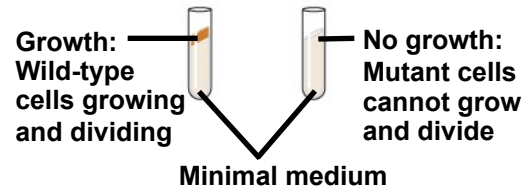


EXPERIMENT



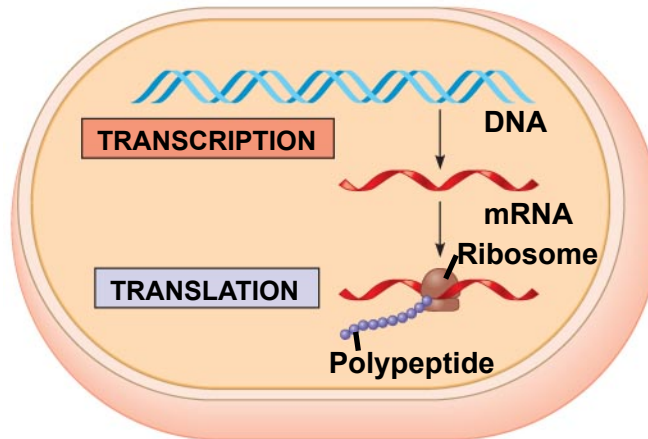
RESULTS

Classes of *Neurospora crassa*

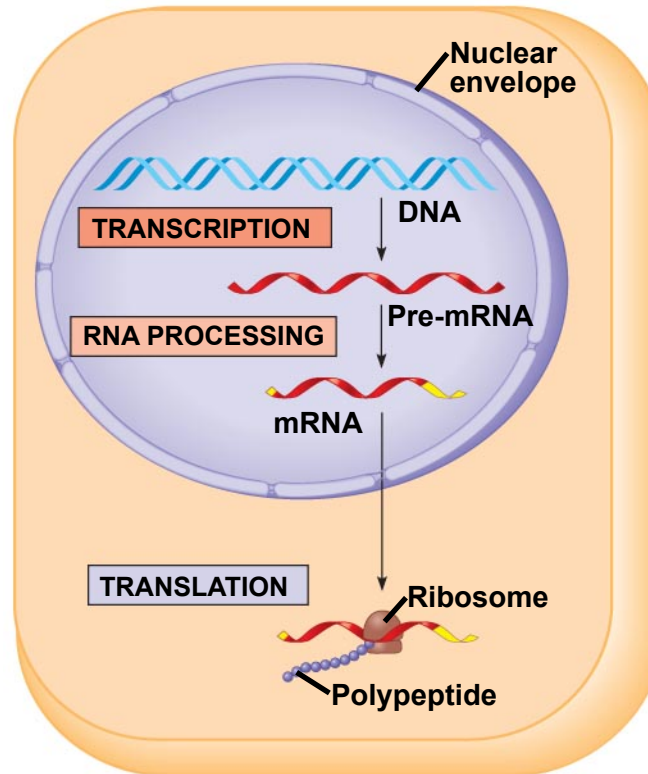
	Wild type	Class I mutants	Class II mutants	Class III mutants
Minimal medium (MM) (control)				
MM + ornithine				
MM + citrulline				
MM + arginine (control)				

CONCLUSION

	Wild type	Class I mutants (mutation in gene A)	Class II mutants (mutation in gene B)	Class III mutants (mutation in gene C)
Gene A →	Precursor Enzyme A	Precursor Enzyme A	Precursor Enzyme A	Precursor Enzyme A
Gene B →	Ornithine Enzyme B	Ornithine Enzyme B	Ornithine Enzyme B	Ornithine Enzyme B
Gene C →	Citrulline Enzyme C	Citrulline Enzyme C	Citrulline Enzyme C	Citrulline Enzyme C
	Arginine	Arginine	Arginine	Arginine

