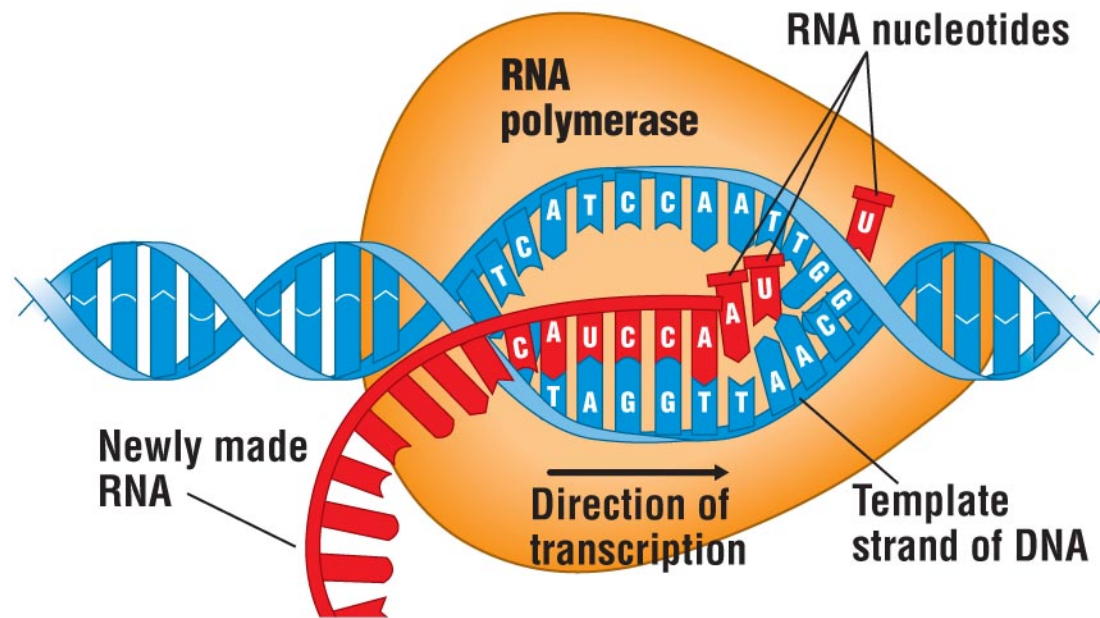


Transcription: From DNA to RNA

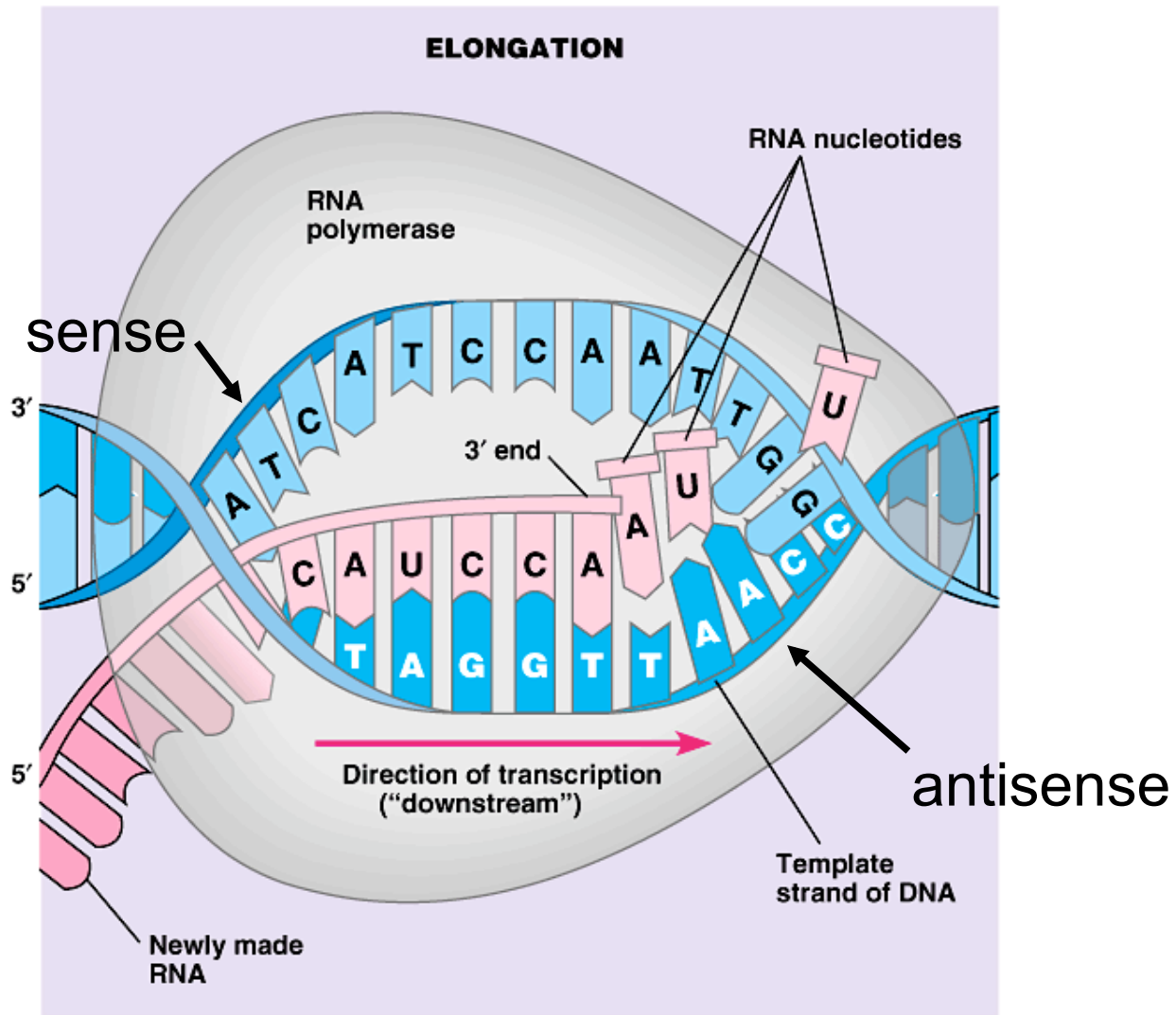
- In transcription,
 - Genetic information is transferred from DNA to RNA.
 - An RNA molecule is transcribed from a DNA template by RNA polymerase.



