



**208M**

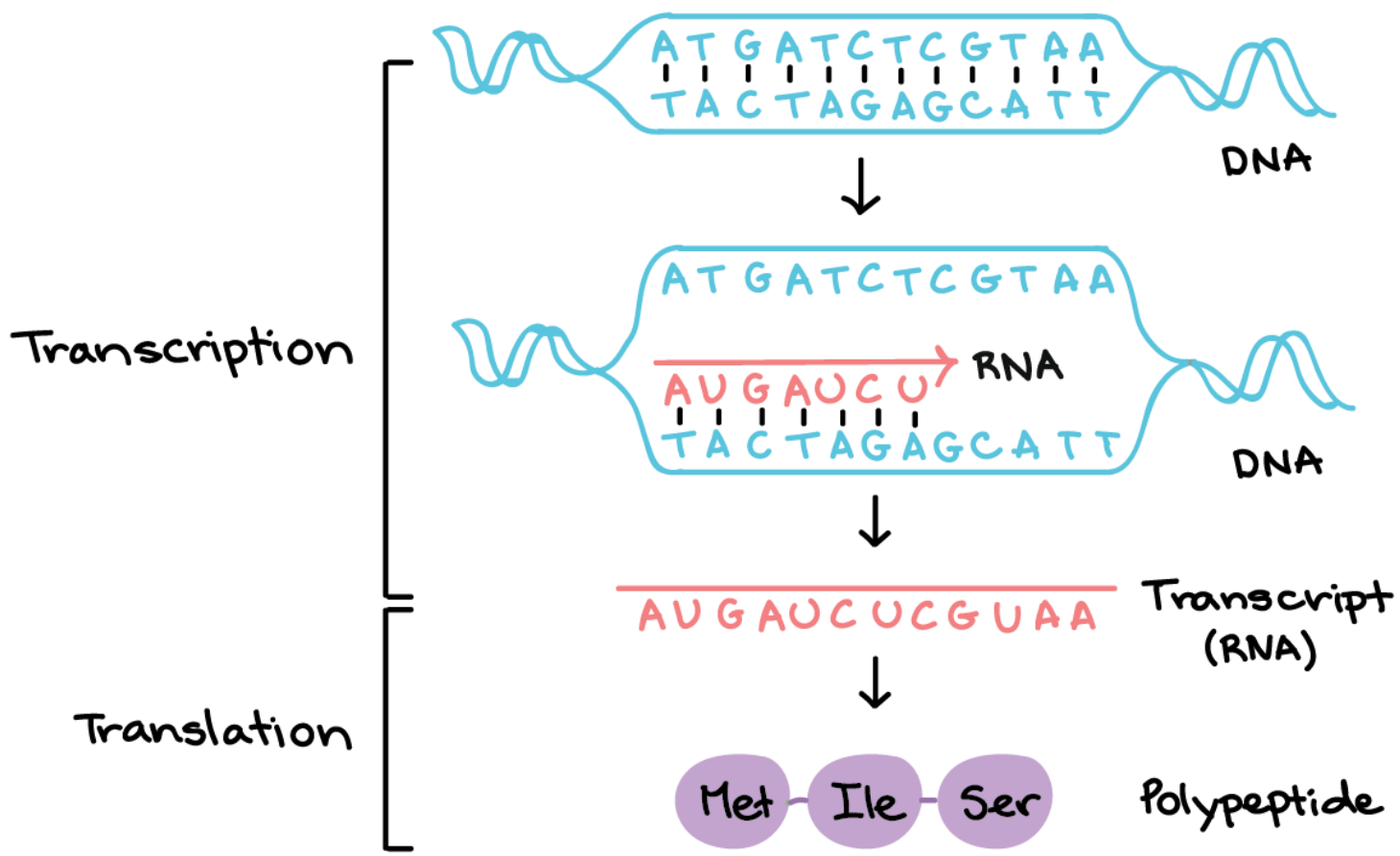
**Molecular Biology (1)**

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**2020**

# Transcription

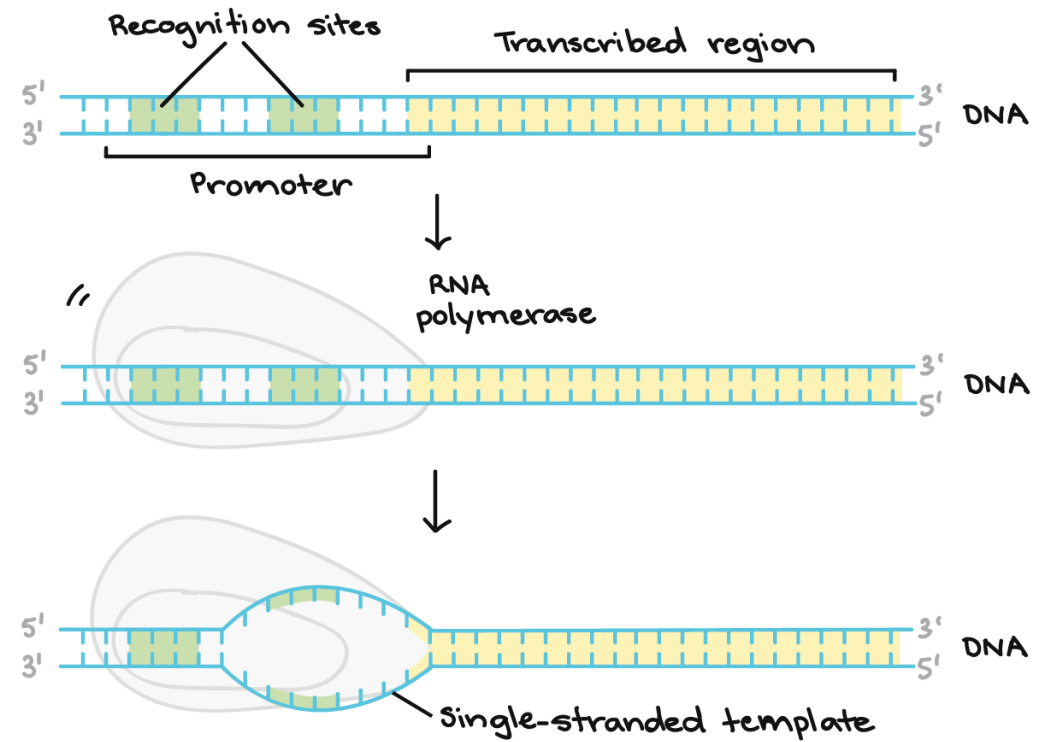
- ▶ Transcription is the first step in gene expression. It involves copying a gene's DNA sequence to make an RNA molecule.
- ▶ Transcription is performed by enzymes called RNA polymerases, which link nucleotides to form an RNA strand (using a DNA strand as a template).
- ▶ Transcription has three stages: initiation, elongation, and termination.
- ▶ In eukaryotes, RNA molecules must be processed after transcription: they are spliced and have a 5' cap and poly-A tail put on their ends.
- ▶ Transcription is controlled separately for each gene in your genome.

