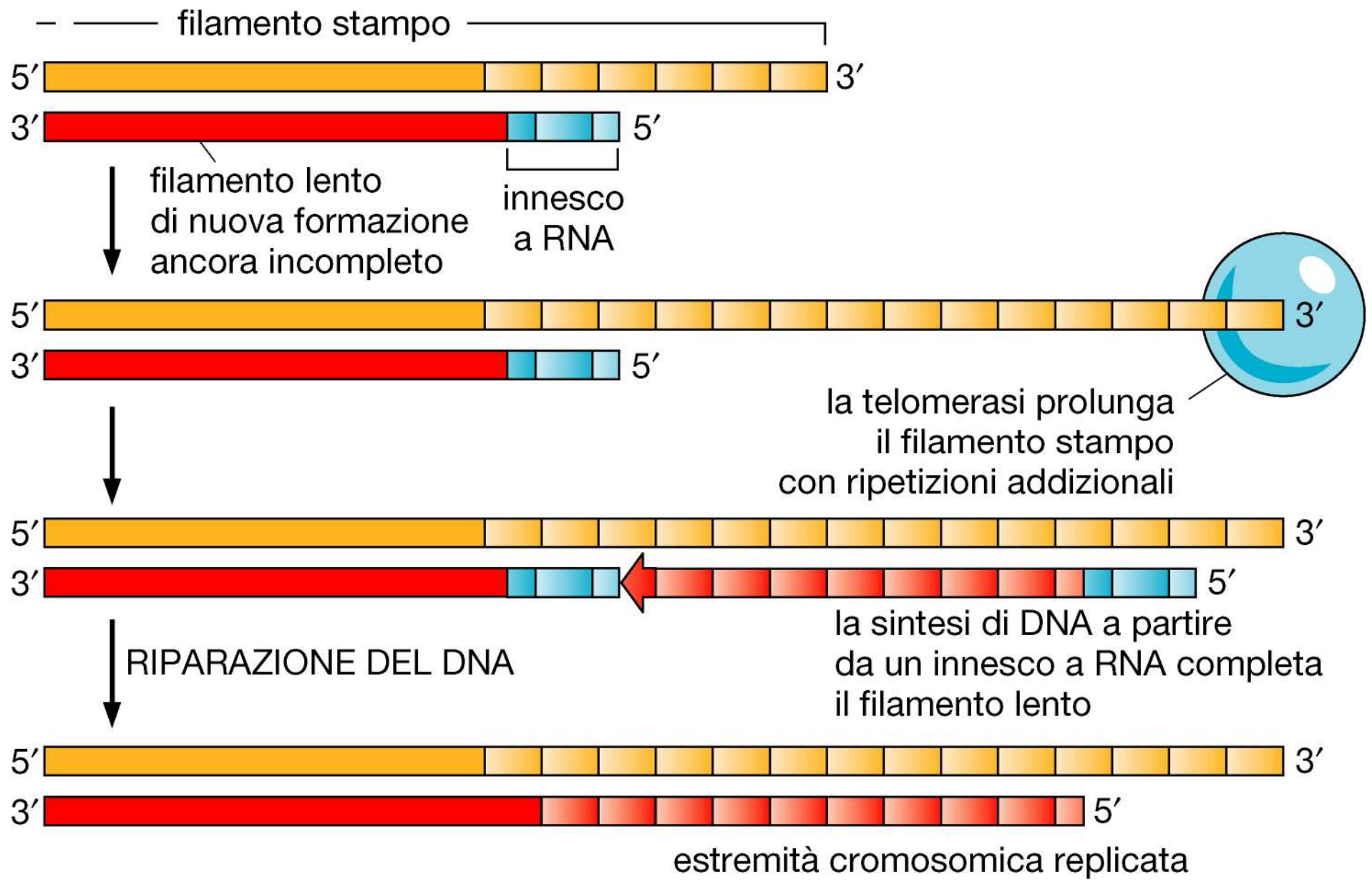
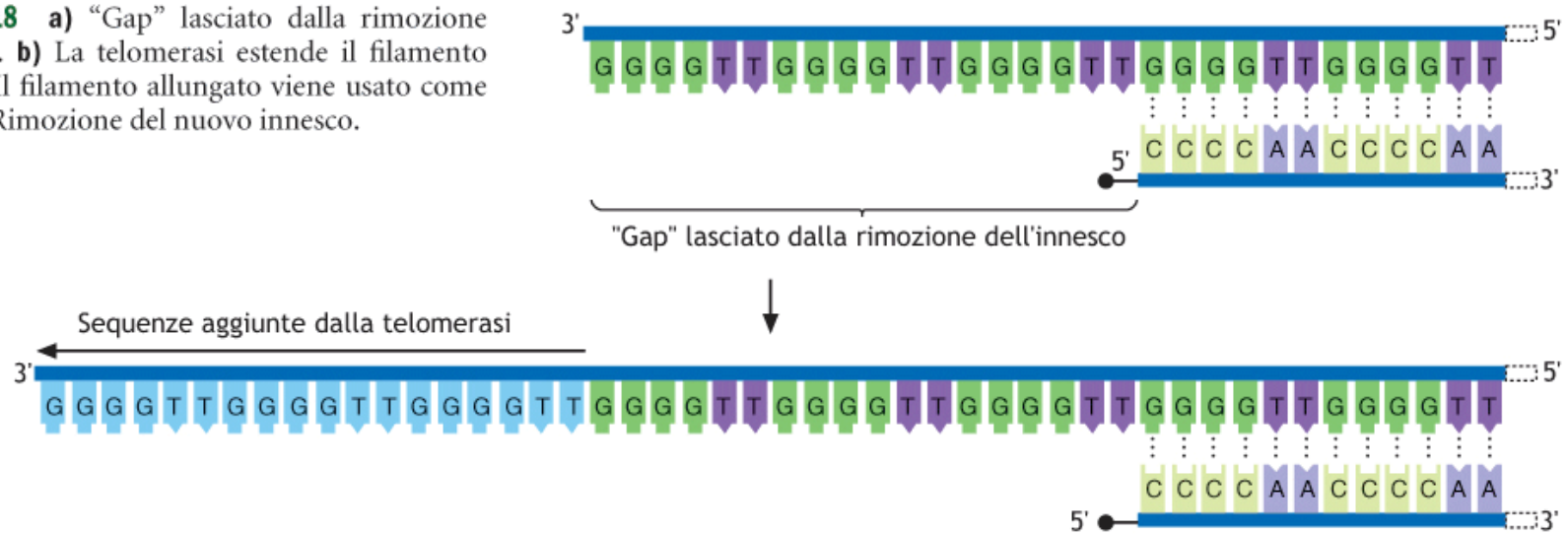


FIGURA 4.18 a) "Gap" lasciato dalla rimozione dell'innesco. b) La telomerasi estende il filamento stampo. c) Il filamento allungato viene usato come stampo. d) Rimozione del nuovo innesco.