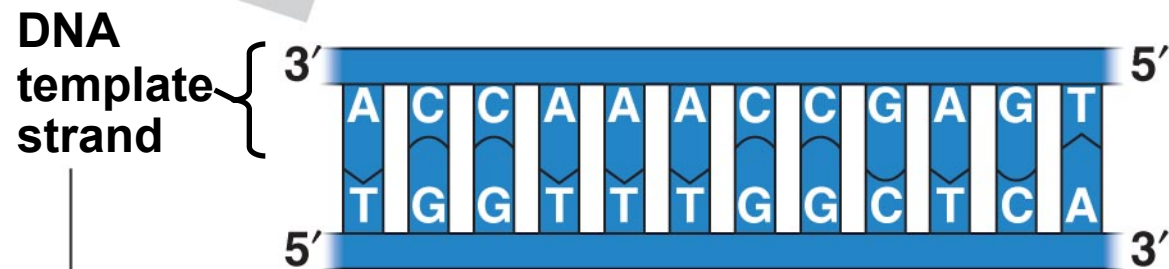
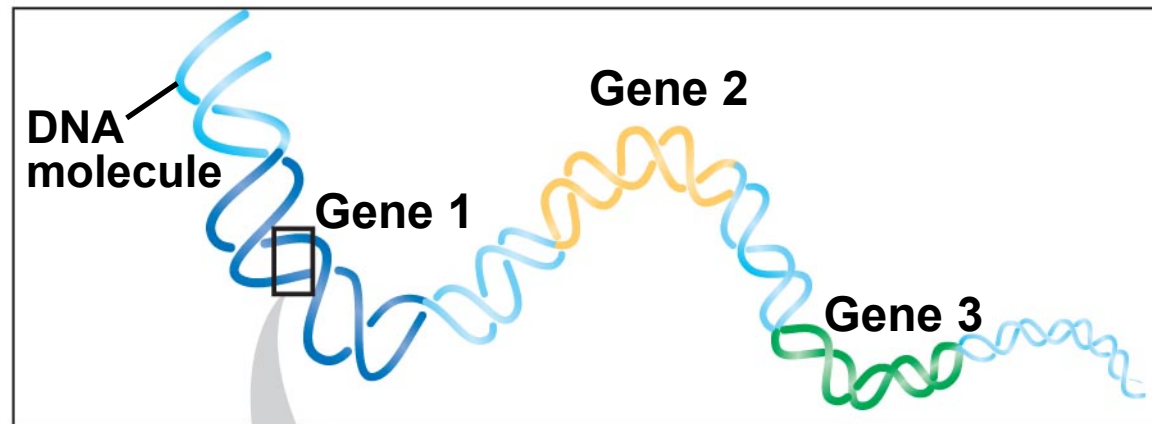


(a) Bacterial cell



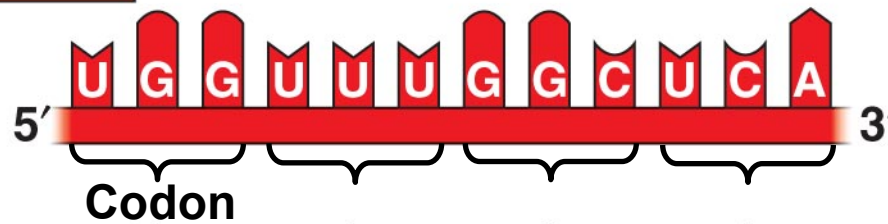
(b) Eukaryotic cell

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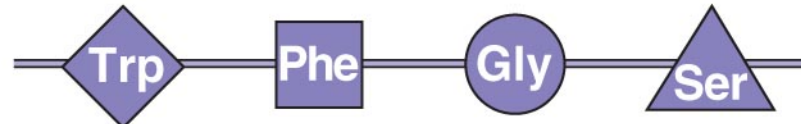
TRANSCRIPTION

mRNA



TRANSLATION

Protein



Amino acid

		Second mRNA base					
		U	C	A	G		
First mRNA base (5' end of codon)	U	UUU	UCU	UAU	UGU	U C A G	U C A G
		UUC	UCC	UAC	UGC		
		UUA	UCA	UAA Stop	UGA Stop		
		UUG	UCG	UAG Stop	UGG Trp		
	C	CUU	CCU	CAU	CGU	U C A G	U C A G
		CUC	CCC	CAC	CGC		
		CUA	CCA	CAA	CGA		
		CUG	CCG	CAG	CGG		
	A	AUU	ACU	AAU	AGU	U C A G	U C A G
		AUC	ACC	AAC	AGC		
		AUA	ACA	AAA	AGA		
		AUG Met or start	ACG	AAG	AGG		
	G	GUU	GCU	GAU	GGU	U C A G	U C A G
		GUC	GCC	GAC	GGC		
		GUA	GCA	GAA	GGA		
		GUG	GCG	GAG	GGG		
		Third mRNA base (3' end of codon)					