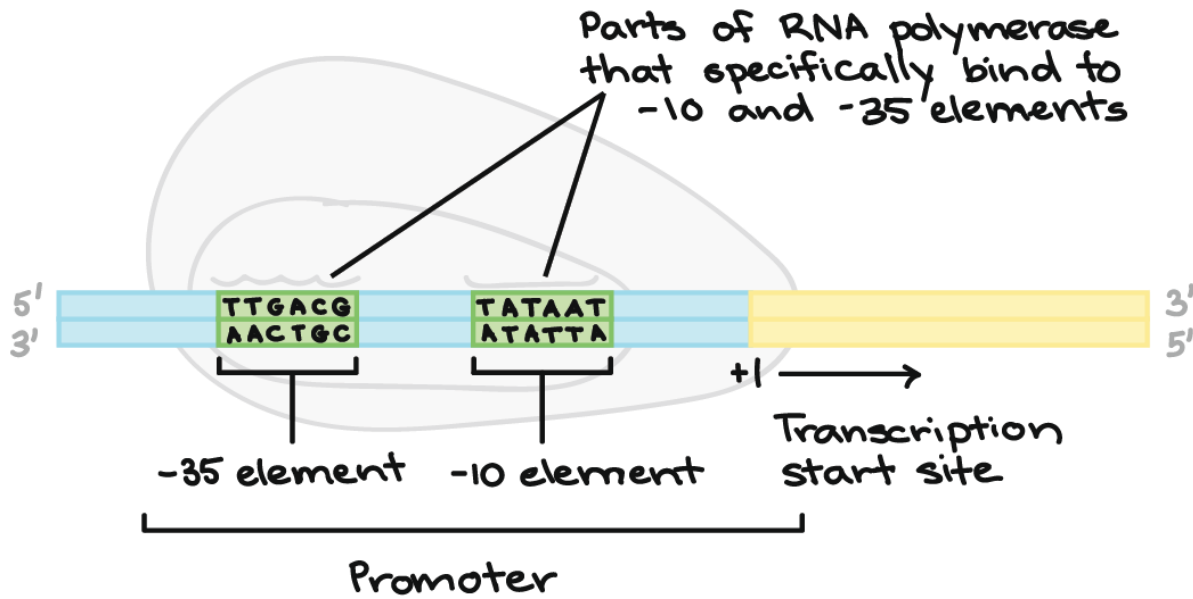


▶ RNA polymerase

# Stages of transcription

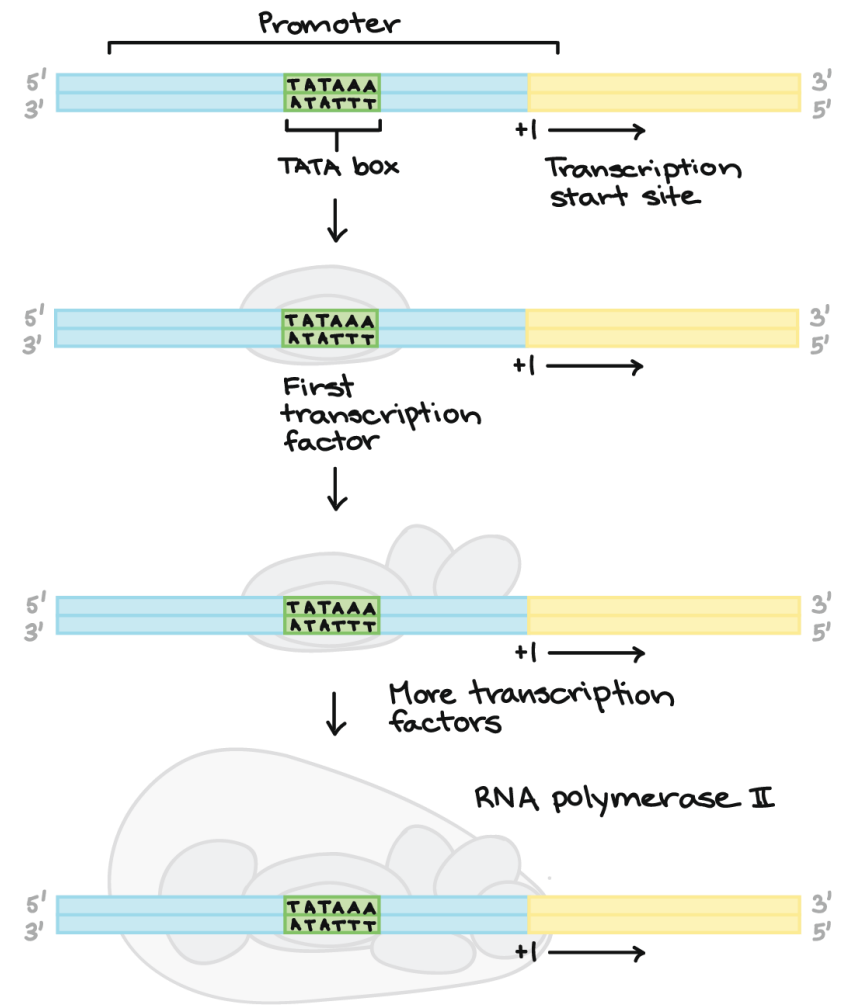