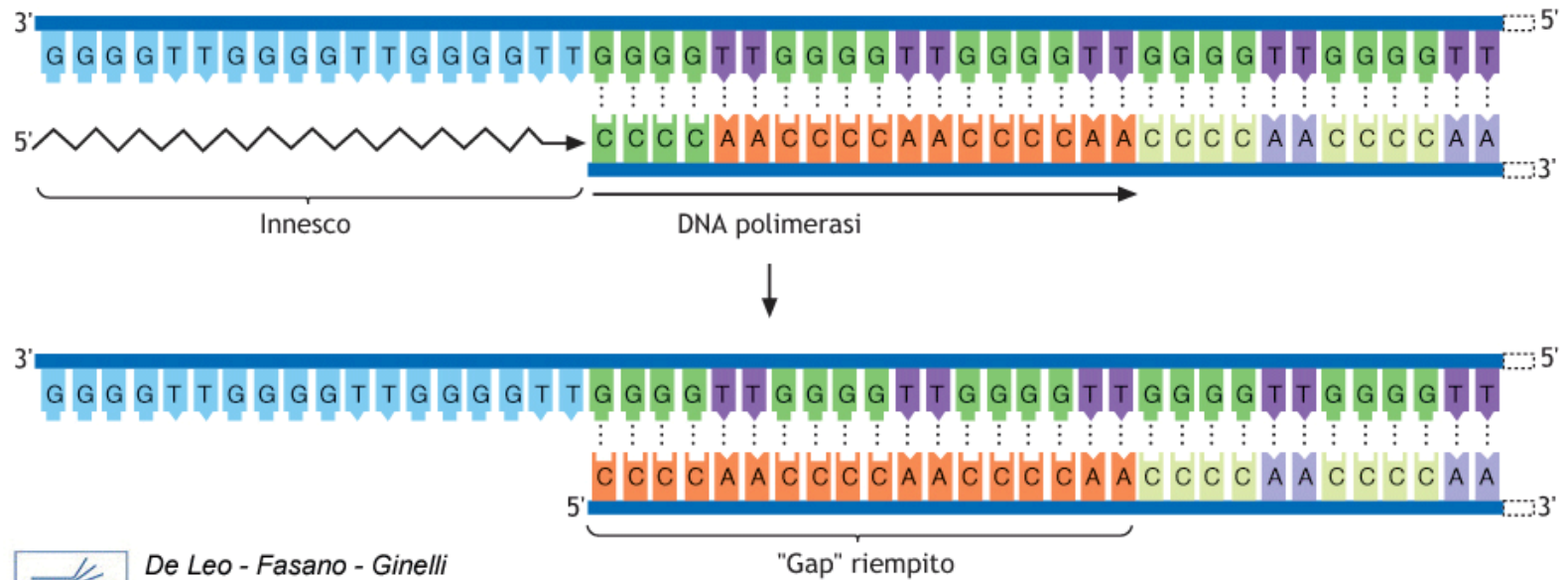
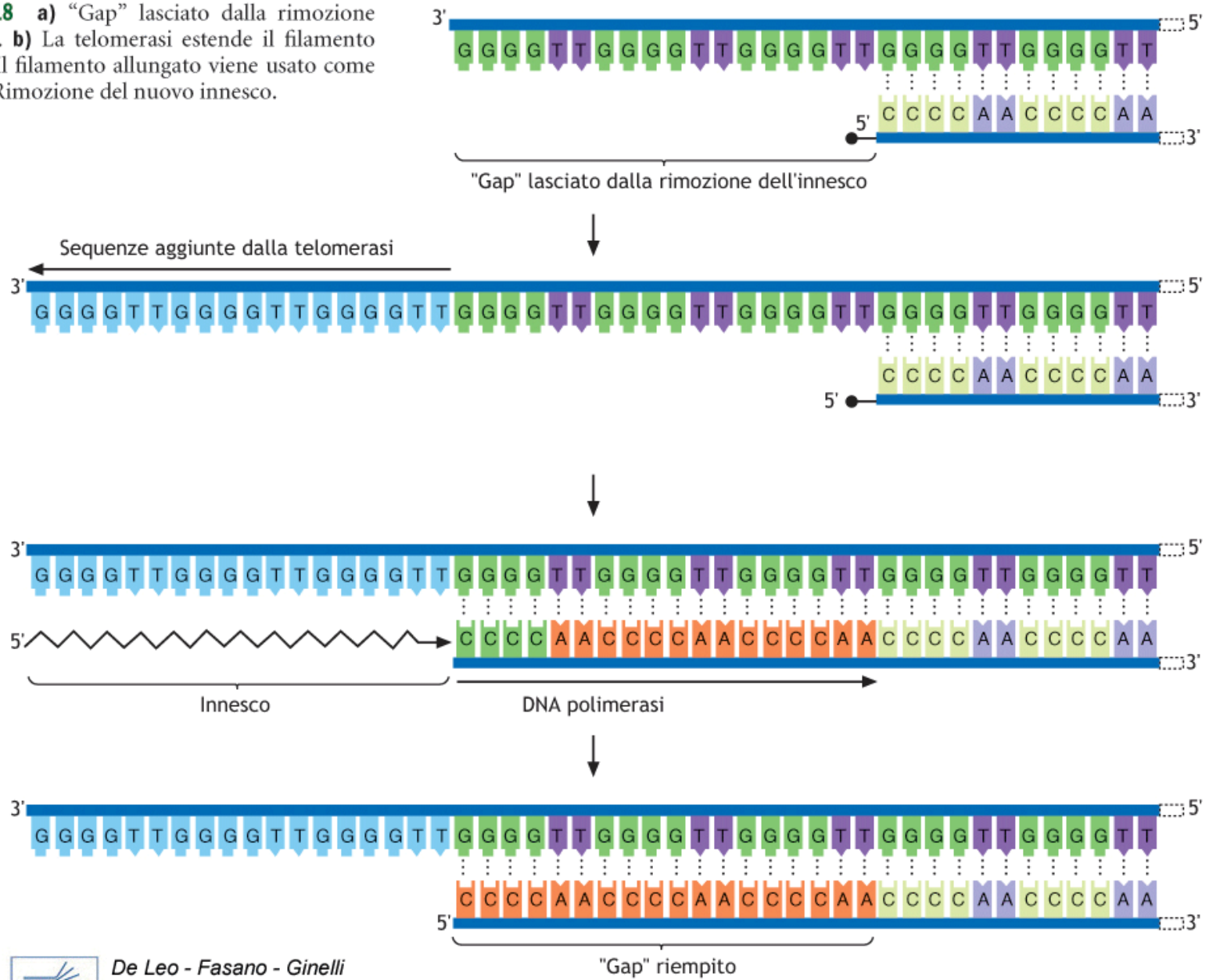
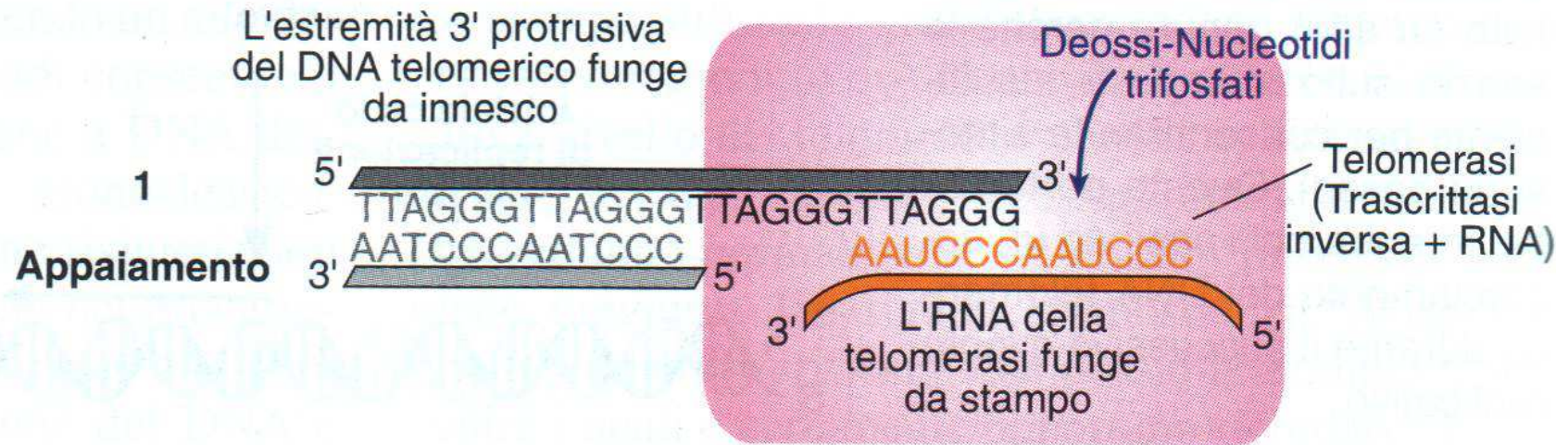
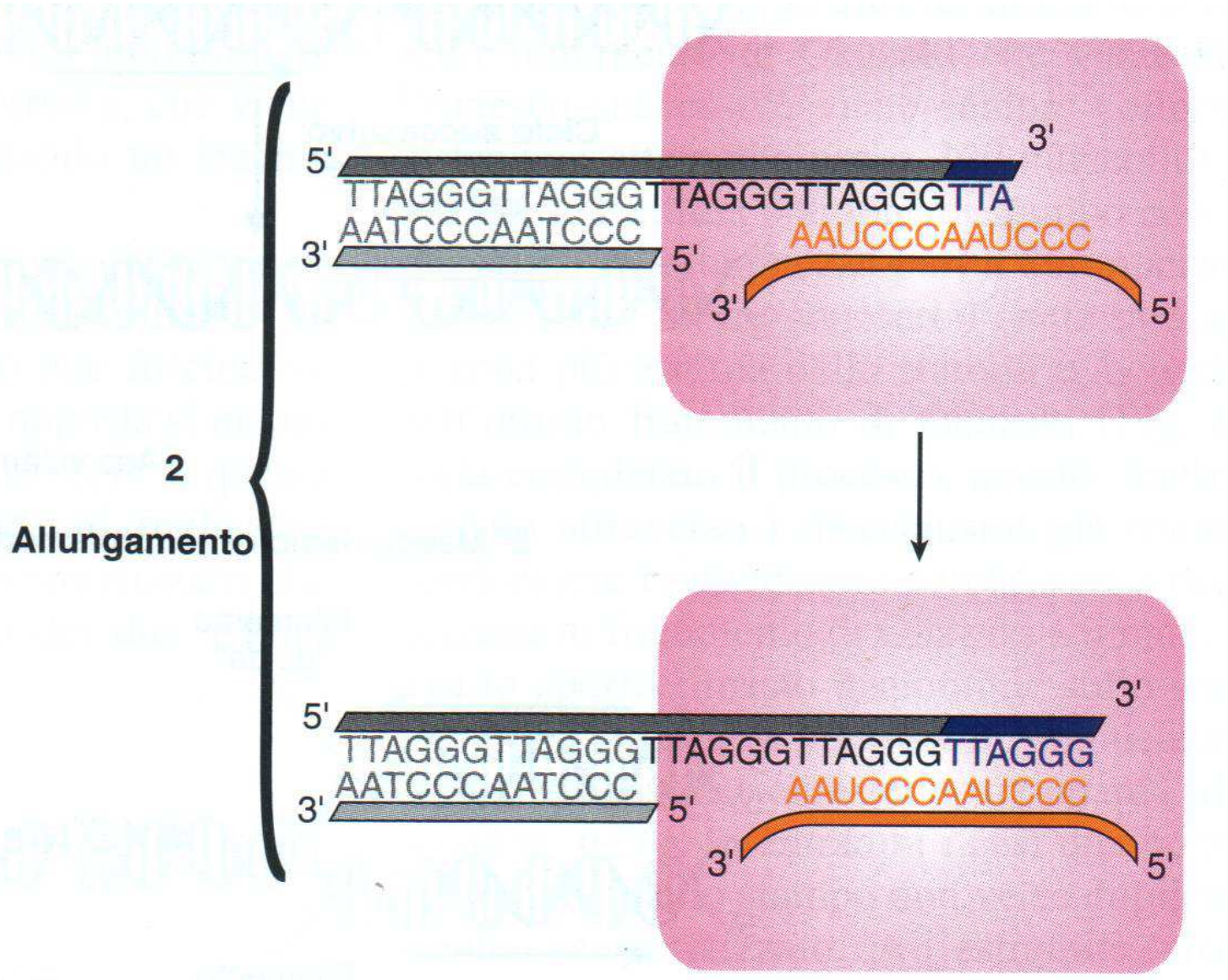
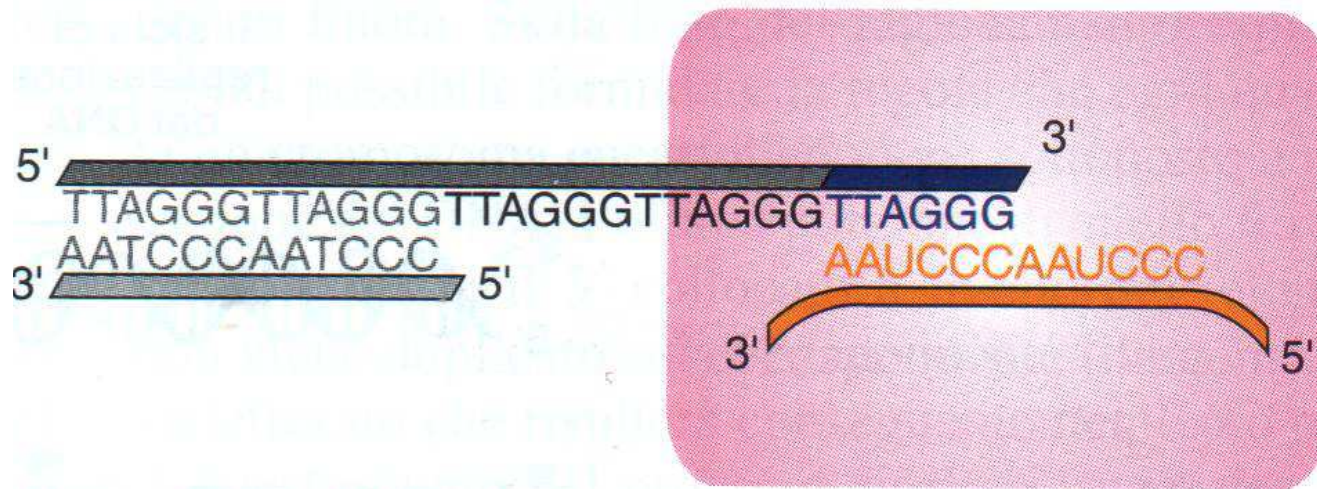
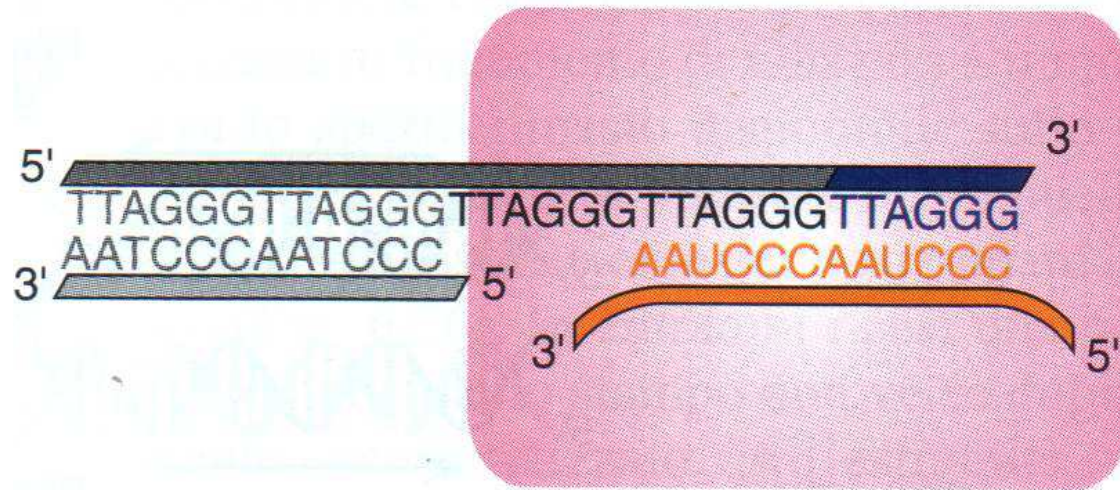