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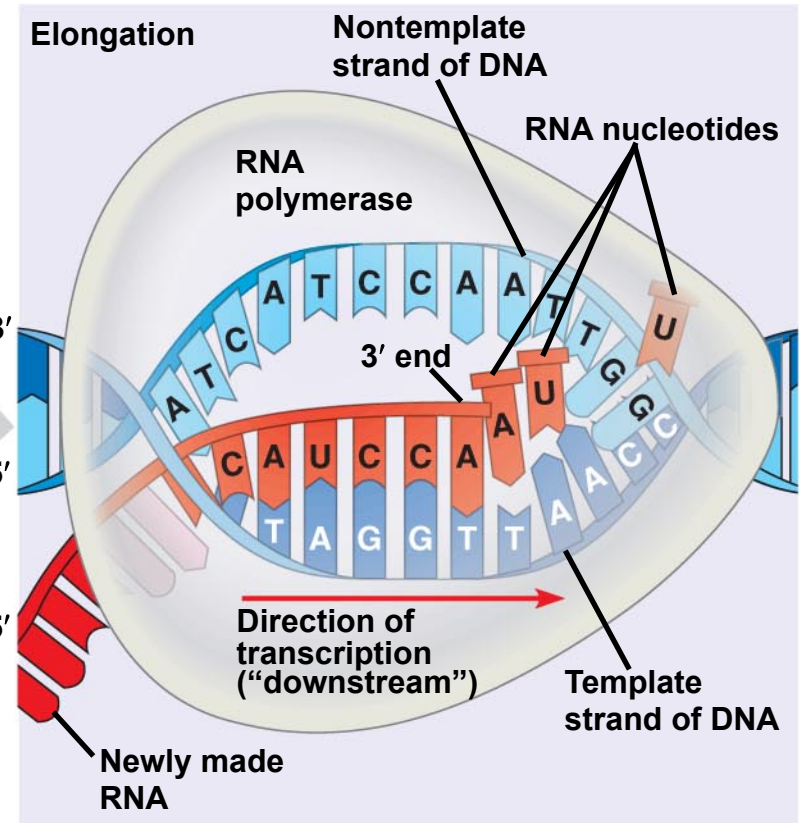
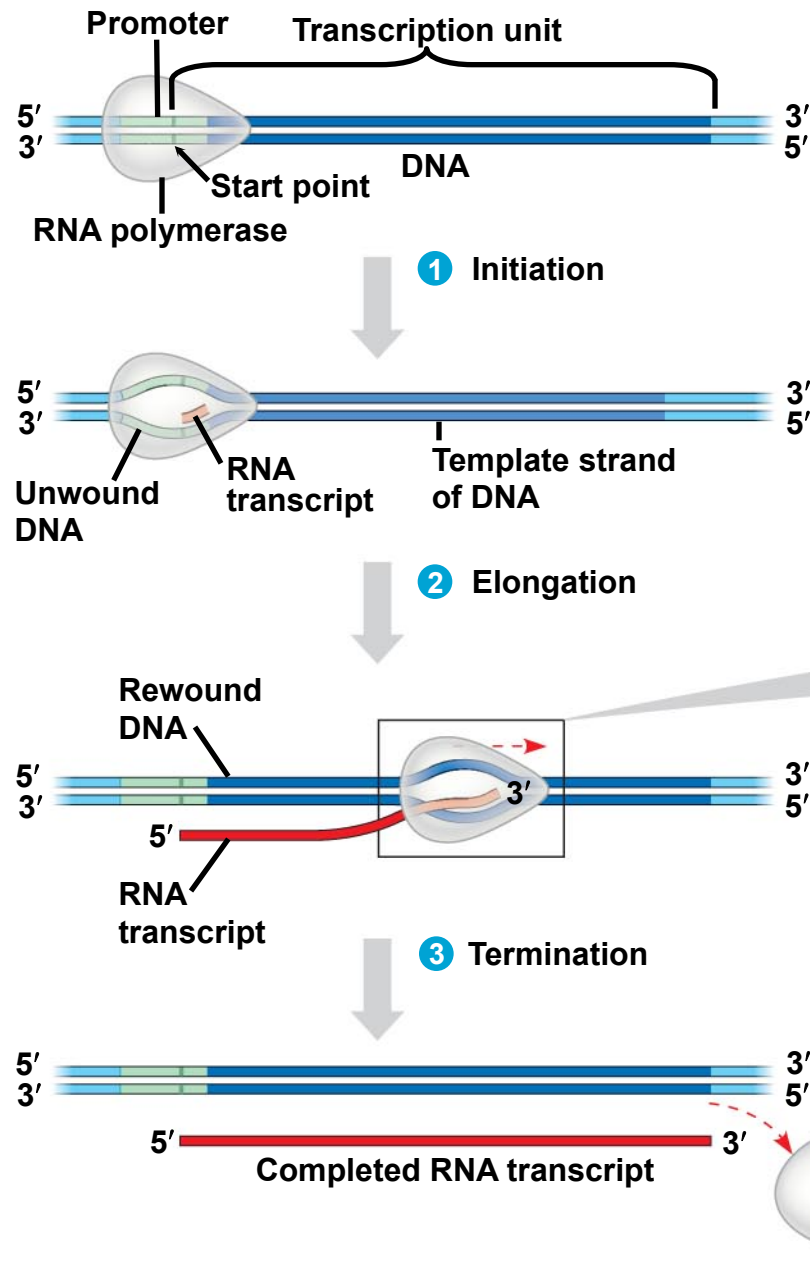


(a) Tobacco plant expressing a firefly gene

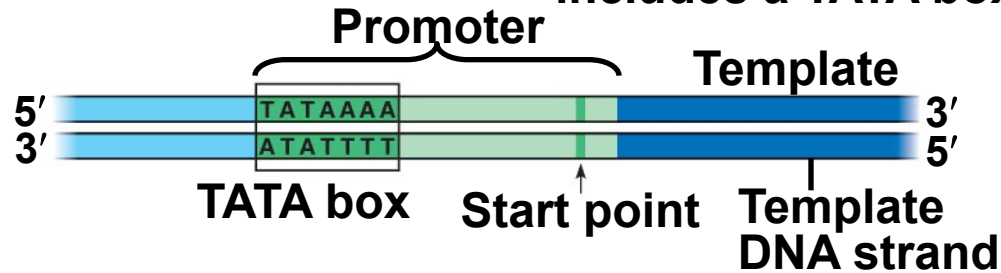
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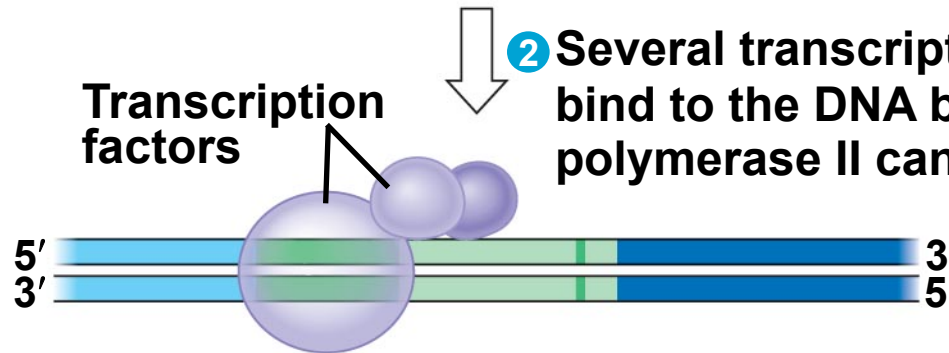
(b) Pig expressing a jellyfish gene



