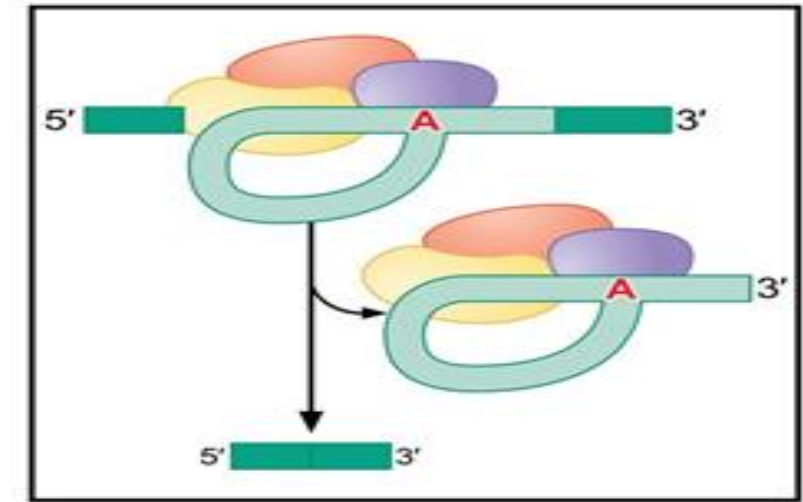
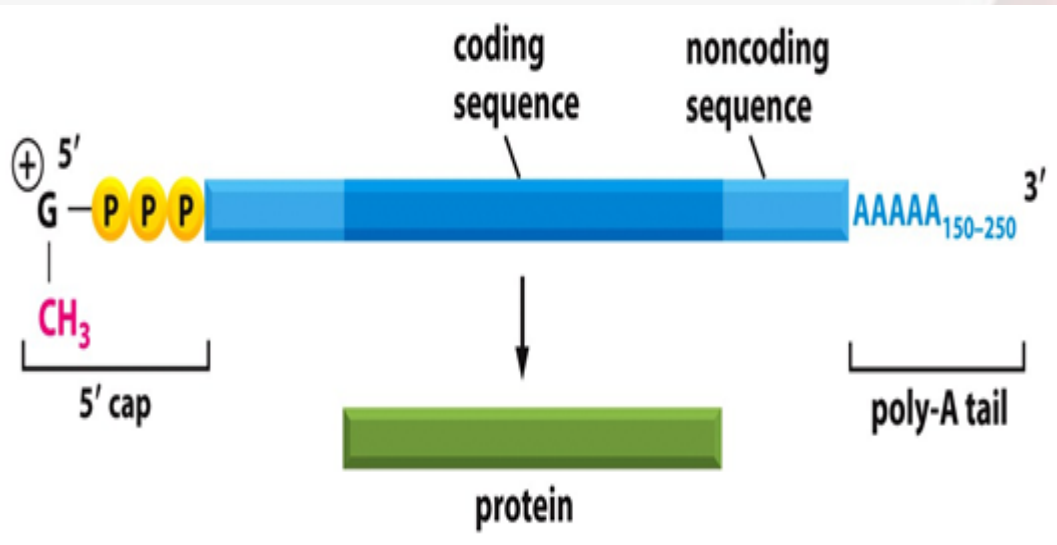


## Capping & splicing of mRNA



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## **What is RNA processing?**

