

بازآرایی DNA DNA Rearrangement



دکتر هادی انصاری هادی پور

دانشگاه پزشکی

1. Homologous recombination:

Reassortment of genes between chromosome pairs without altering the arrangement of genes within the genome. Other types of recombinational events lead to rearrangements of genomic DNA.

2. Site-Specific Recombination:

Bacteriophage λ

Immunoglobulin genes

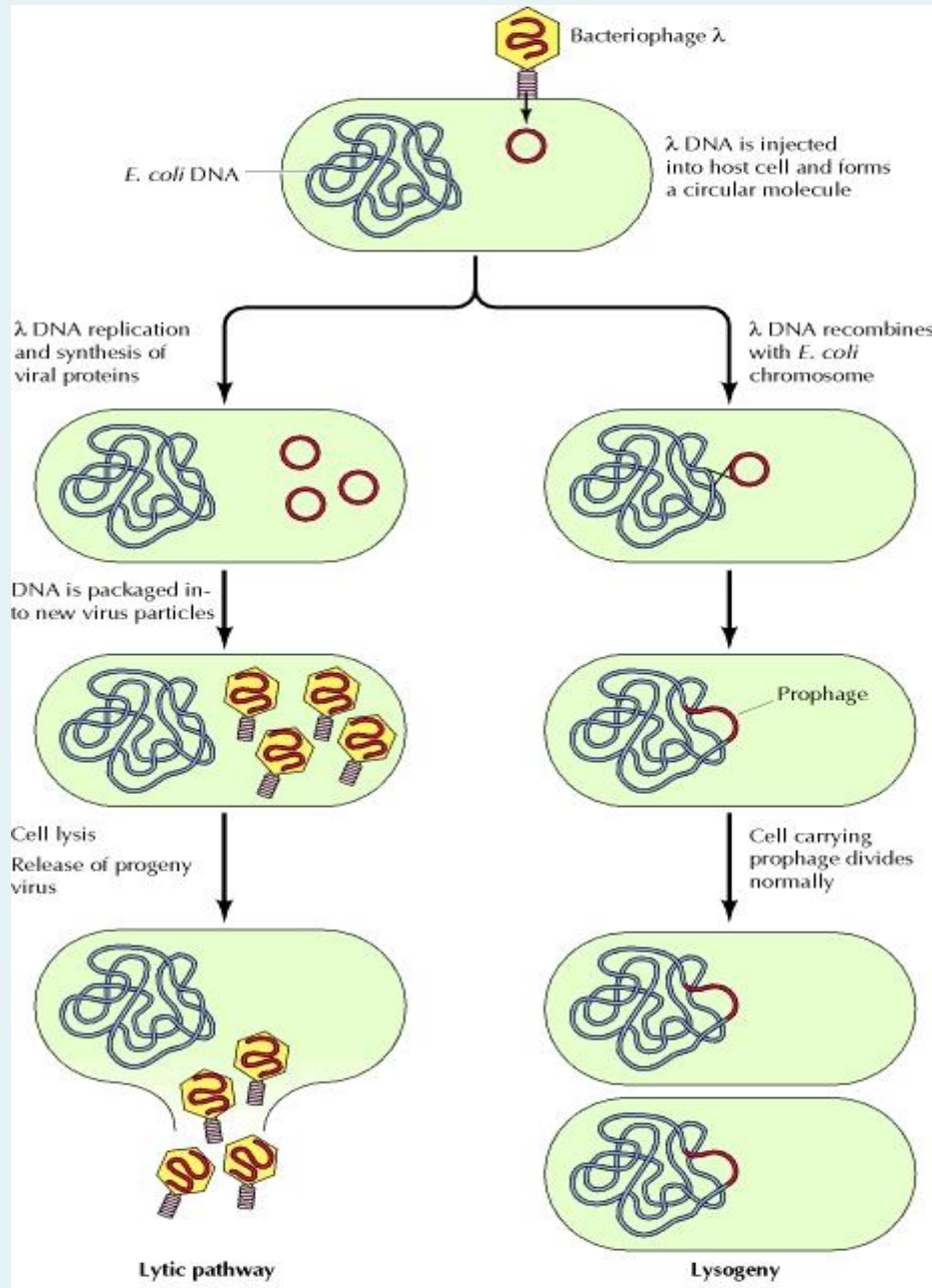
3. Transposition via DNA Intermediates:

transposable elements , or transposons: eukaryotes and bacteria.

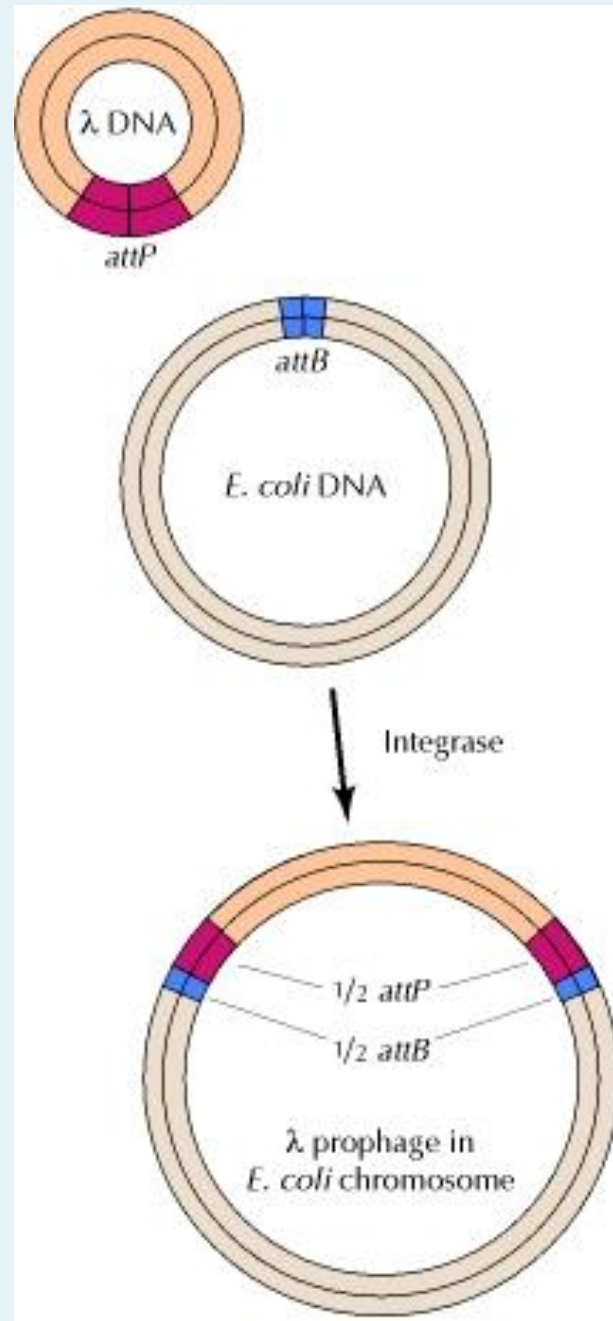
4. Transposition via RNA Intermediates: Retroviruses.