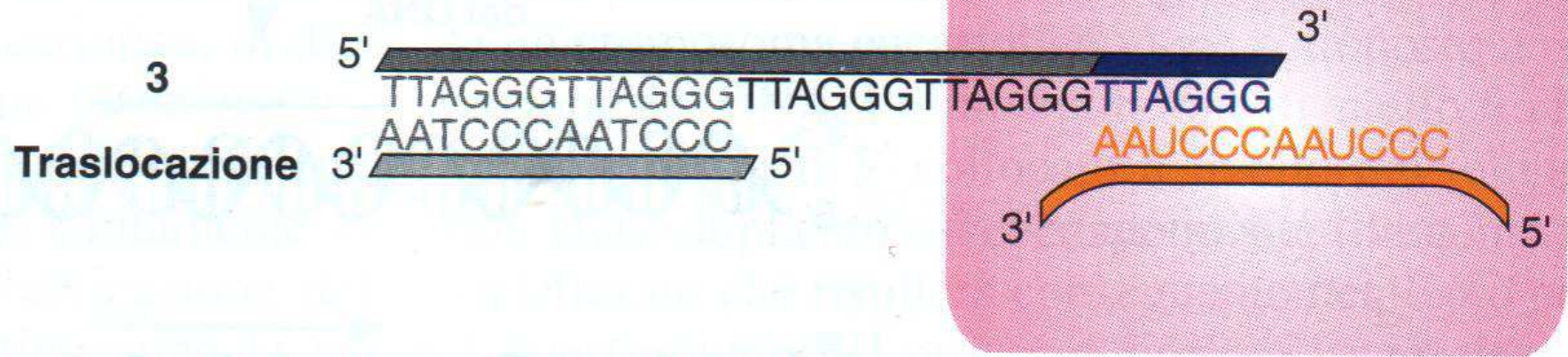
FIGURA 4.18 a) "Gap" lasciato dalla rimozione dell'innesco. b) La telomerasi estende il filamento stampo. c) Il filamento allungato viene usato come stampo. d) Rimozione del nuovo innesco.