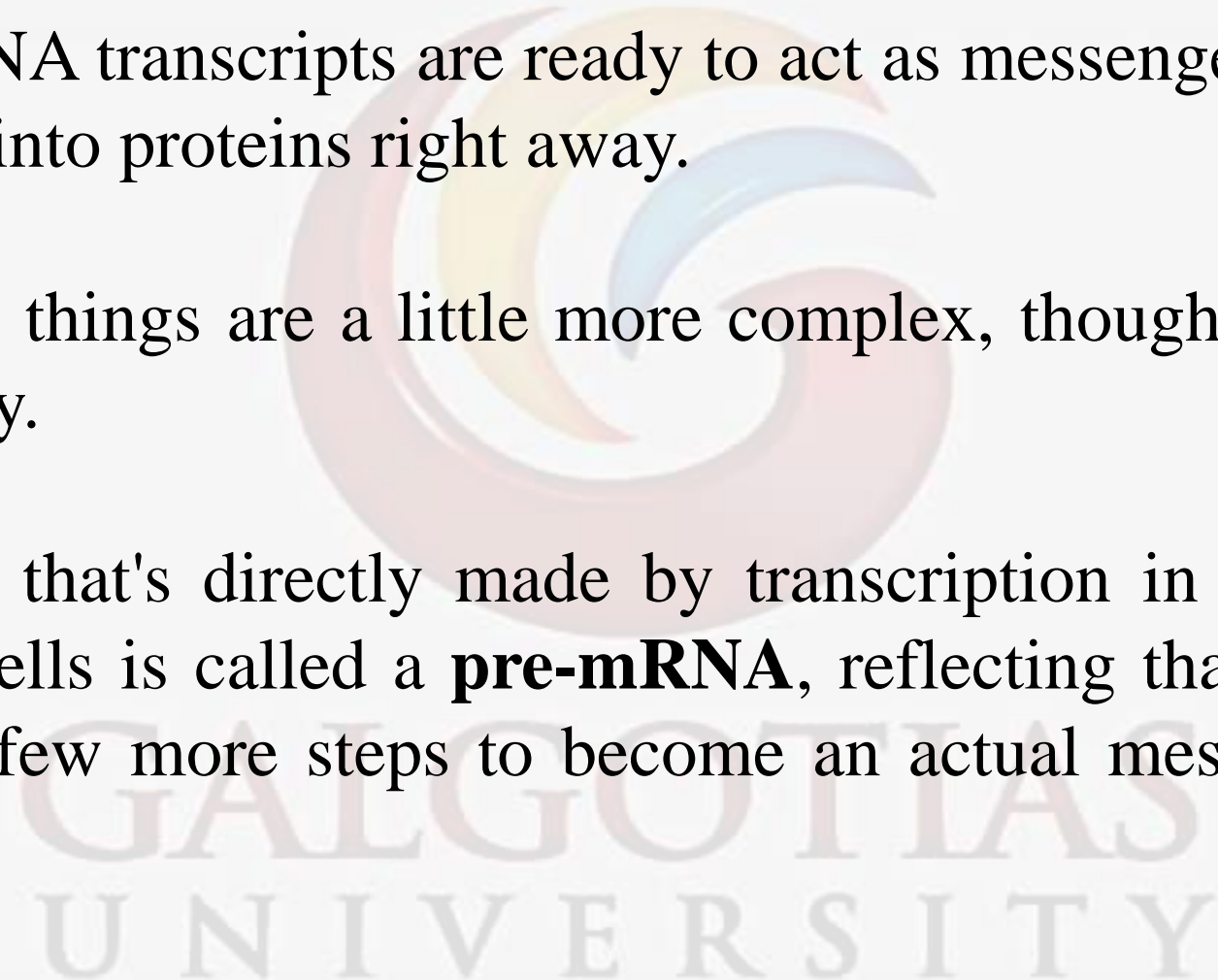
RNA processing is to generate a mature mRNA (for protein genes) or a functional tRNA or rRNA from the primary transcript.

OR

RNA processing is the collective term used to describe the molecular events allowing the primary transcripts to become mature RNA.