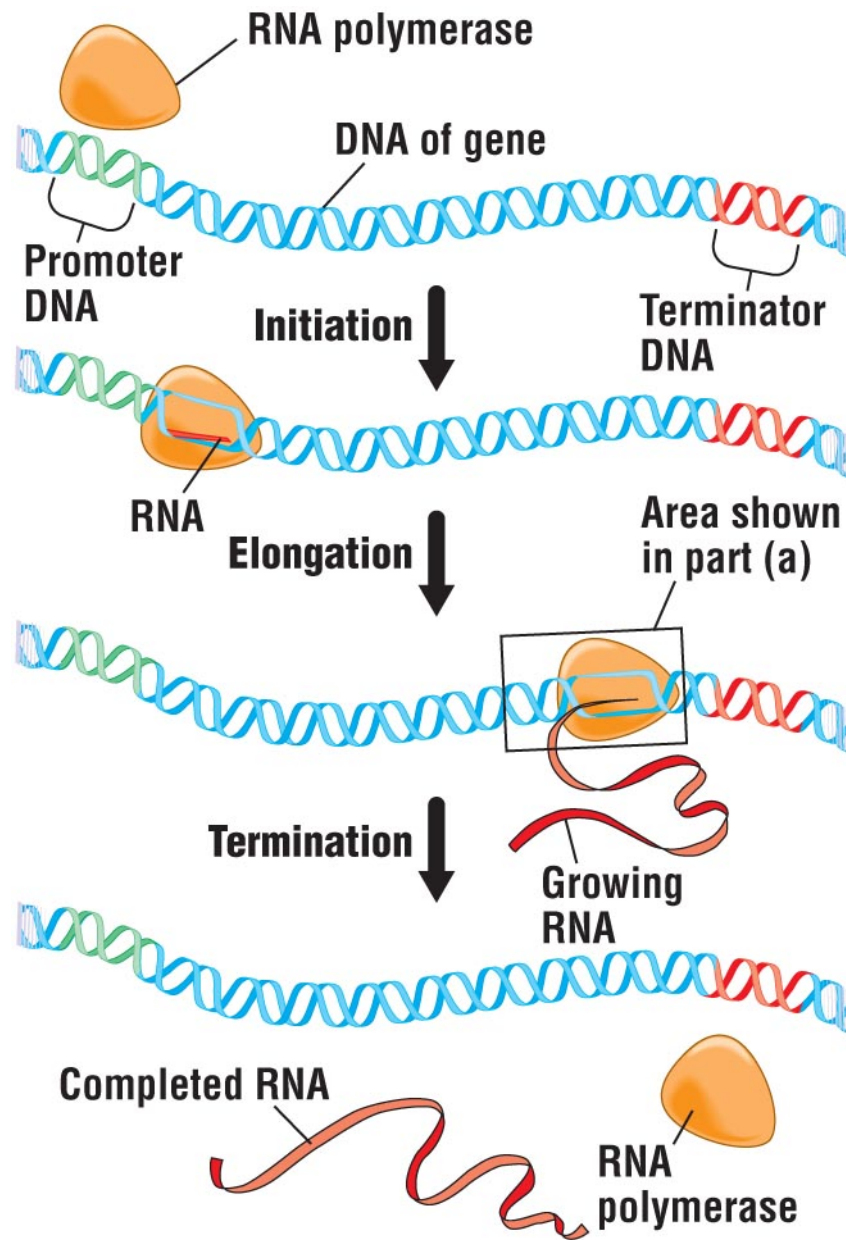
(a) A close-up view of transcription.