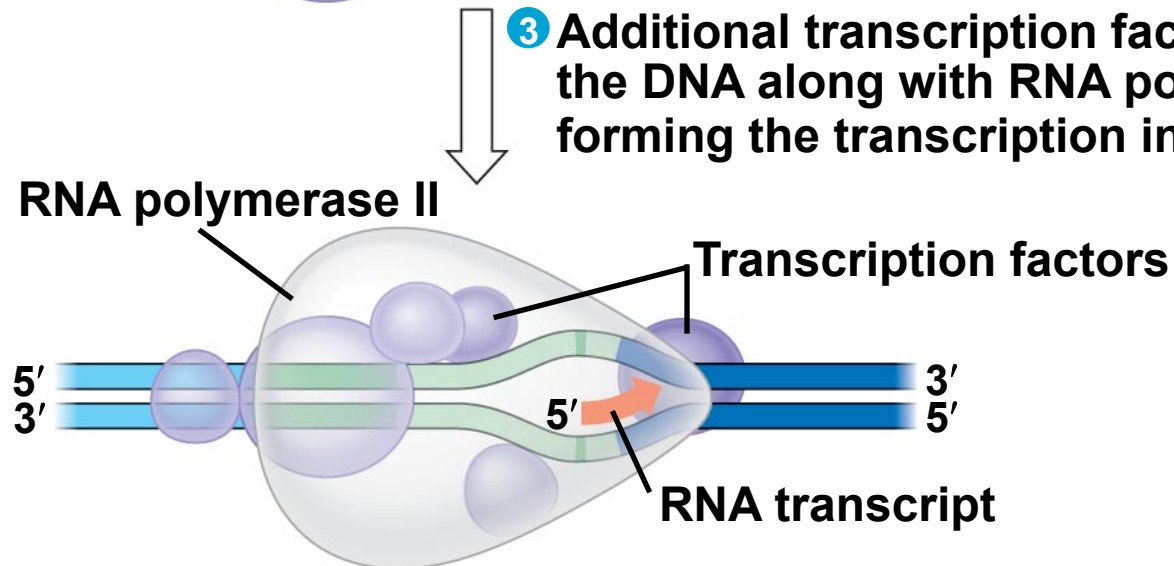
- ① A eukaryotic promoter includes a TATA box



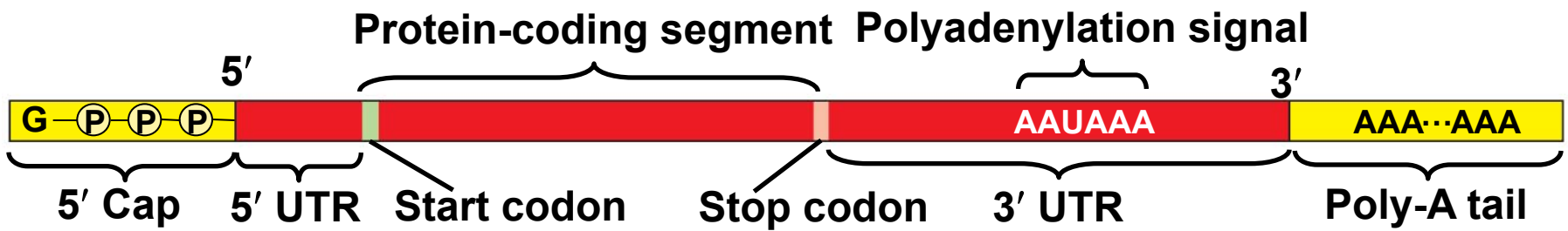
- ② Several transcription factors must bind to the DNA before RNA polymerase II can do so.