5. Gene Amplification

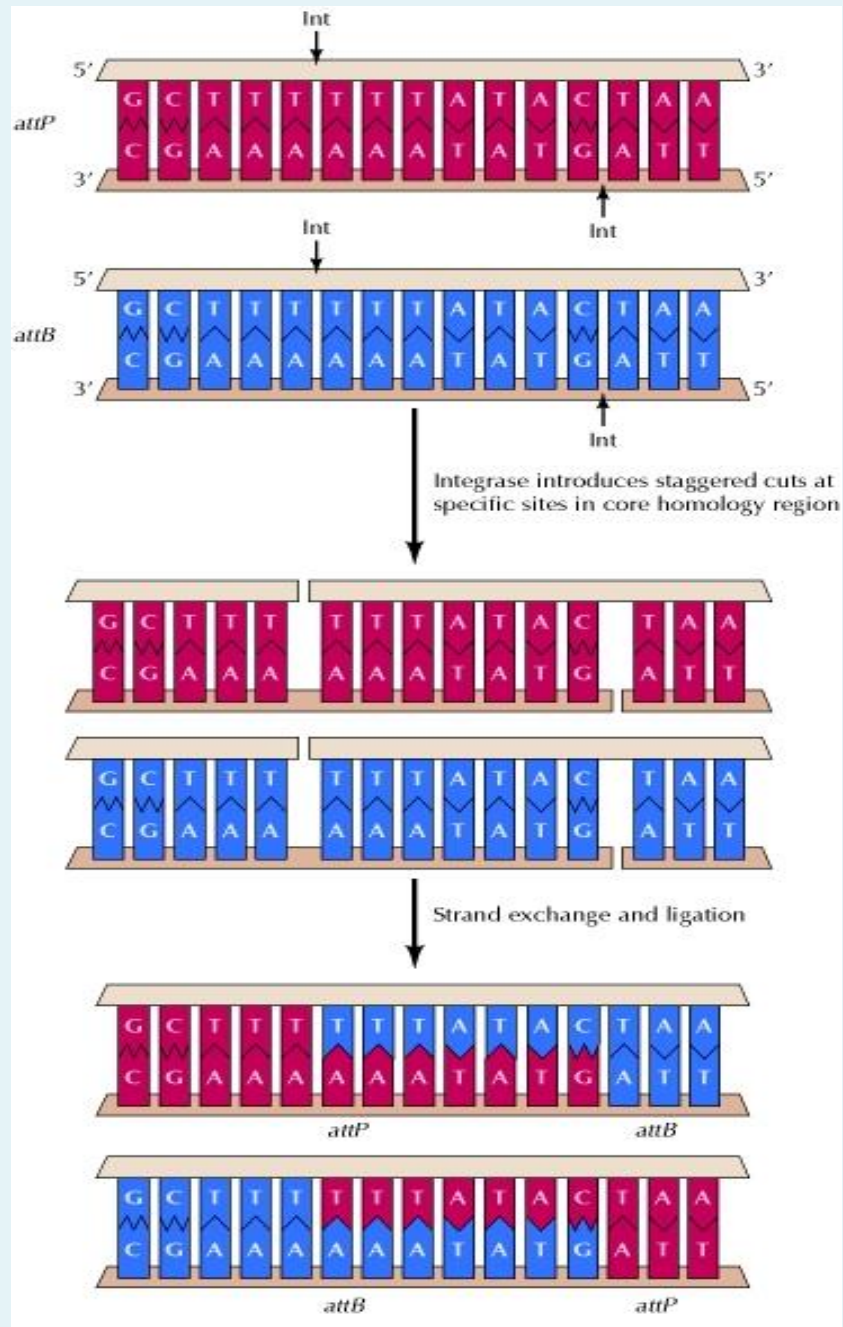
- The discovery that genes can move to different chromosomal locations came from Barbara McClintock's studies of corn in the 1940s. Purely on the basis of genetic analysis, McClintock described novel genetic elements that could move to different locations in the genome and alter the expression of adjacent genes.
- Several types of DNA rearrangements, including the transposition of elements initially described by McClintock, are now recognized in both prokaryotic and eukaryotic cells.