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-
- Transcription of an entire gene
 - Sense strand = coding strand
 - Has the same base sequence as mRNA with **thymine** instead of **uracil**
 - Antisense = template strand
 - Is transcribed



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(b) Transcription of a gene.

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Figure 10.13b

Initiation of Transcription

- The “start transcribing” signal is a nucleotide sequence called a promoter.
- The first phase of transcription is initiation:
 - RNA polymerase attaches to the promoter
 - RNA synthesis begins in the 5' to 3' direction.

RNA Elongation

- The second phase of transcription is elongation:
 - The RNA grows longer.
 - RNA nucleoside triphosphates (free floating nucleotides) are added

Termination of Transcription

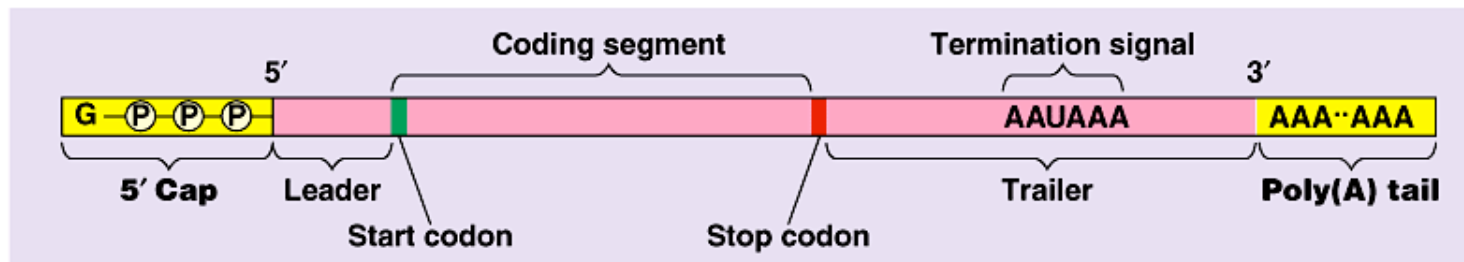
- The third phase of transcription is termination:
 - RNA polymerase reaches a sequence of DNA bases called a terminator.

[Animation of Transcription](#)