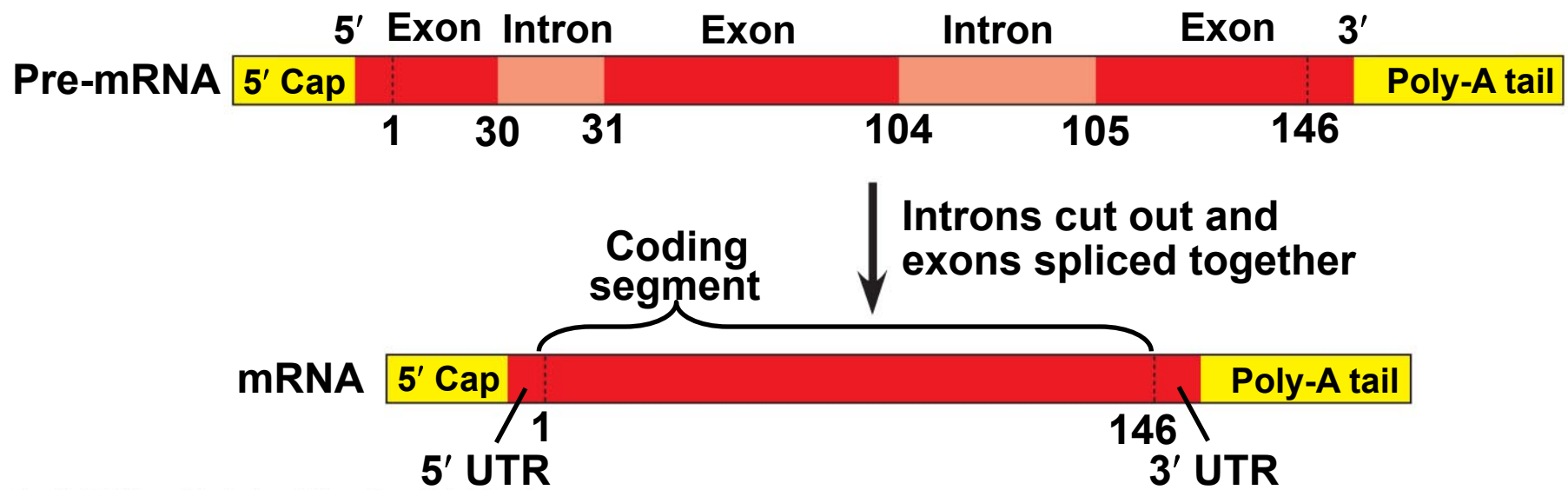
- ③ Additional transcription factors bind to the DNA along with RNA polymerase II, forming the transcription initiation complex.