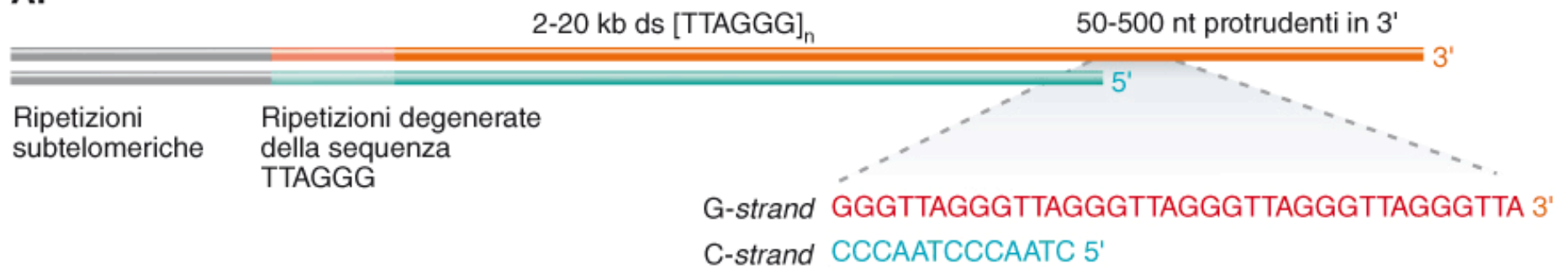




A loop seals the end of the chromosome

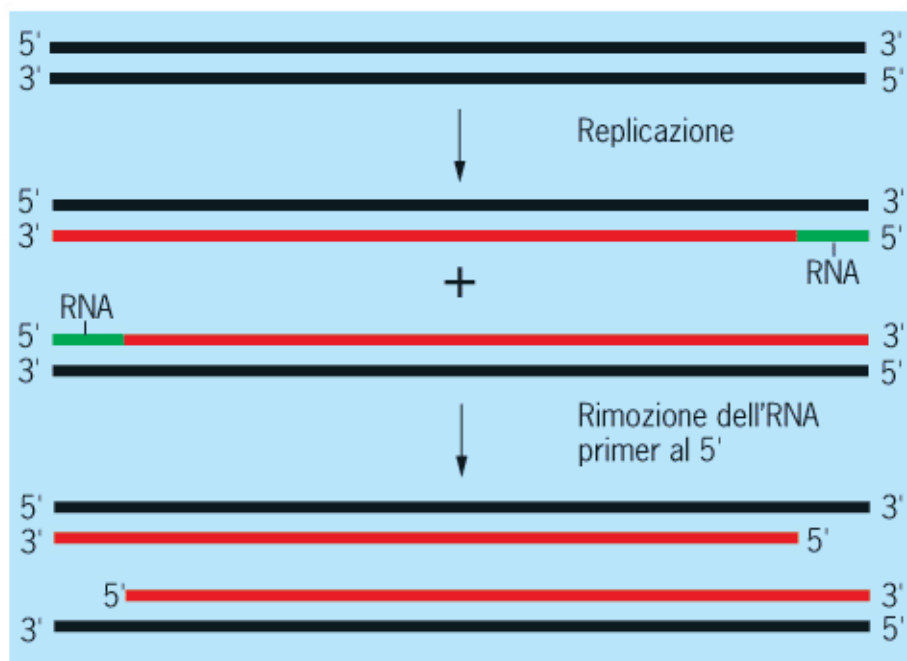


A.

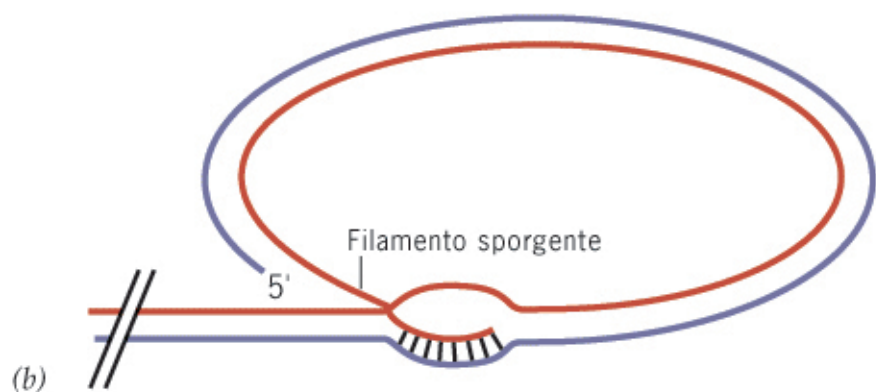


B.

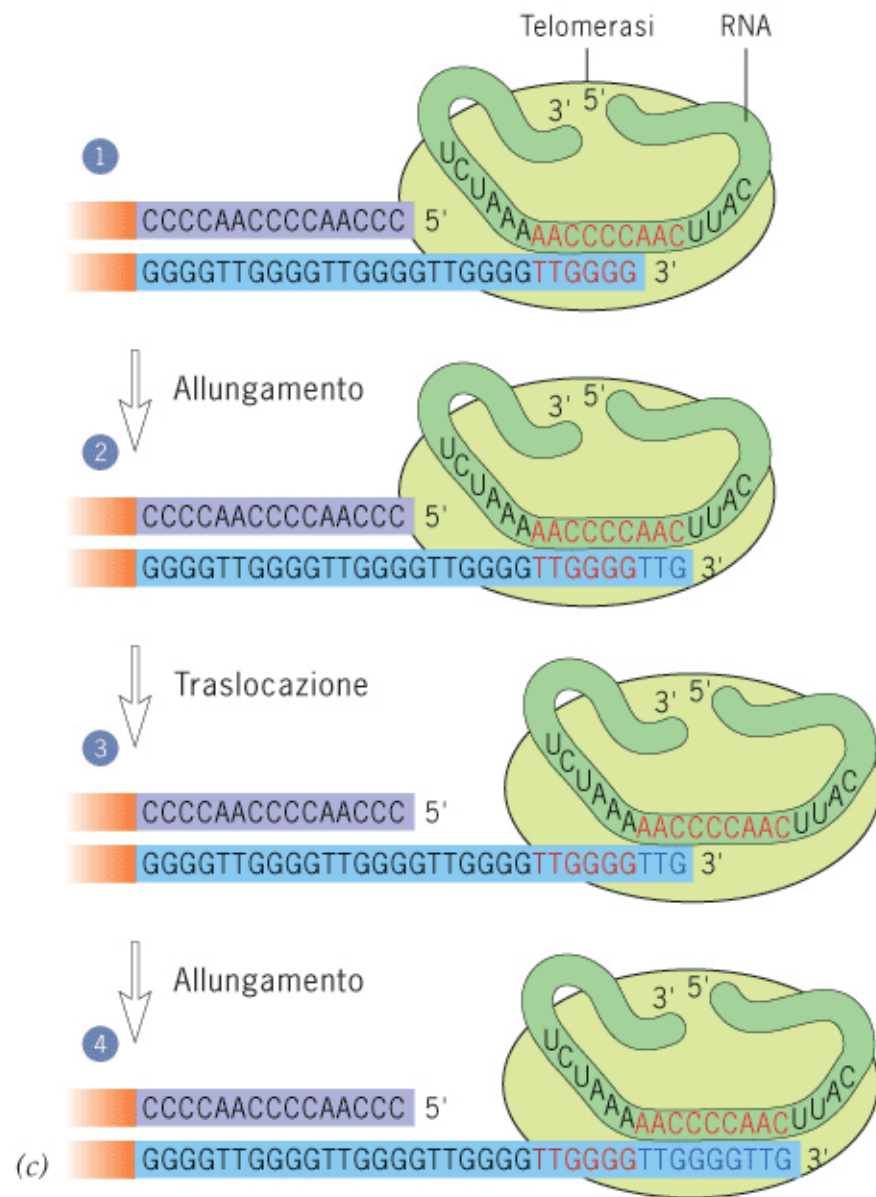




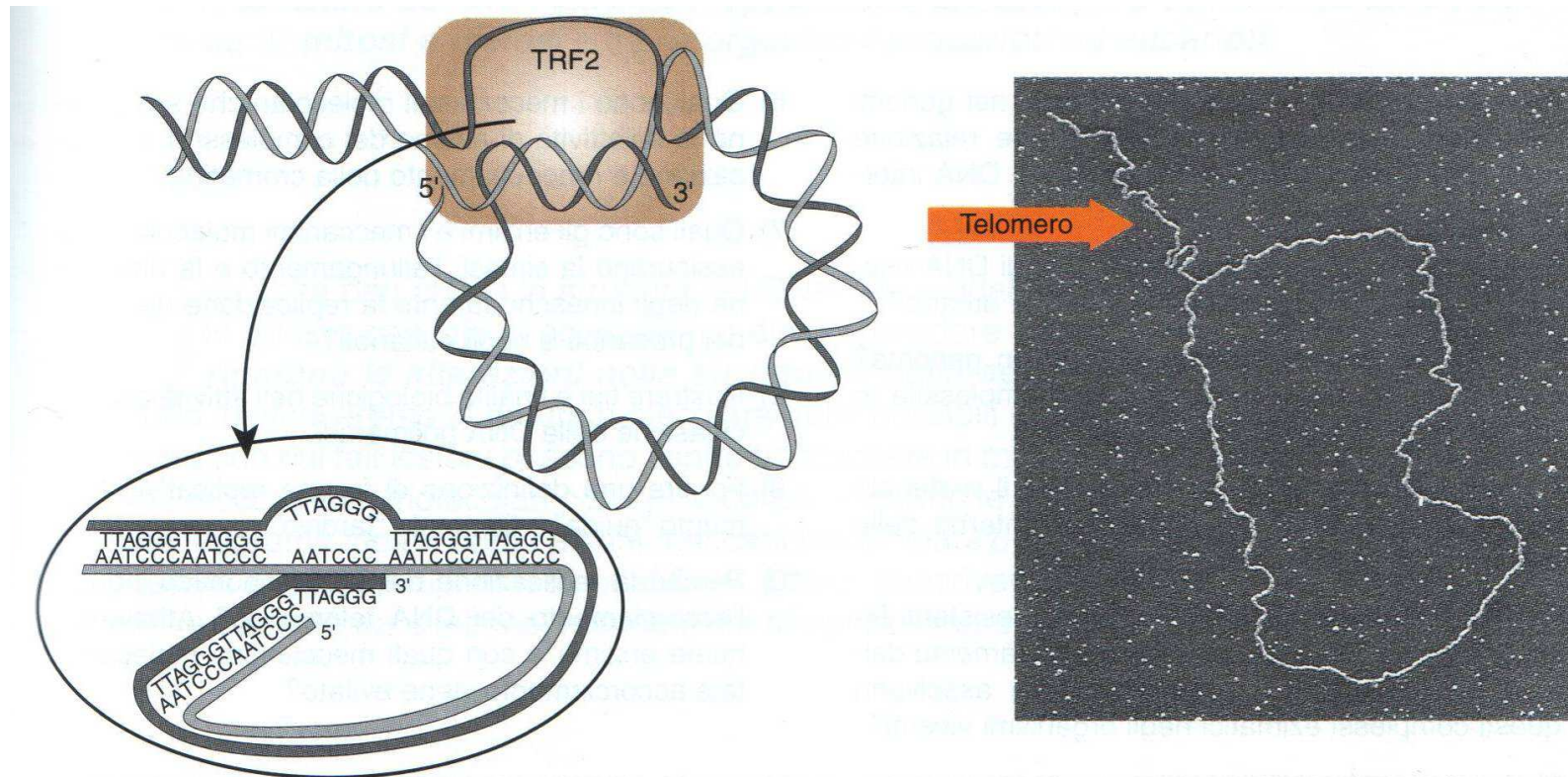
(a)