Lytic and lysogenic pathways of bacteriophage λ

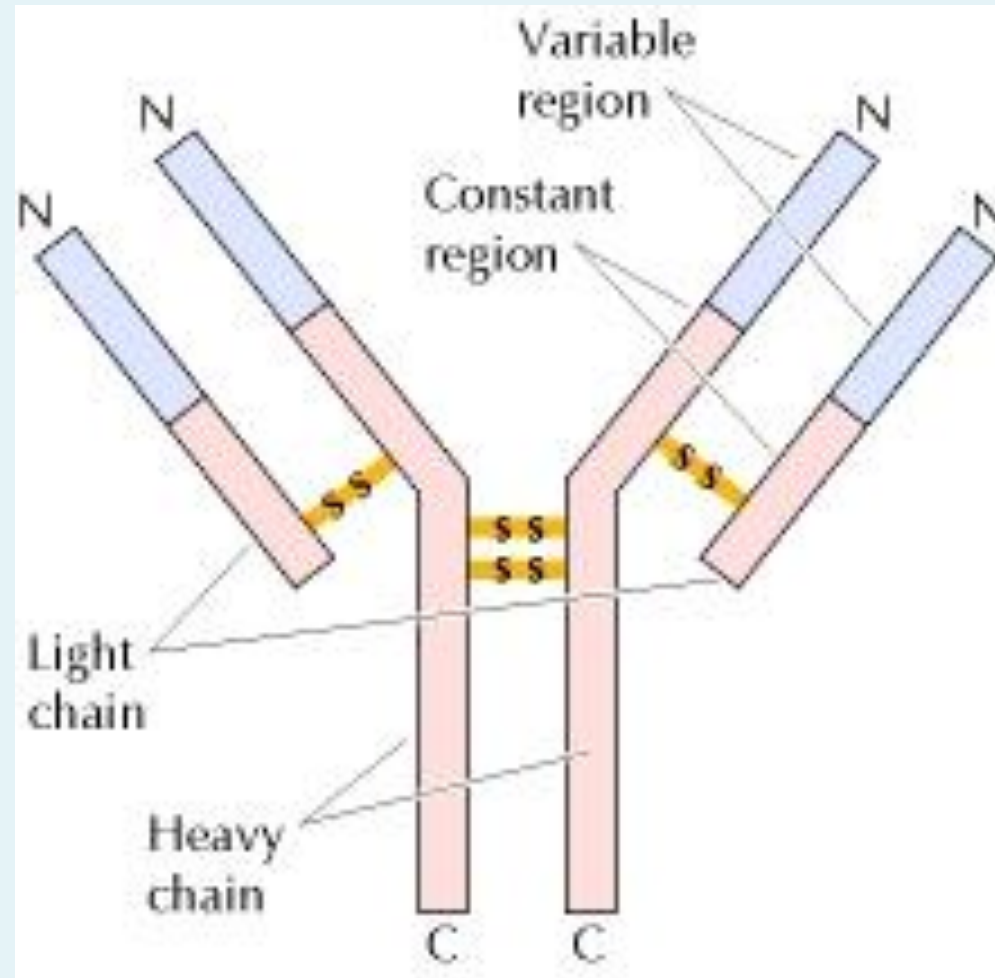


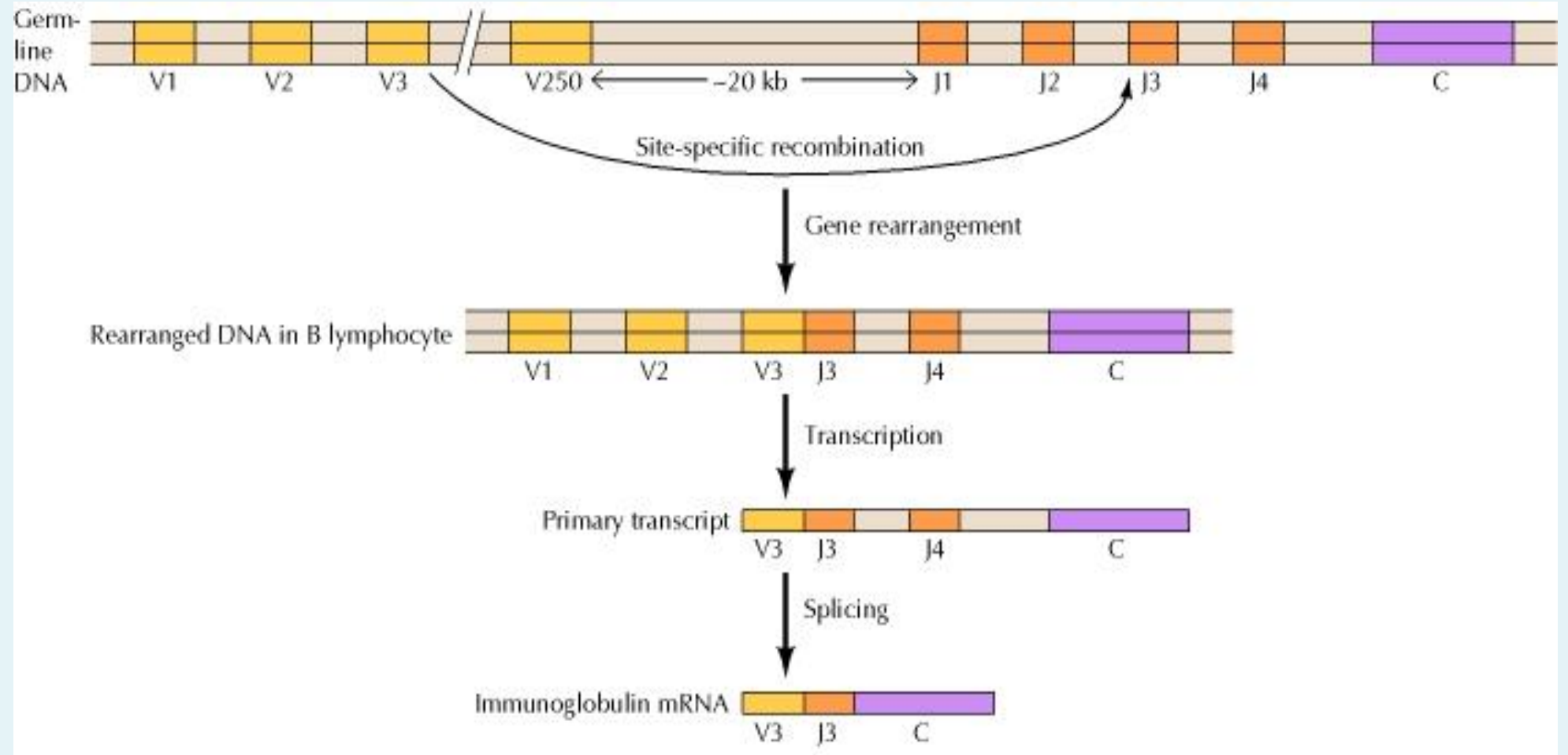
Integration of λ DNA by site-specific recombination



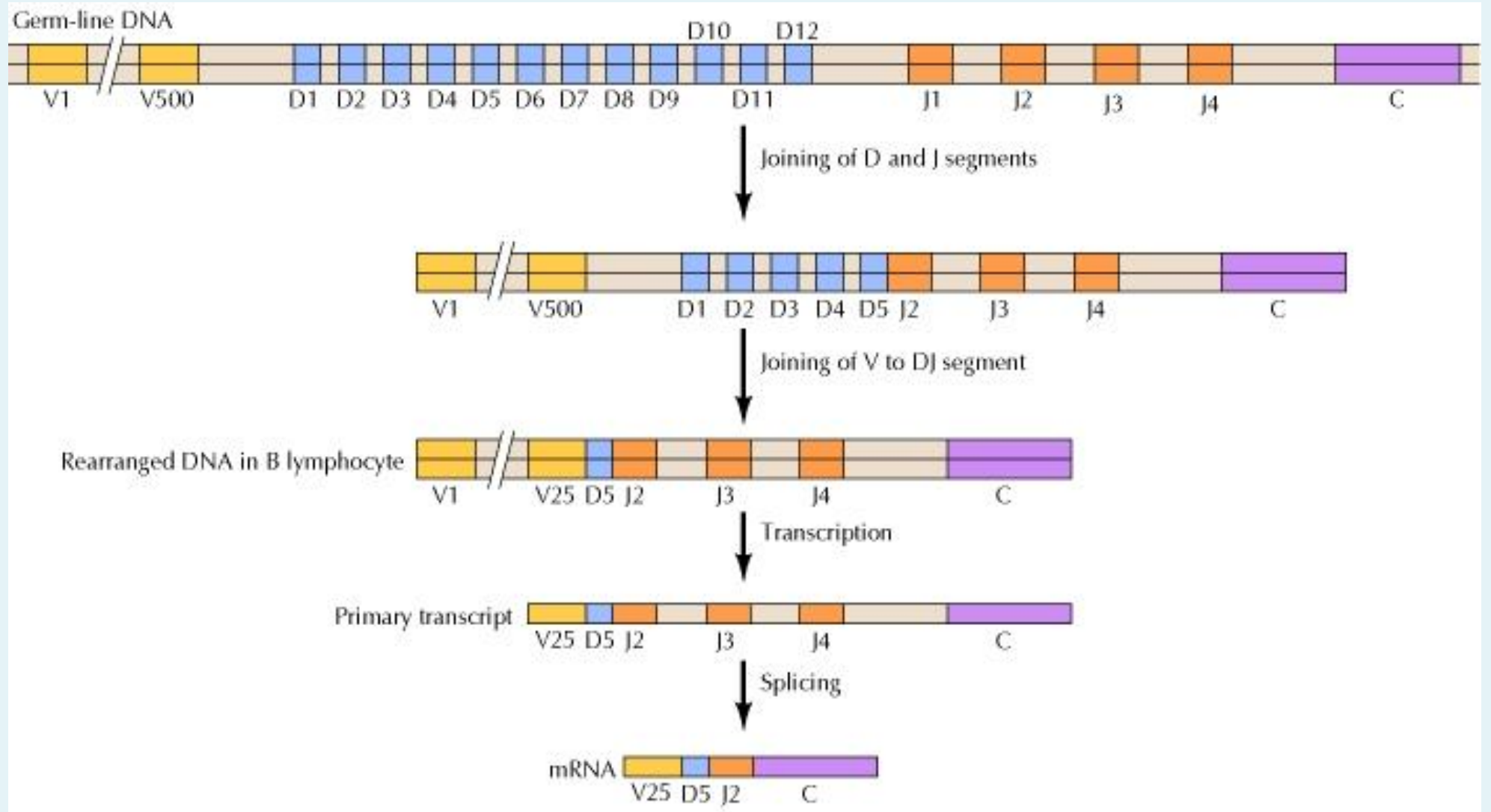
Mechanism of λ site-specific recombination