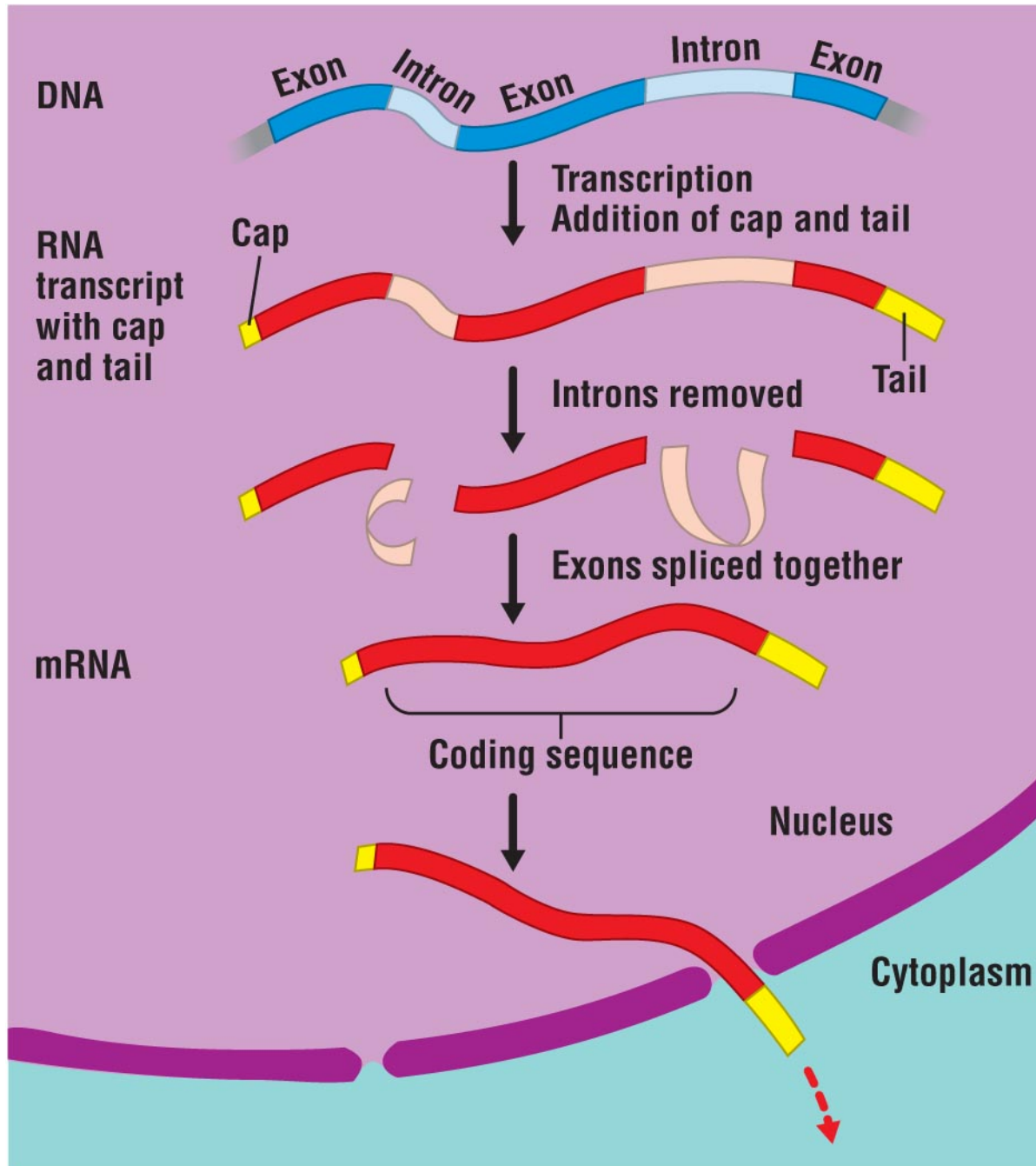
The Processing of Eukaryotic RNA

- The eukaryotic cell processes the RNA after transcription.

- RNA processing includes:
 - Adding a 5' cap and a poly-A tail
 - Removing introns (noncoding segments)
 - Splicing exons (coding segments) together

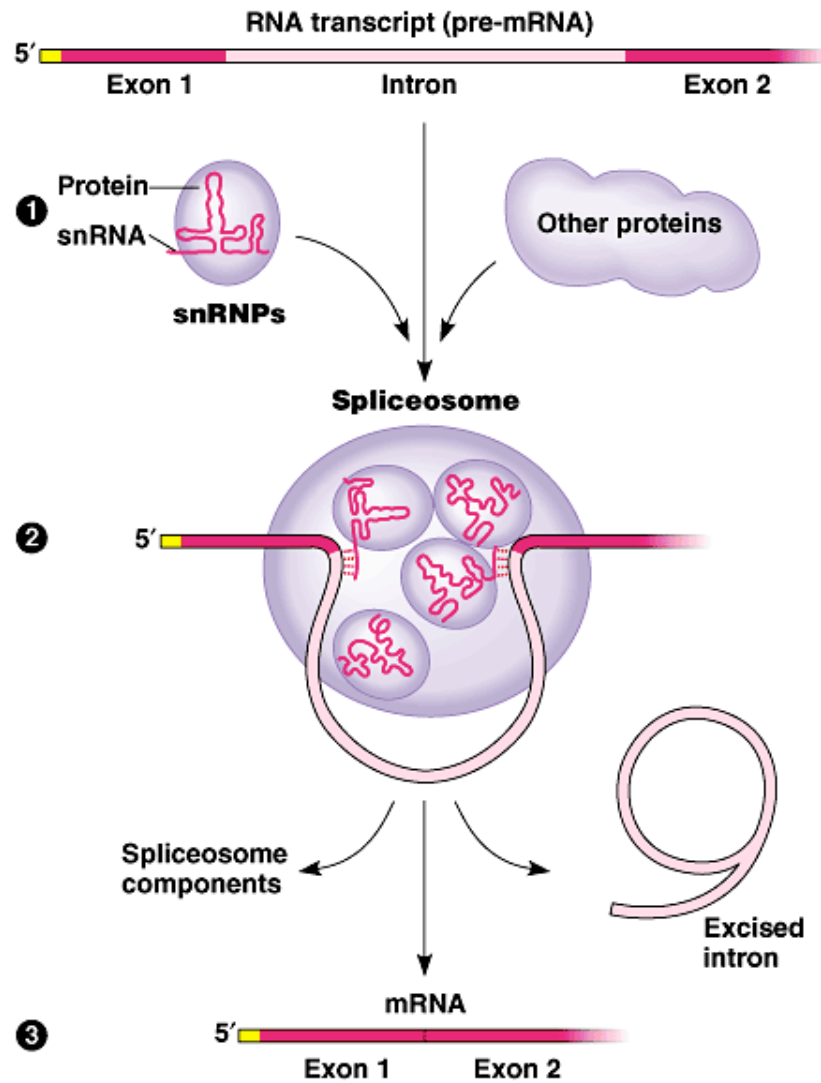


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Animation

Figure 10.14



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