(b)



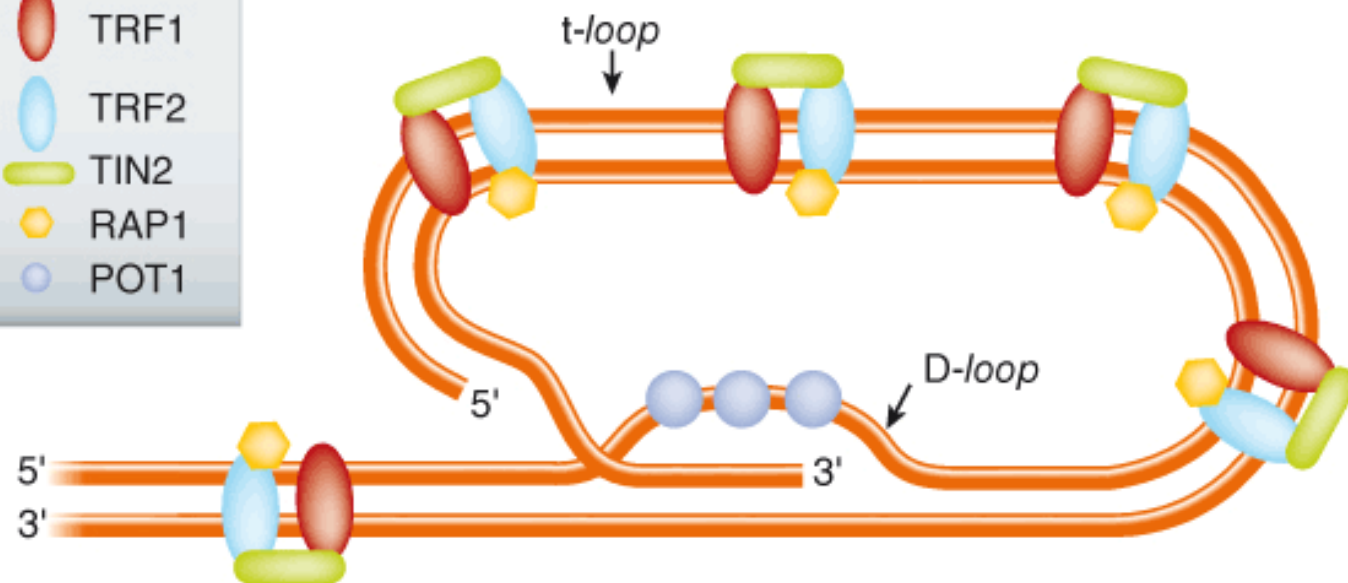
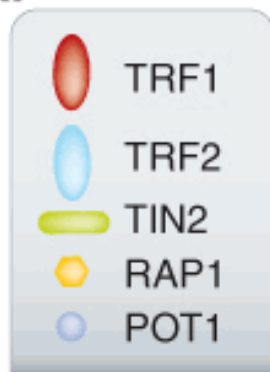
(c)



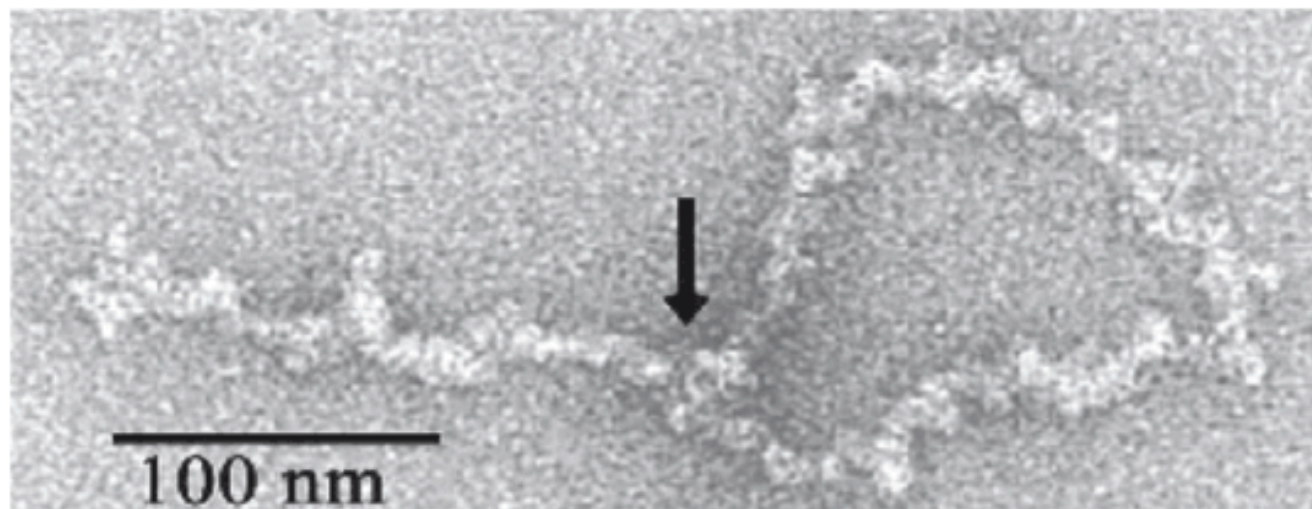
◆ **FIGURA 6.28**

Formazione dell'ansa T. Nelle fasi di interruzione dell'attività telomerasica, i telomeri vengono protetti formando la struttura (ansa T) mostrata in figura come schema (a sinistra) e come immagine ultrastrutturale (a destra). Attraverso un ripiegamento del DNA telomerico, il suo estremo 3' protrusivo spiazza il filamento identico di una unità ripetitiva a monte e si appaia a quella complementare. Il meccanismo descritto viene catalizzato dalla proteina TRF2. (Foto per gentile concessione del Dr. Jack Griffith.)

A.