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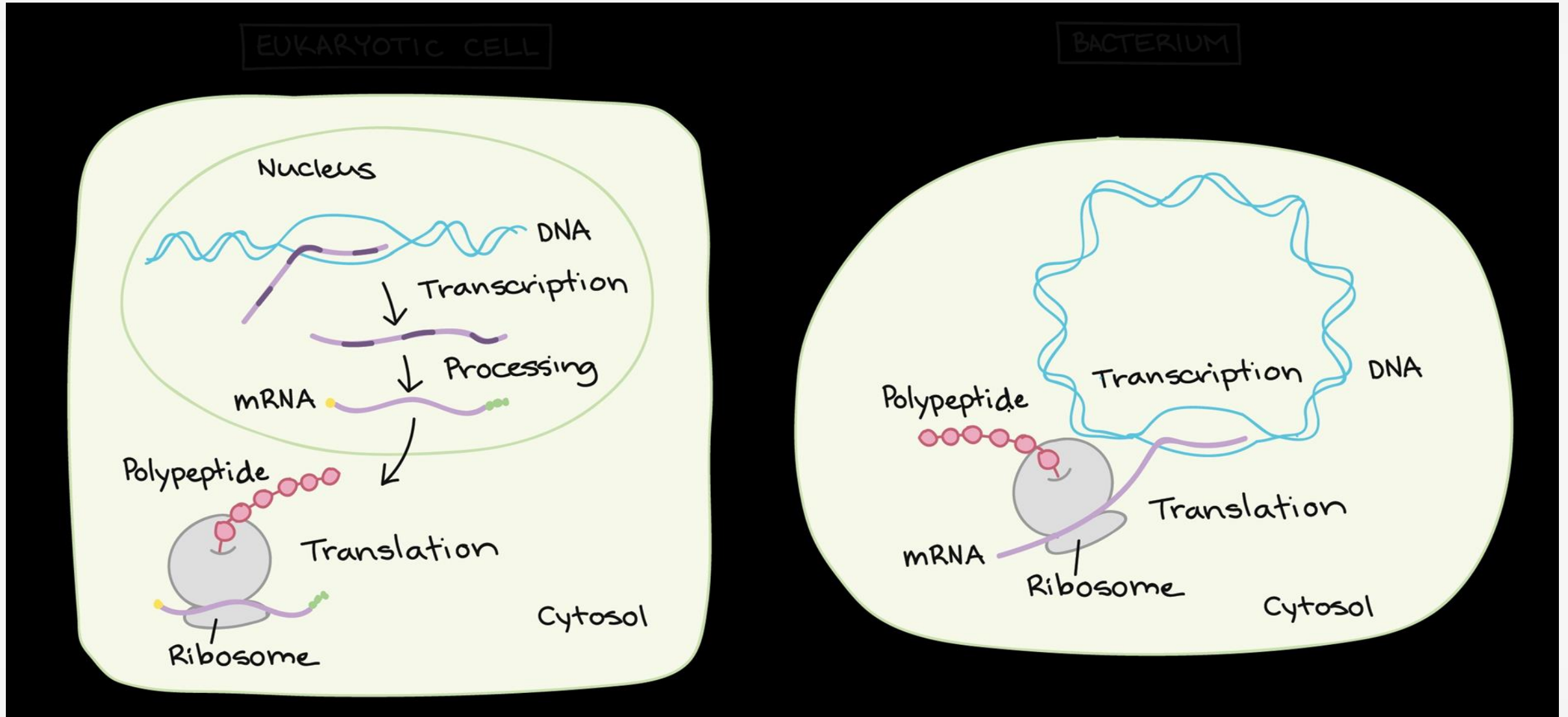
- In bacteria, RNA transcripts are ready to act as messenger RNAs and get translated into proteins right away.
- In eukaryotes, things are a little more complex, though in an pretty interesting way.
- The molecule that's directly made by transcription in one of your (eukaryotic) cells is called a **pre-mRNA**, reflecting that it needs to go through a few more steps to become an actual messenger RNA (mRNA).
- In other words it's also called 'post transcriptional modifications'.