## ► 1. Initiation





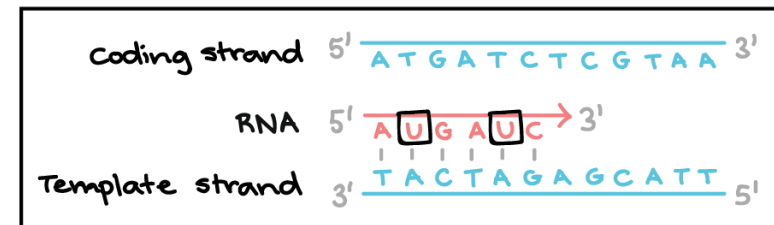
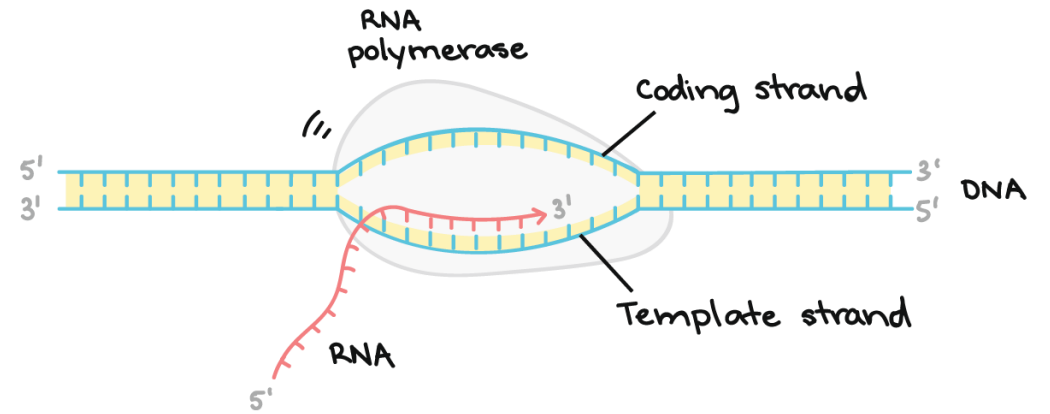
## Promoters in bacteria