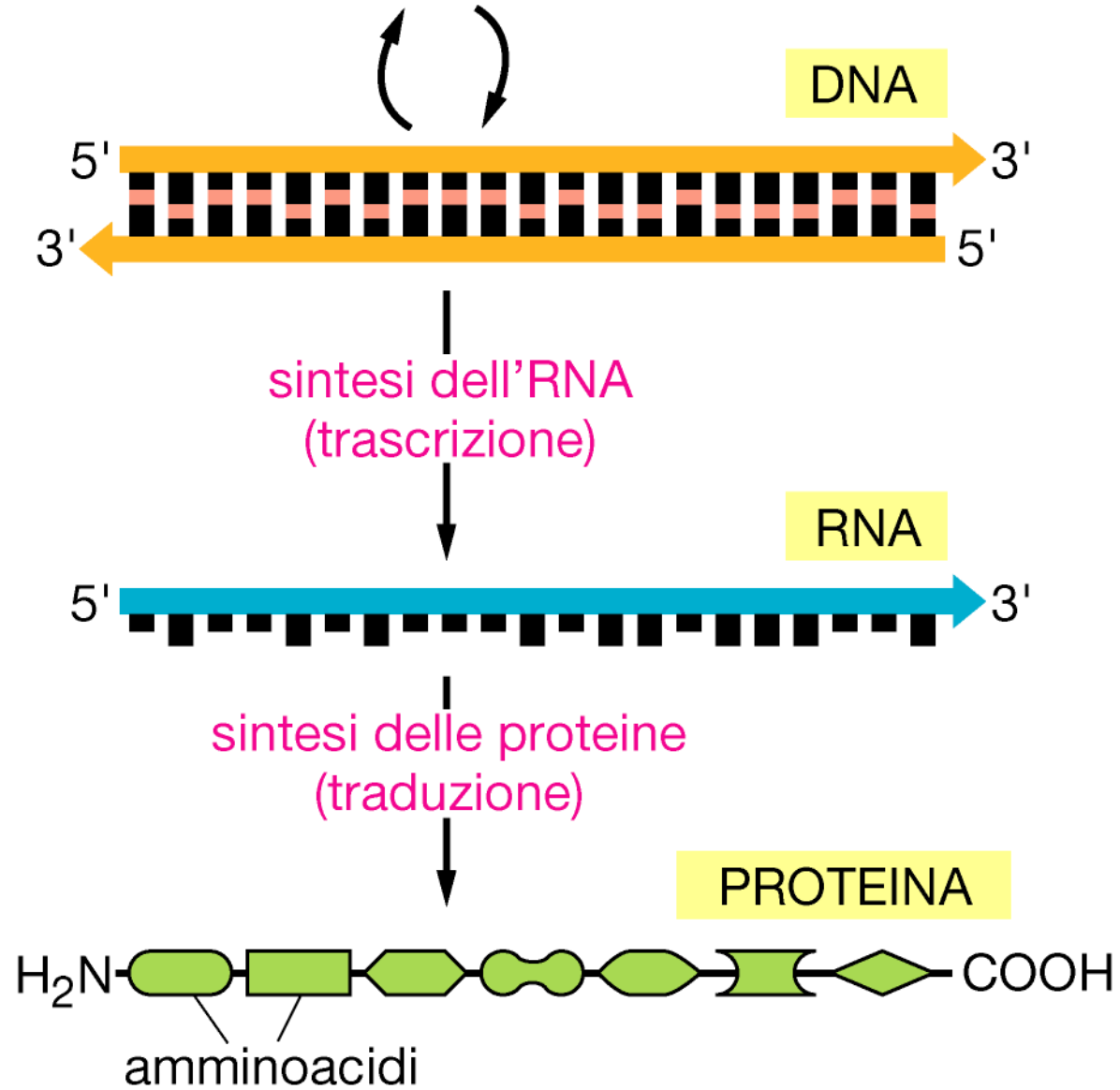


B.

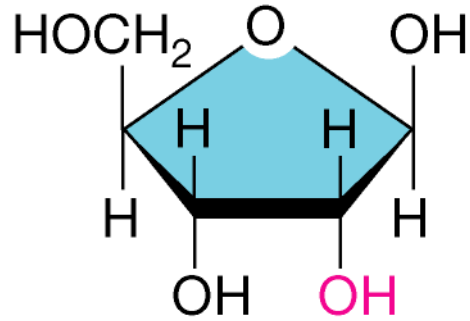


Espressione Genica I: la Trascrizione

replicazione del DNA
riparazione del DNA
ricombinazione genetica

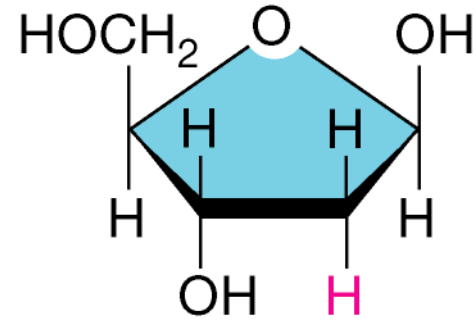


(A)



ribosio

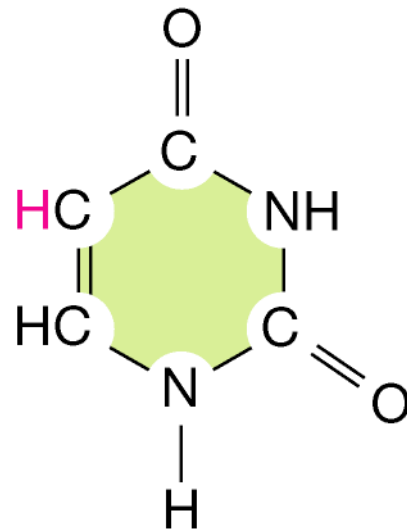
si trova nell'acido
ribonucleico (RNA)



deossiribosio

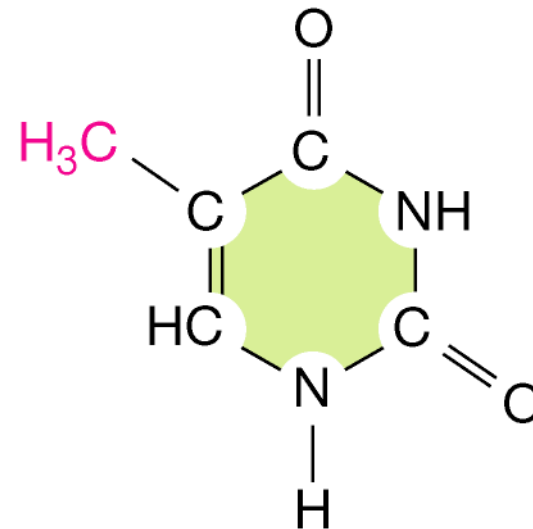
si trova nell'acido
deossiribonucleico (DNA)

(B)