# School of Basic and Applied Sciences

Course Code : MEV301

Course Name: Environmental Biotechnology



## STEPS OF RNA PROCESSING

Processing of pre-mRNA involves the following steps:

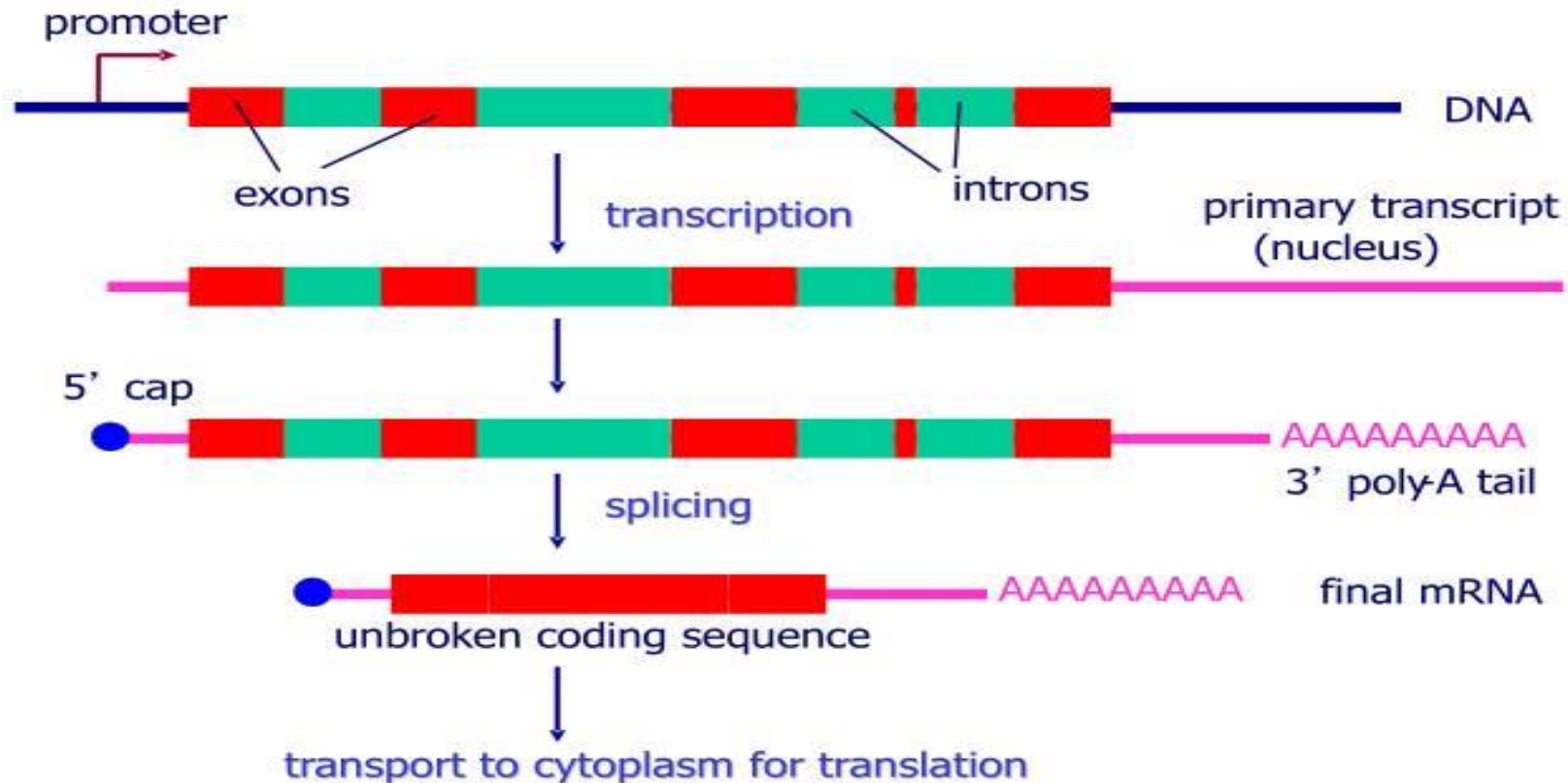
**Capping** - add 7-methylguanylate ( $m^7G$ ) to the 5' end.