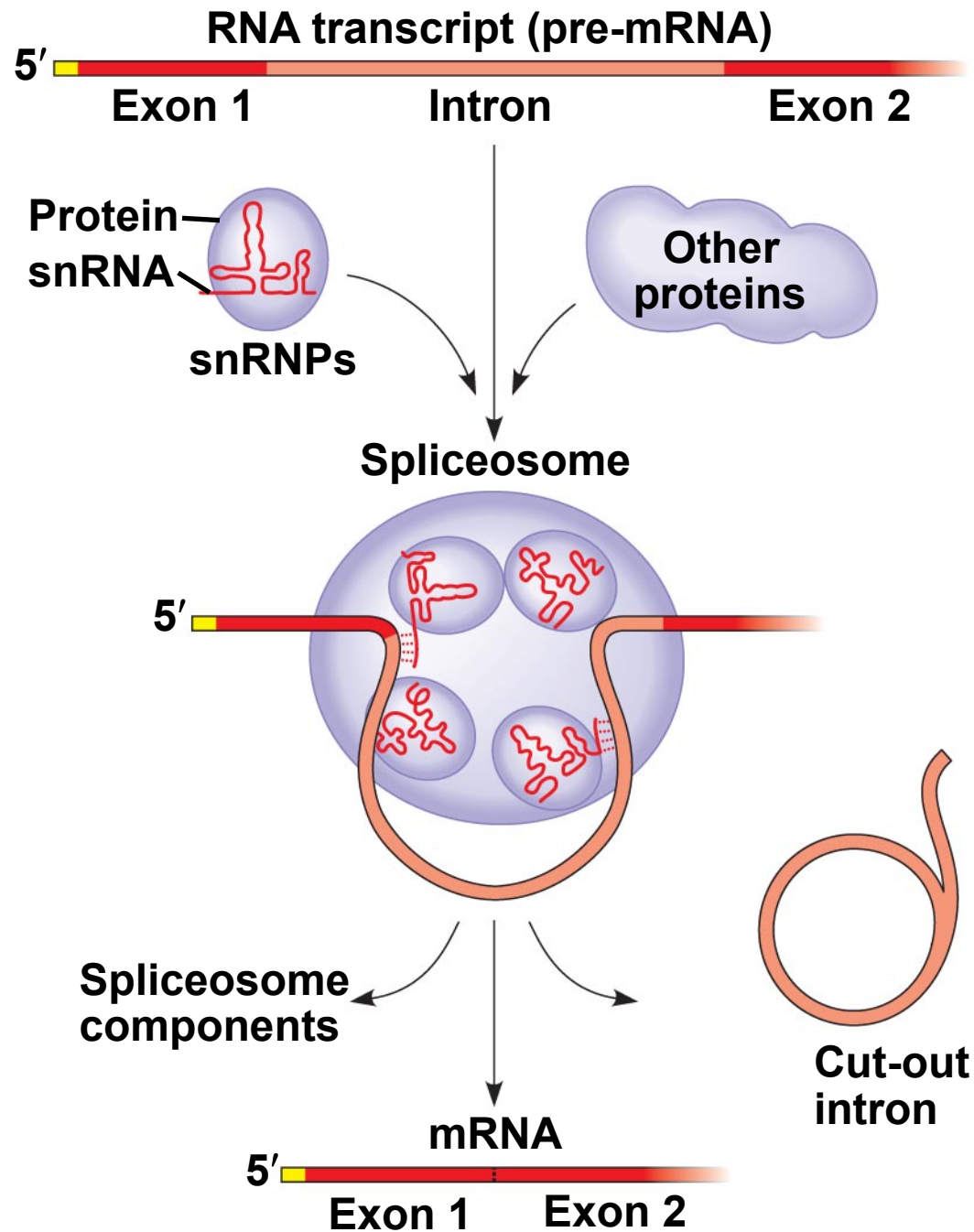
Transcription initiation complex

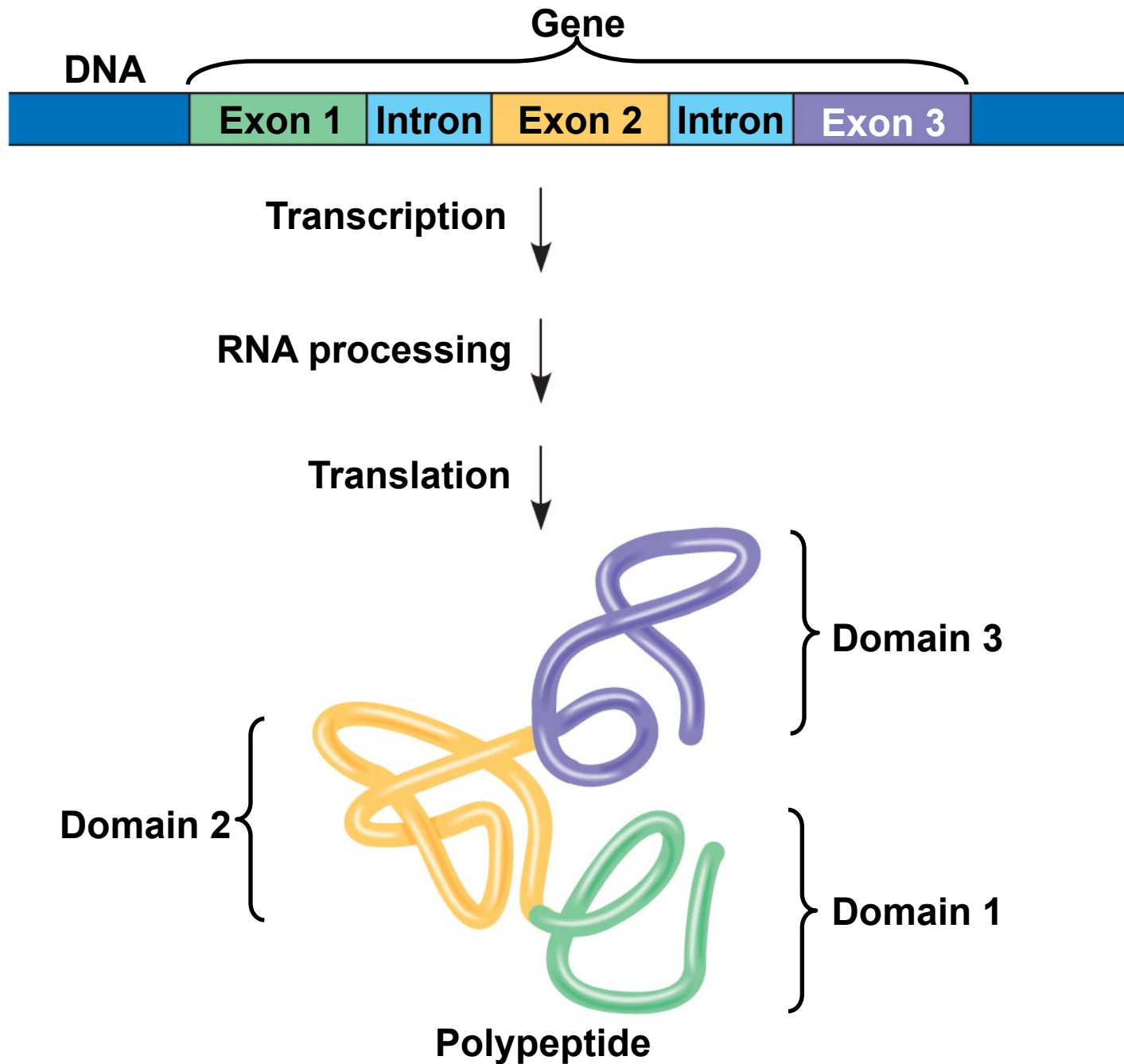


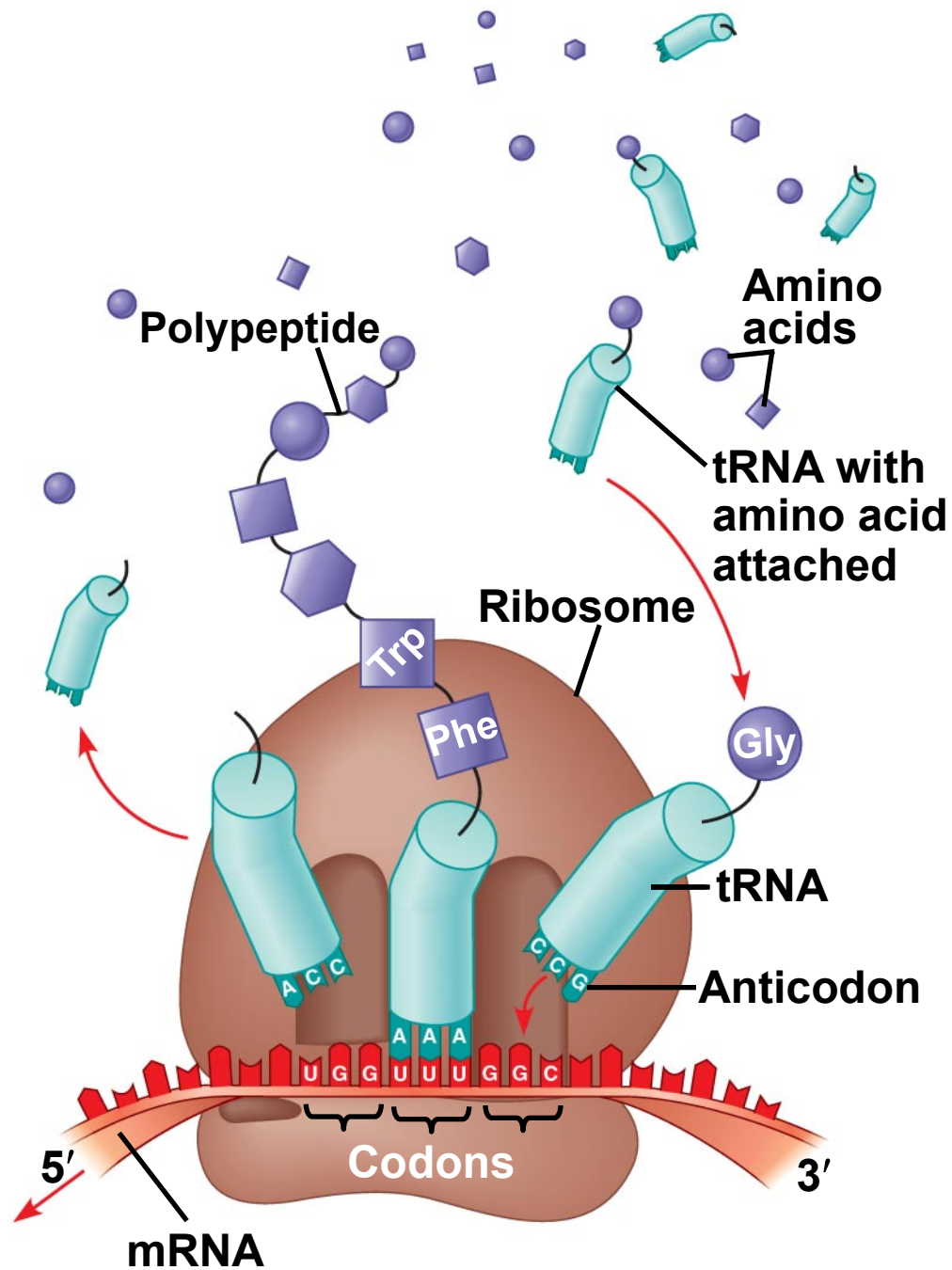