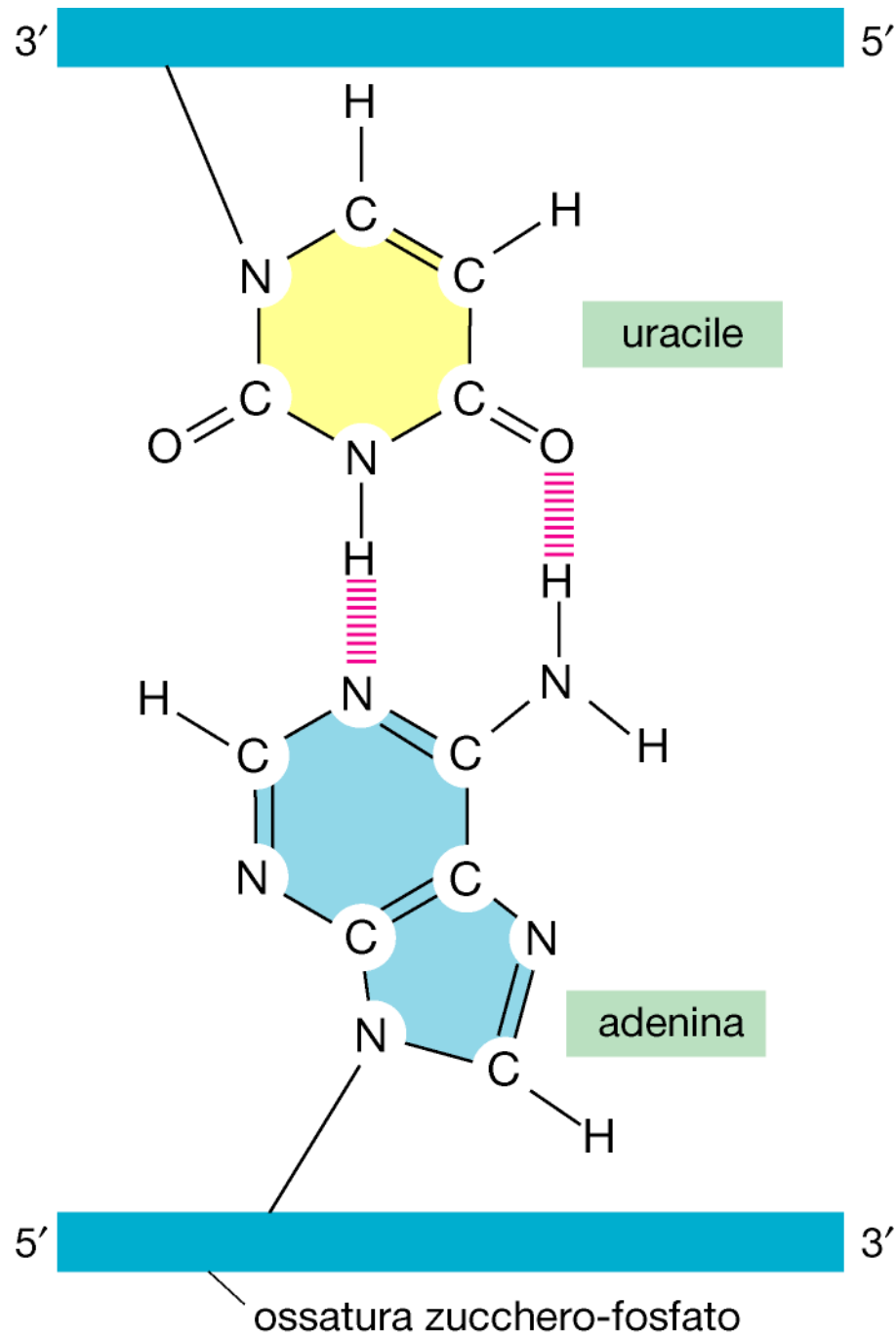
uracile

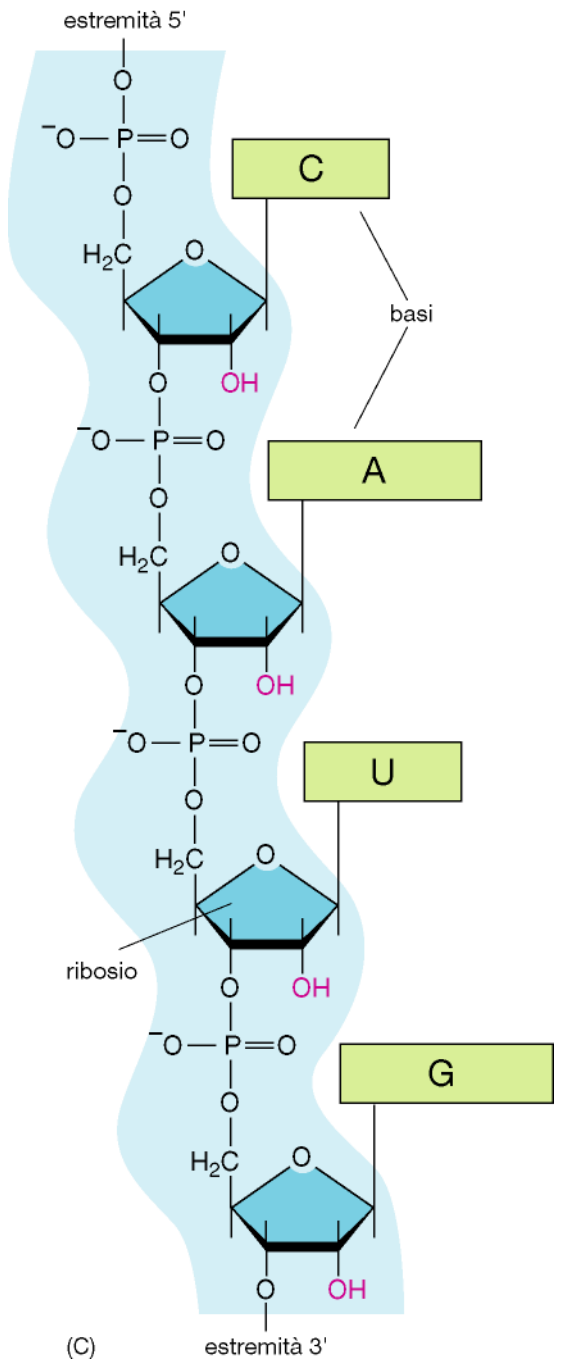
si trova nell'RNA

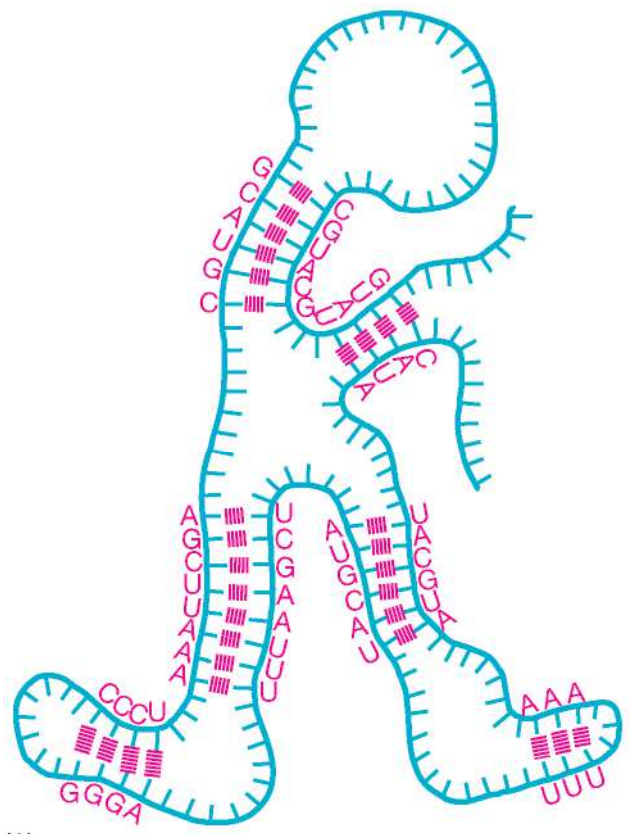


timina

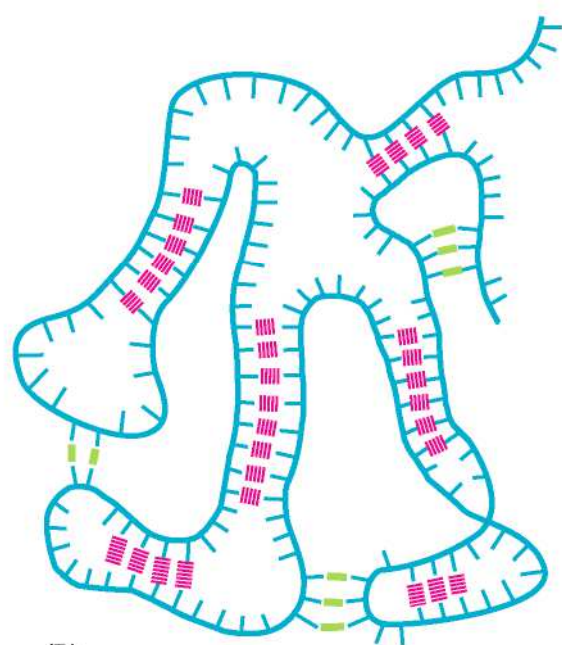
si trova nel DNA



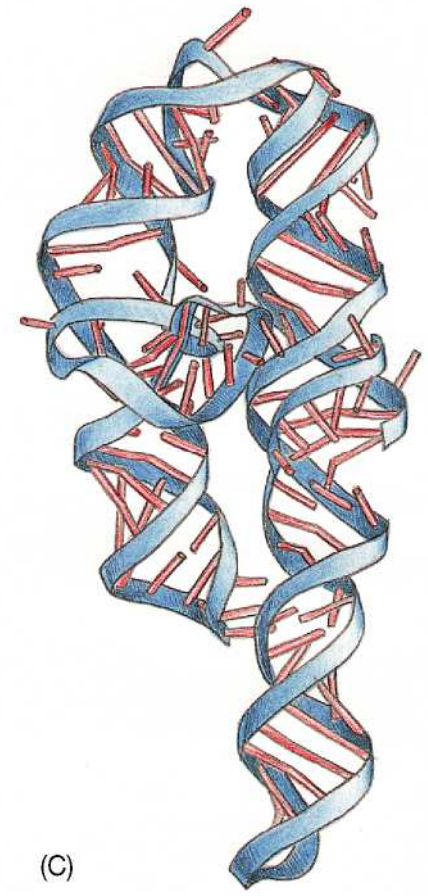




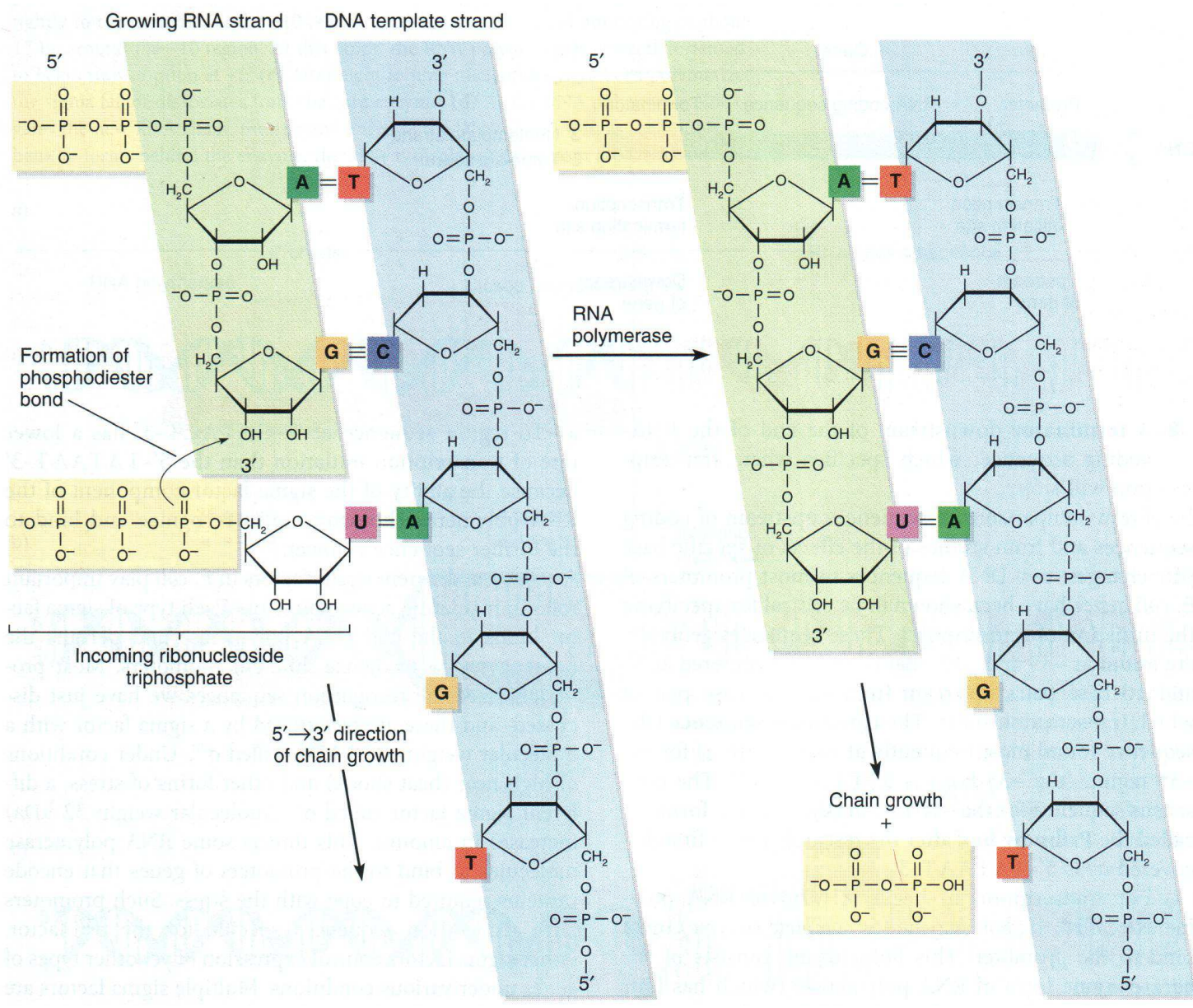
(A)