# Promoters in eukaryotes



# Stages of transcription

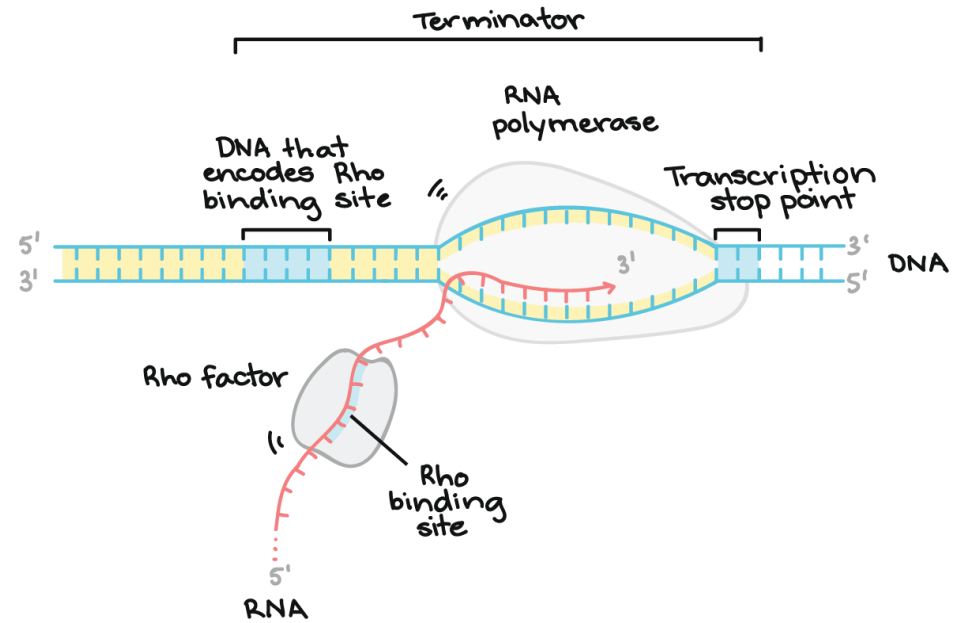
## ► 2. Elongation



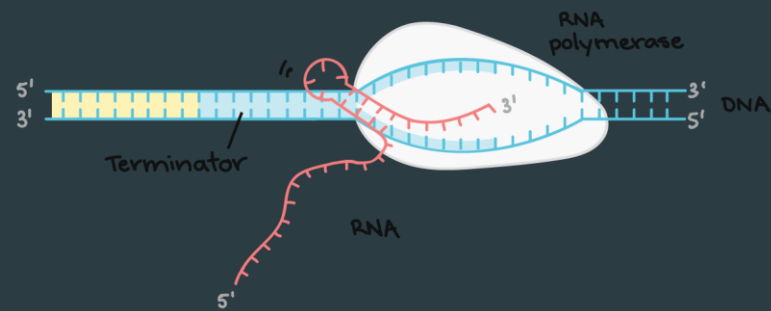


# Stages of transcription

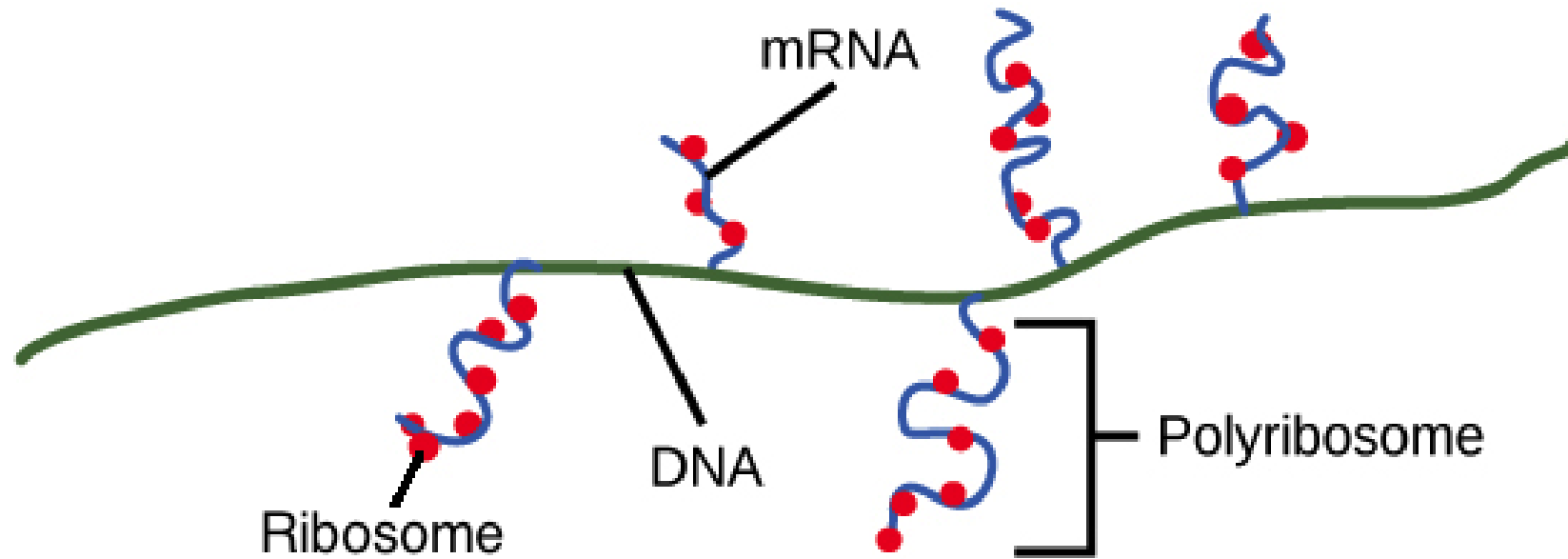
- ▶ 3. Termination
- ▶ Termination in bacteria