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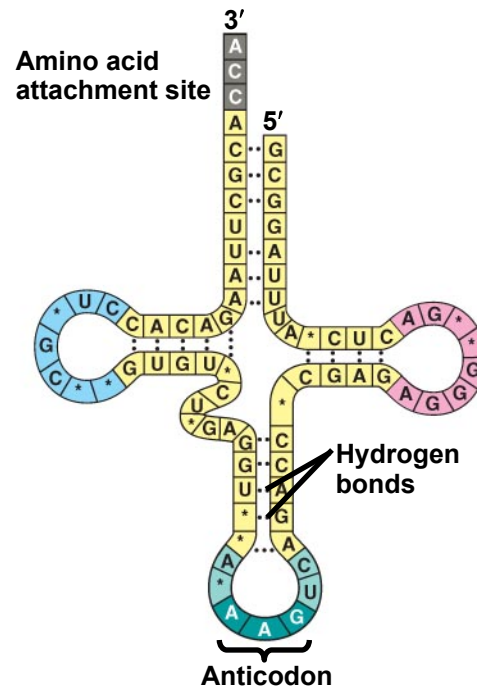
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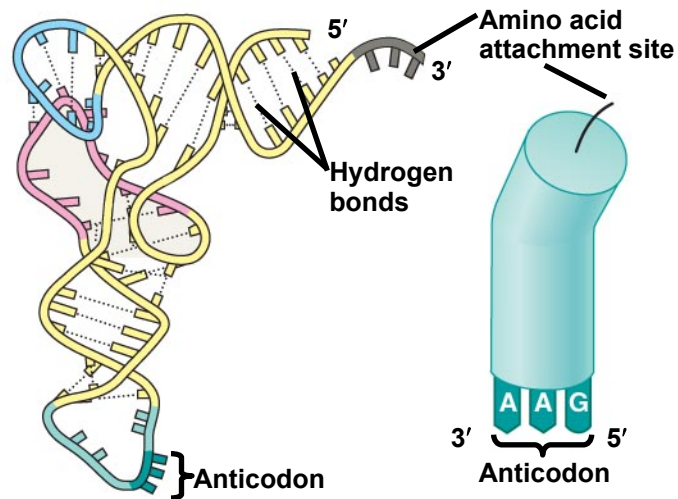