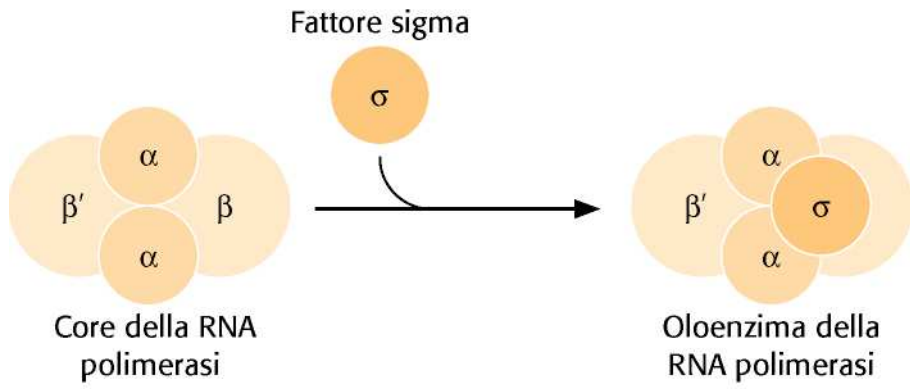
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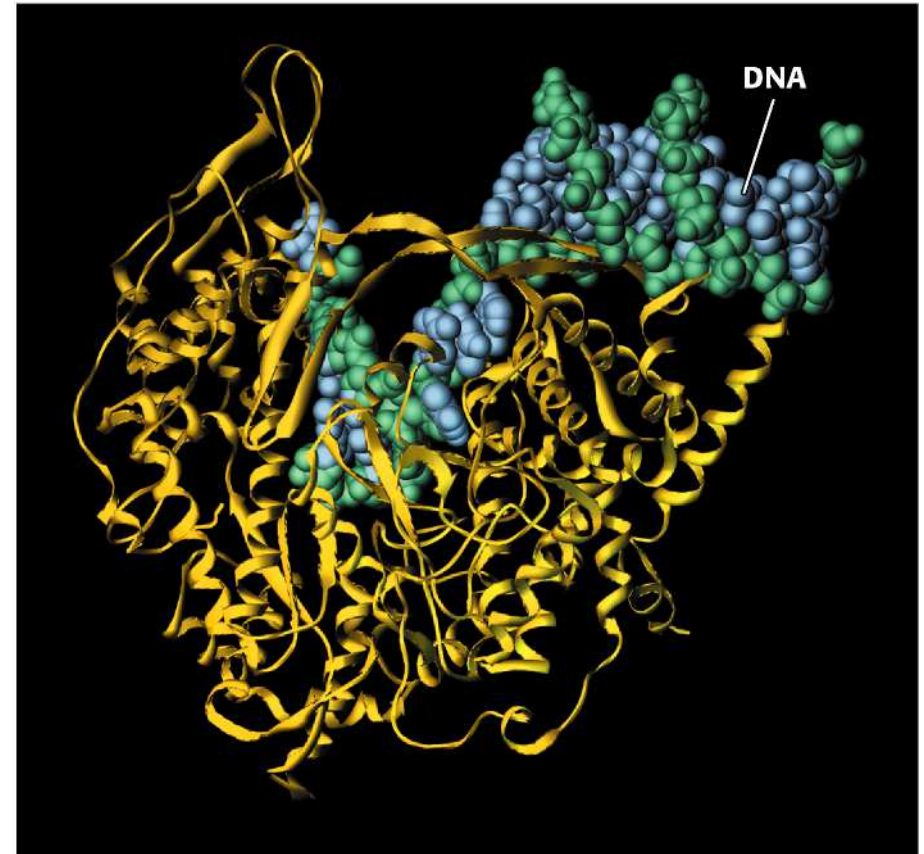
(C)



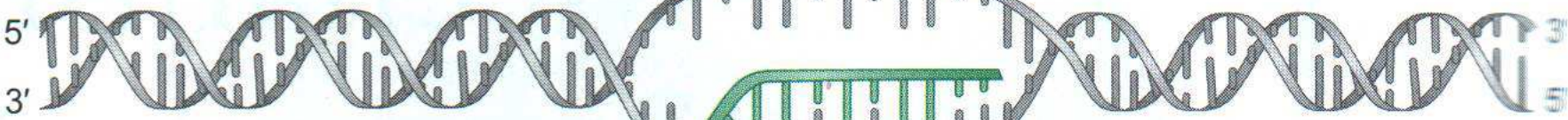
(a)



(b)

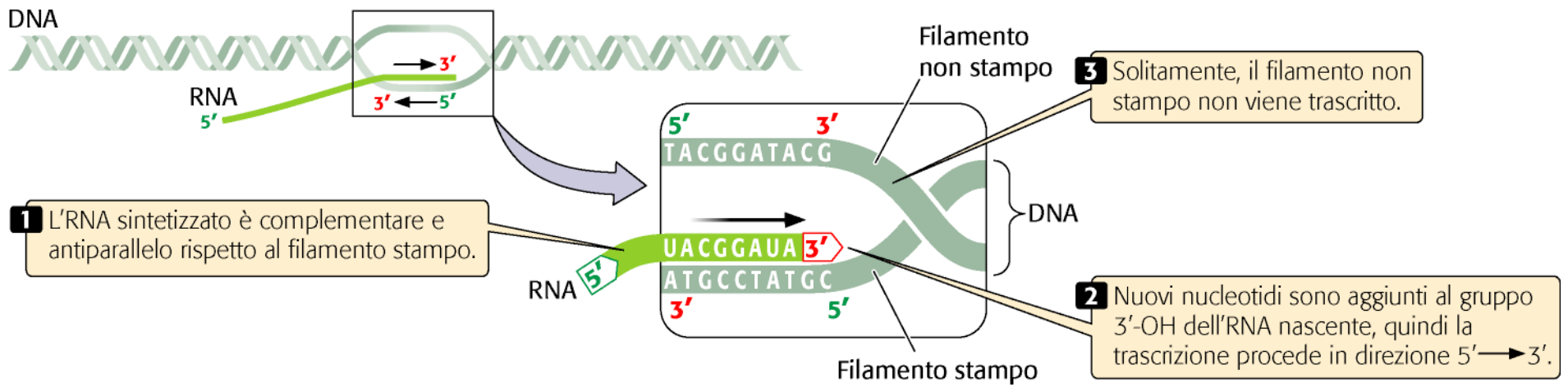


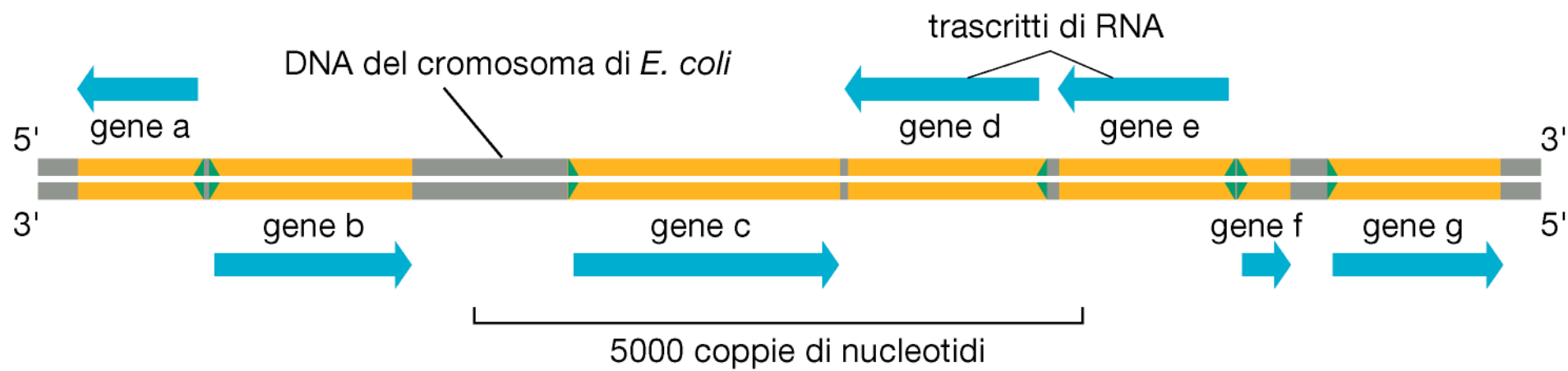
DNA duplex



RNA







Tipi di RNA

- RNA messaggero mRNA
- RNA ribosomale rRNA
- RNA transfer tRNA
- RNA nucleari piccoli snRNA **(solo eucarioti)**