Structure of an immunoglobulin.

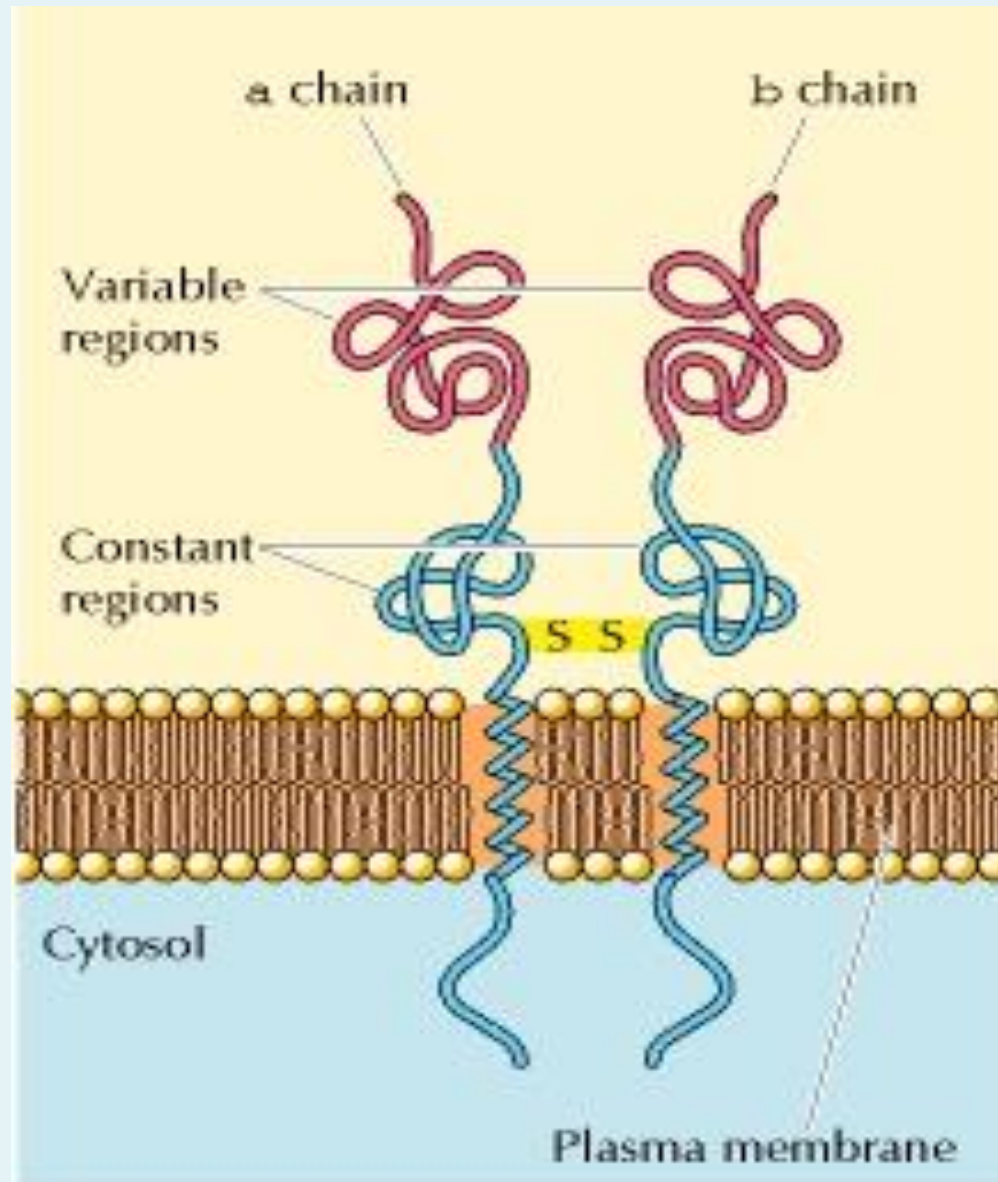




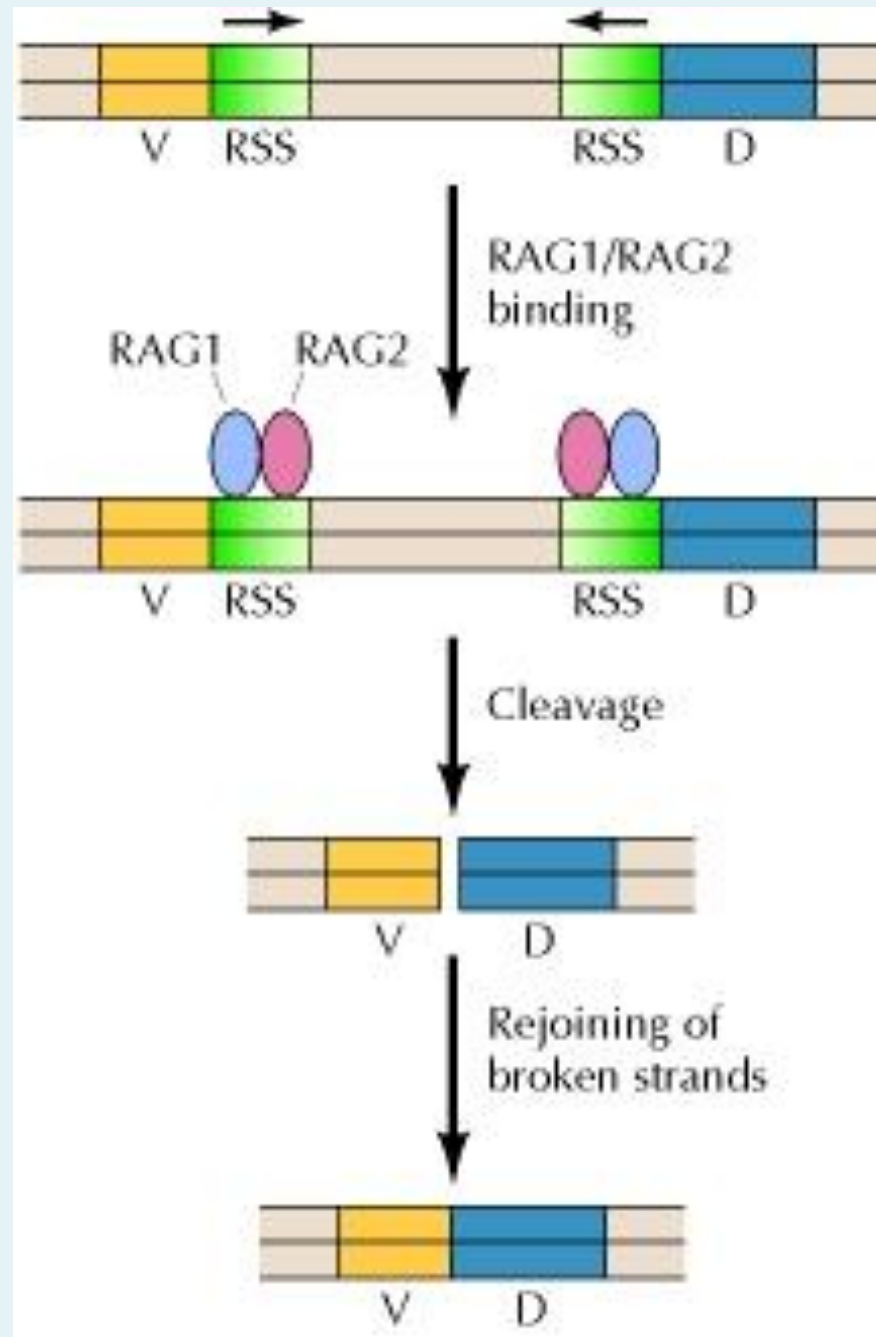