# Rho-independent termination



# What happens to the RNA transcript?



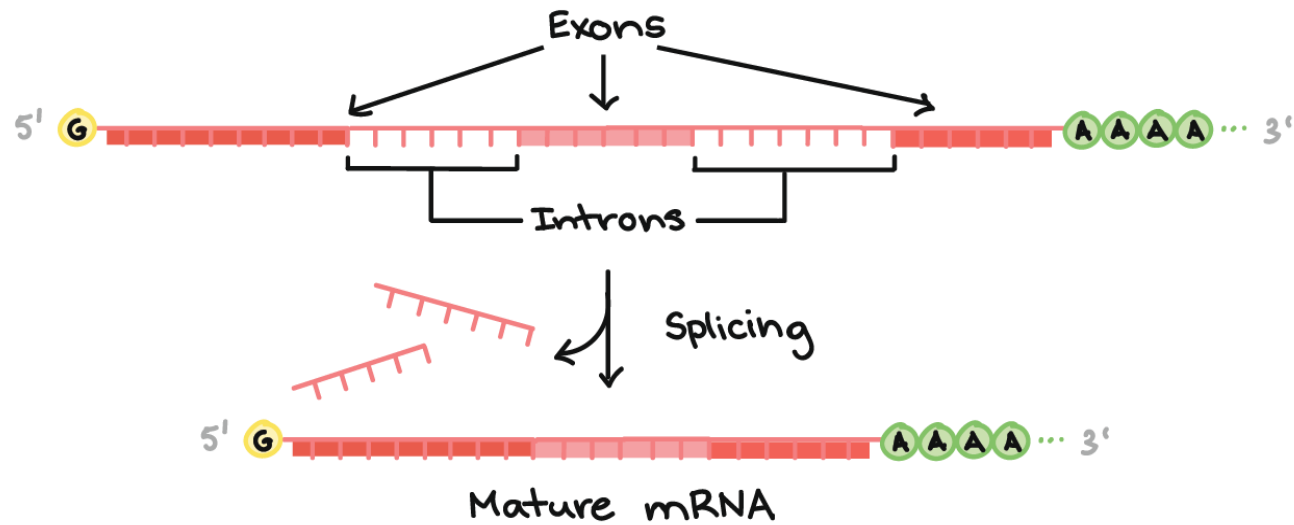
# Eukaryotic RNA modifications (pre-mRNA processing)

**The 5' cap is added**



# Eukaryotic RNA modifications (pre-mRNA processing)

## RNA splicing



# Alternative splicing

