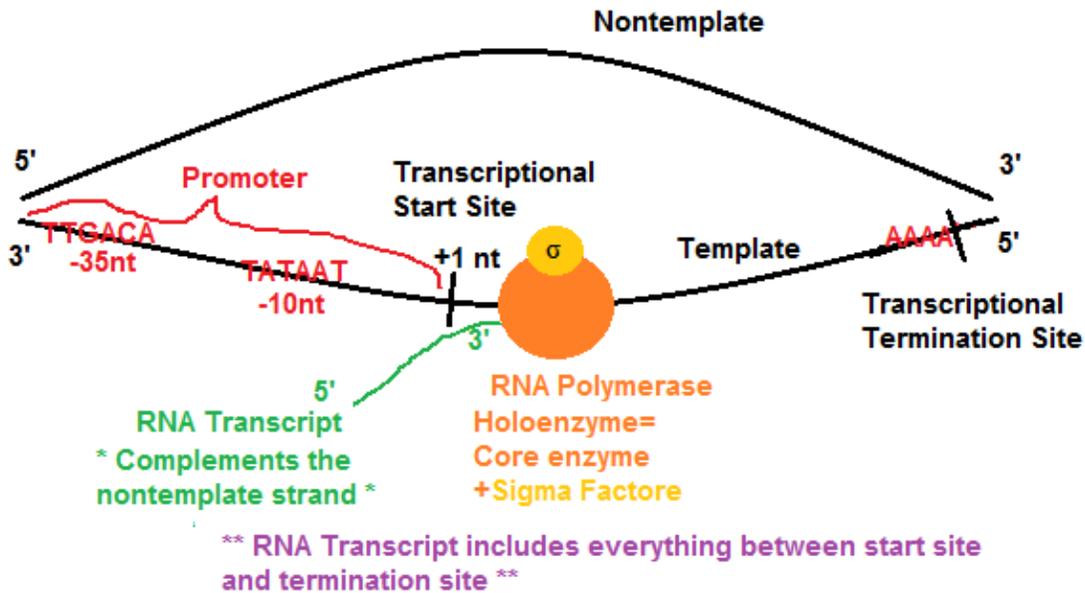
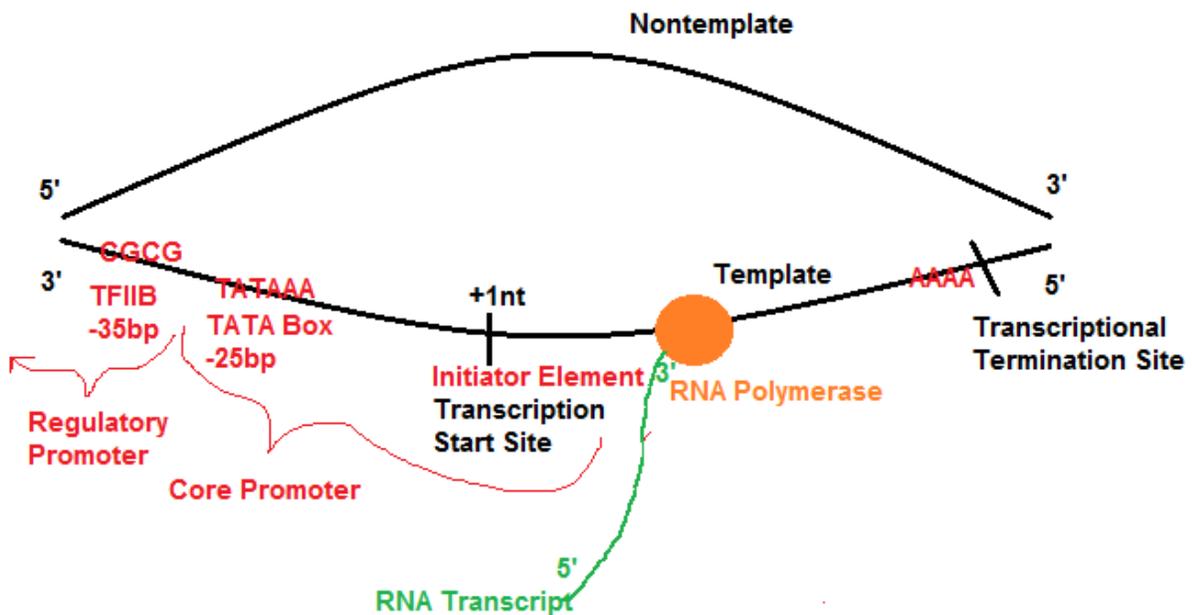


1. Draw the diagram of a gene undergoing transcription. Label the template and nontemplate strand, the promoter region, the transcriptional start site, the RNA coding region, and the transcriptional termination site. Which of these regions are included in the RNA transcript? Which of these regions are omitted from the RNA transcript?

Prokaryotes:



Eukaryotes:



Now that you have made RNA let's take a look at each of these RNA types.

2. Fill out the table below about the mRNA modifications.

Name of Modification	Important Sequences Involved	Important Enzymes Involved	Major Function of Modification
5' Methyl-G Cap	-----	Catabolized by capping enzyme (PAP)	<ul style="list-style-type: none"> Facilitate binding of ribosome to 5' end of mRNA Increases mRNA stability/ prevents degradation Enhances RNA splicing Flag for nuclear export.
Poly-A Tail	AAUAAA	Poly (A) Polymerase finds signal sequence leaves transcript and leaves tail.	<ul style="list-style-type: none"> Increases stability/ prevents degradation Necessary for translation 150-200 nt long
Splicing	GU on 5' end AG on 3' end Splice sites	Catalyzed by the spliceosome. snRNPs & sn RNA	<ul style="list-style-type: none"> Removes introns from pre-mRNA. Allows for multiple proteins to be produced through alternative splicing.

3. What is the difference between pre-mRNA and mature mRNA?

Pre-mRNA consists of introns. Mature mRNA spliced out introns, contains a poly A tail and a 5' cap.

4. Fill out the tables below!

rRNA in Prokaryotes:

"Name" (#S)	Large/Small Subunit?	Total size of Small Subunit	Total Size of Large Subunit	Total Size of Ribosome
23S	Large	30S	50S	70S
16S	Small			
5S	Large			

rRNA in Eukaryotes:

"Name" (#S)	Large/Small Subunit?	Total Size of Small Subunit	Total Size of Large Subunit	Total Size of Ribosome
28S	Large	40S	60S	80S
18S	Small			
5.8S	Large			
5S	Large			

5. What is the secondary structure of tRNA? What is the purpose of tRNA?

4 leaf clover. Contains codons to match with mRNA.