Rearrangement of immunoglobulin light-chain genes



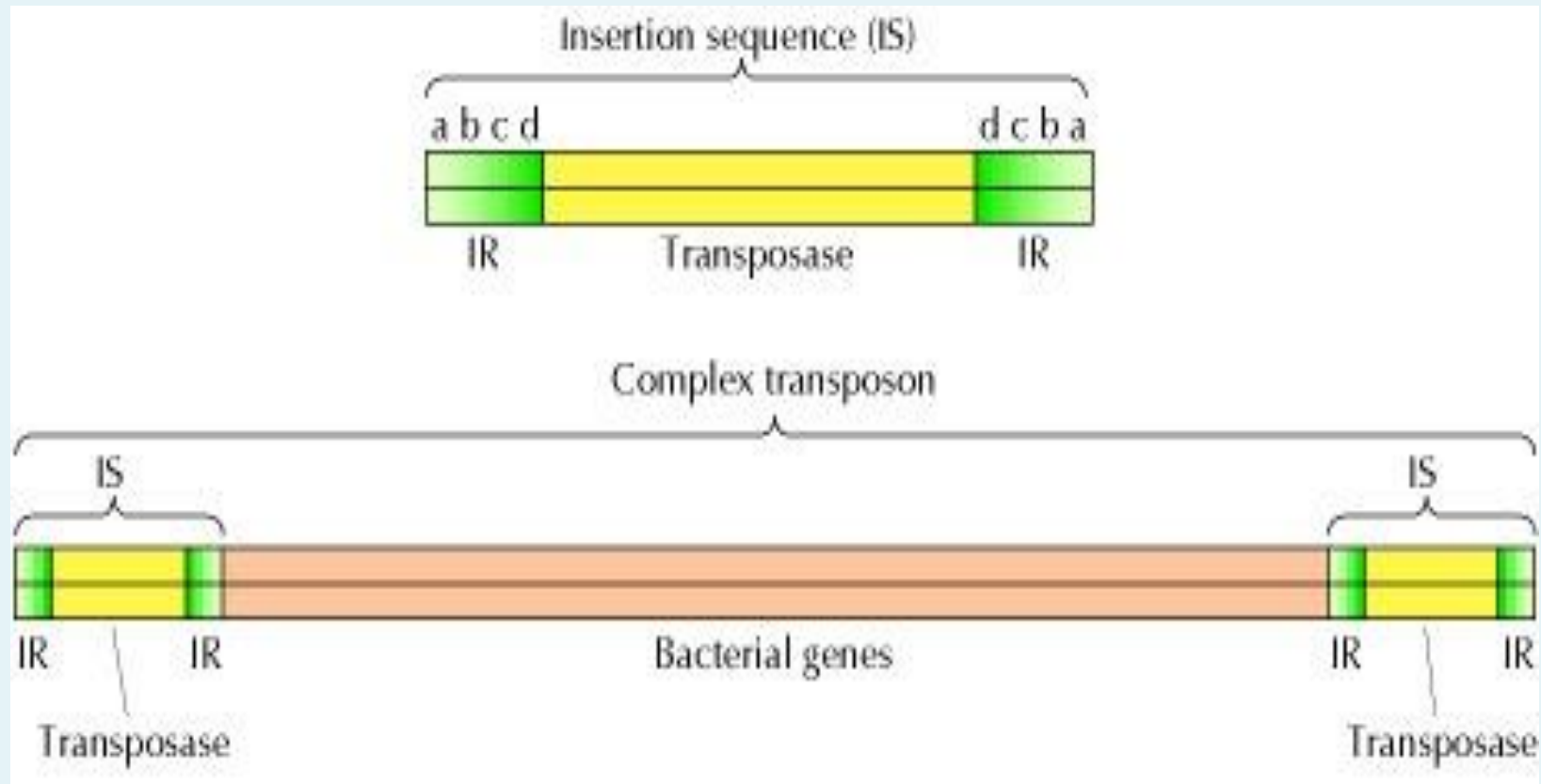
Rearrangement of immunoglobulin heavy-chain genes