**Polyadenylation** - add a poly-A tail to the 3' end.

**Splicing** - remove introns and join exons.

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## RNA processing in eukaryotes







**CAPPING**

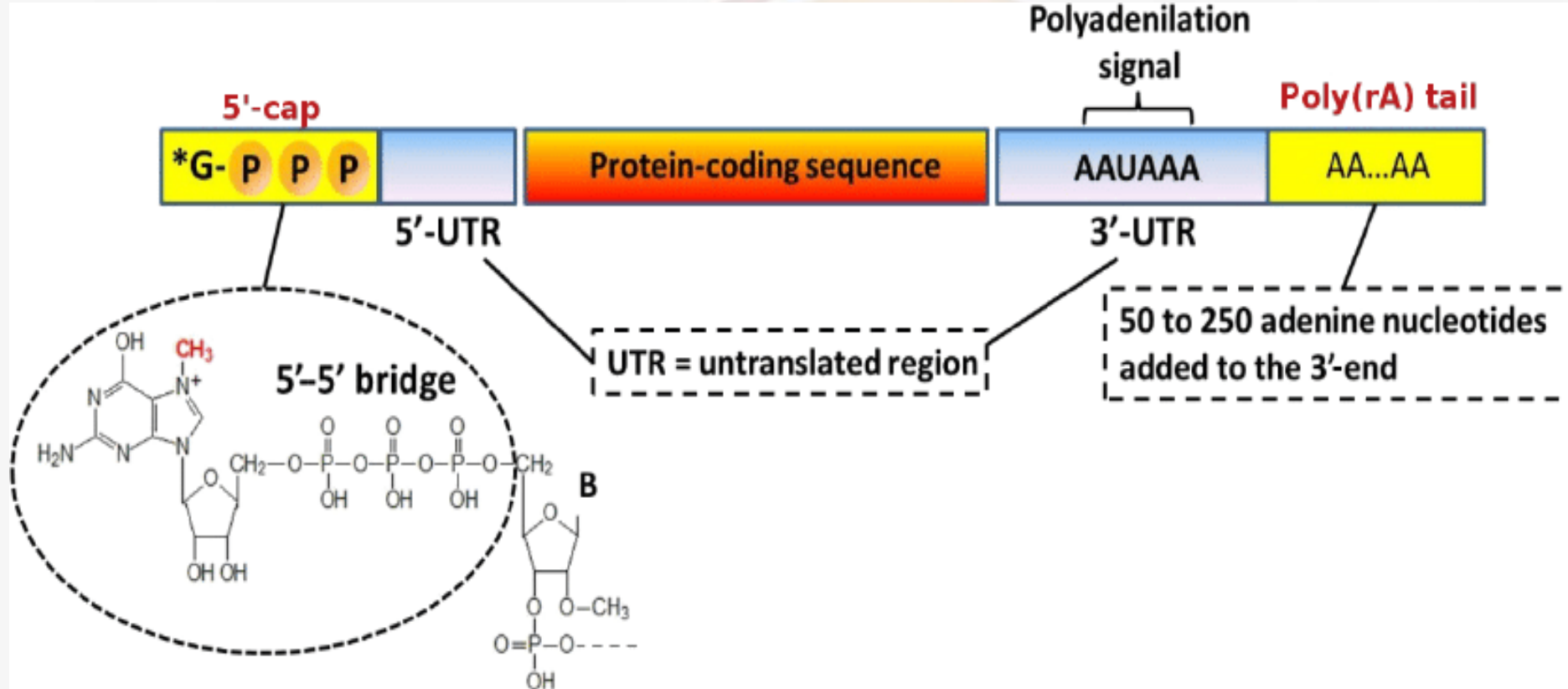
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- Post-transcriptional processing of the 5' end of the RNA product of DNA transcription comes in the form of a process called the 5' cap.
- At the end of transcription, the 5' end of the RNA transcript contains a free triphosphate group since it was the first incorporated nucleotide in the chain.
- The capping process replaces the triphosphate group with another structure called the "cap".



- The cap is added by the enzyme guanyl transferase.
- This enzyme catalyzes the reaction between the 5' end of the RNA transcript and a guanine triphosphate (GTP) molecule.
- Capping is a form of RNA processing in which the 5' end of the nascent pre-mRNA is capped with a 7-methyl guanosine nucleotide, 7-methylguanylate.

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## Capping of mRNA



*Thank you*

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