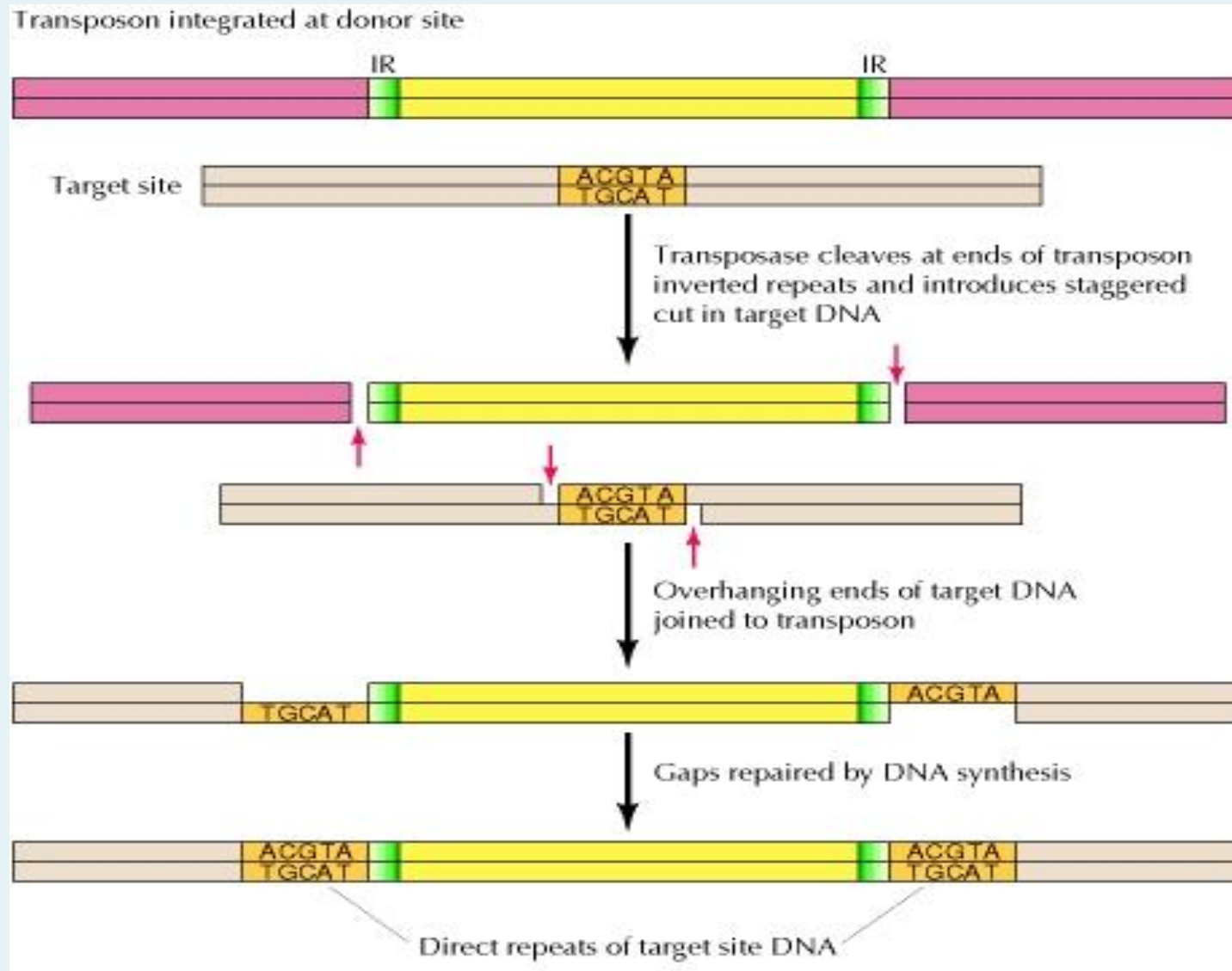
Structure of a T cell receptor



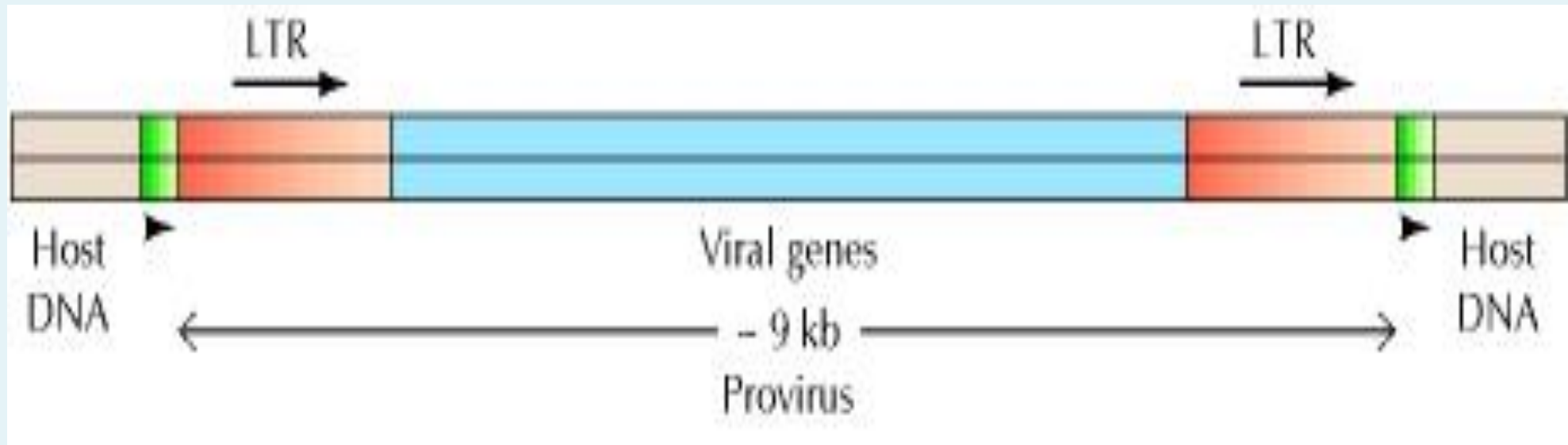
VDJ recombination



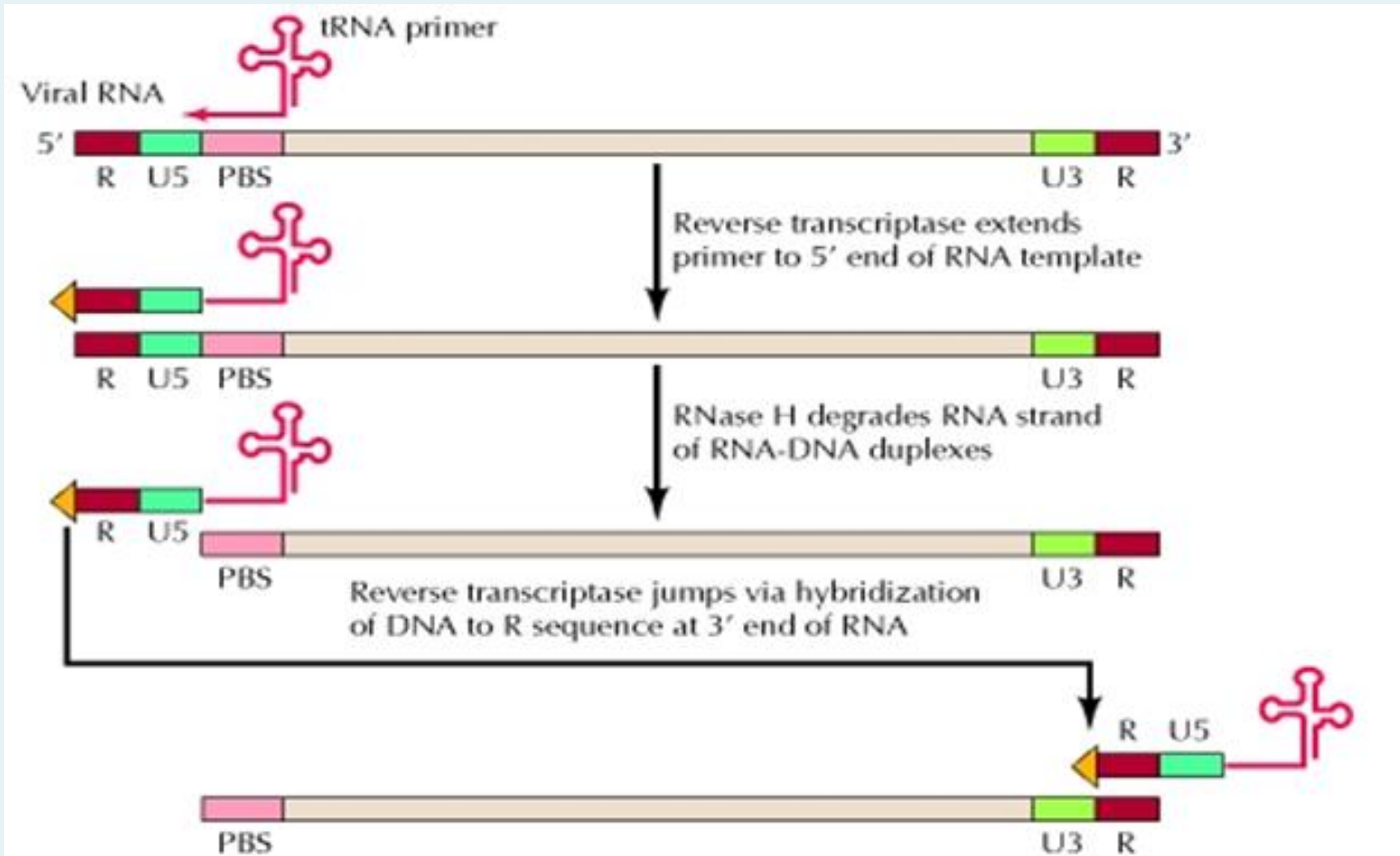
Bacterial transposons



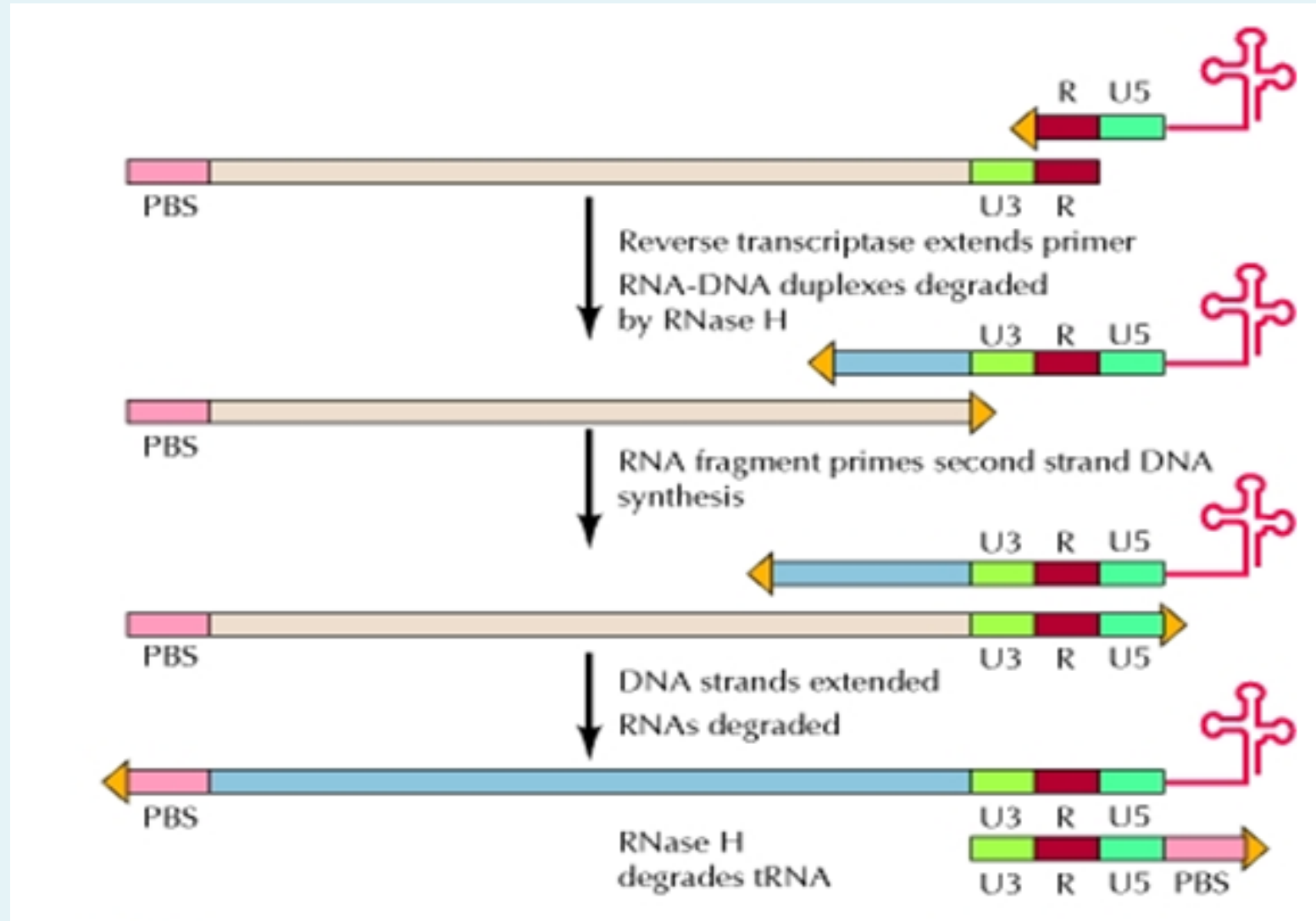
Transposition of insertion sequences



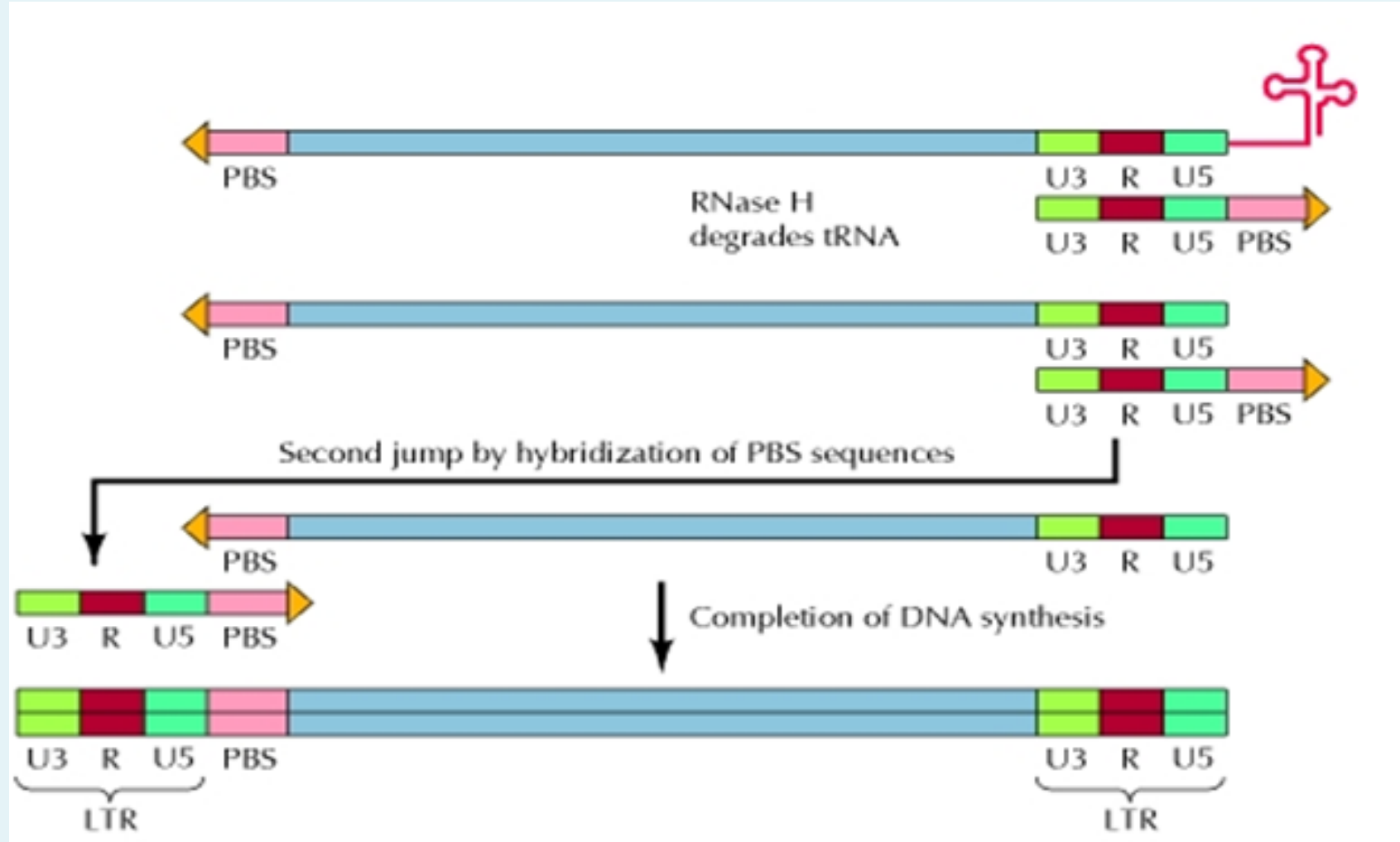
The organization of retroviral DNA



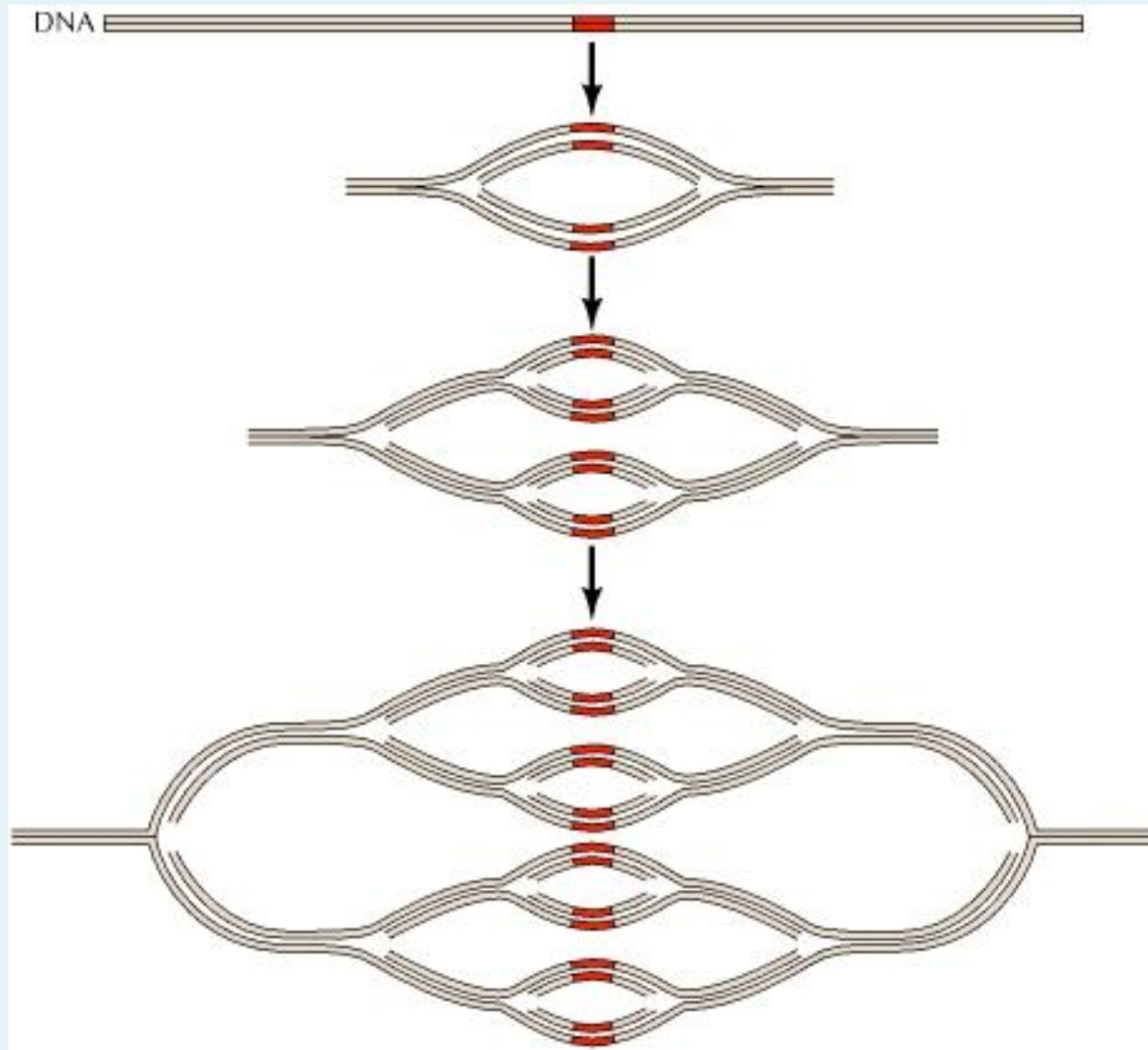
Generation of LTRs during reverse transcription



Generation of LTRs during reverse transcription



Generation of LTRs during reverse transcription



DNA amplification

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