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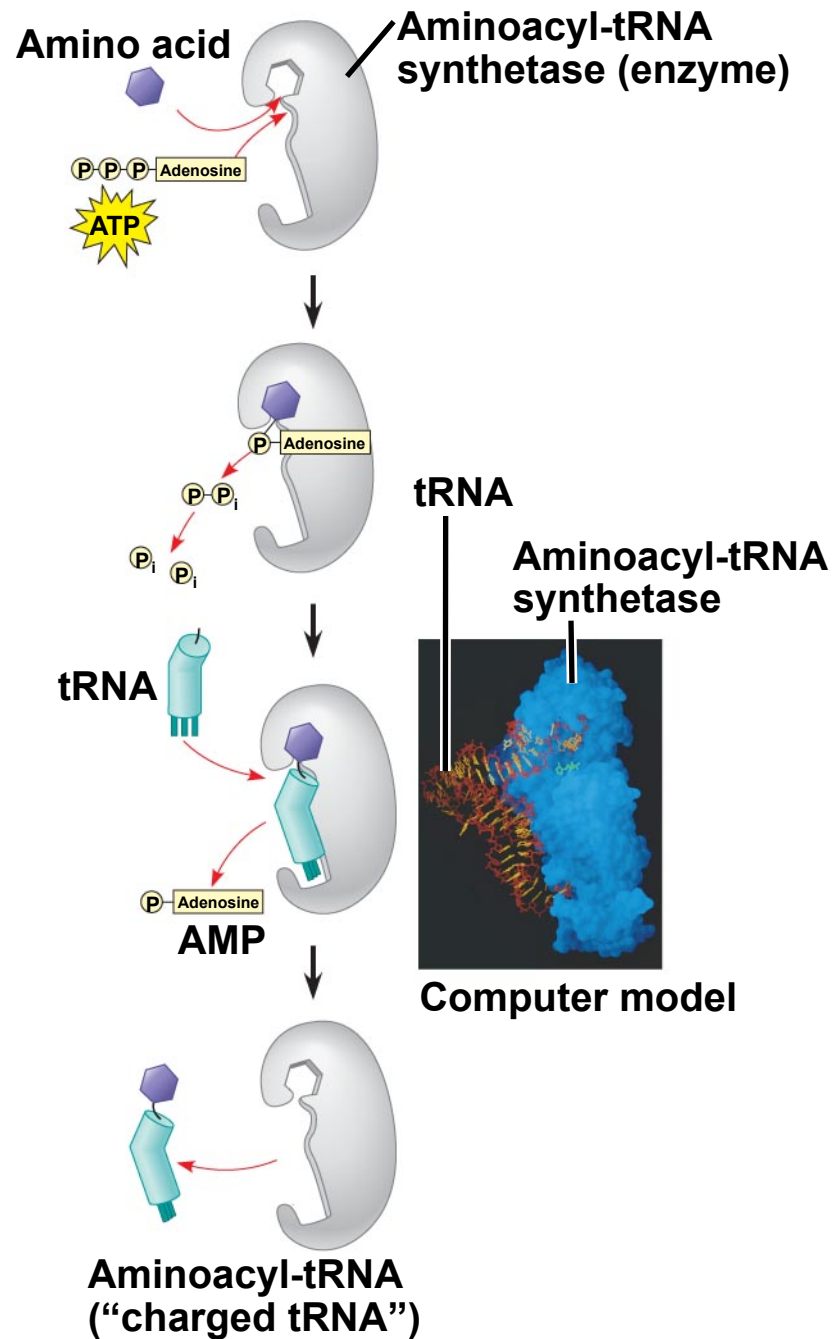
(a) Two-dimensional structure

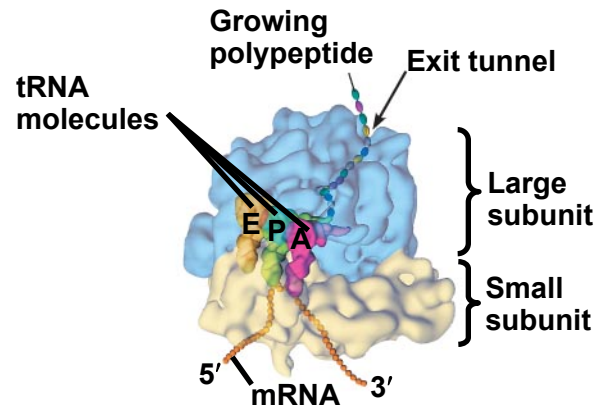


(b) Three-dimensional structure

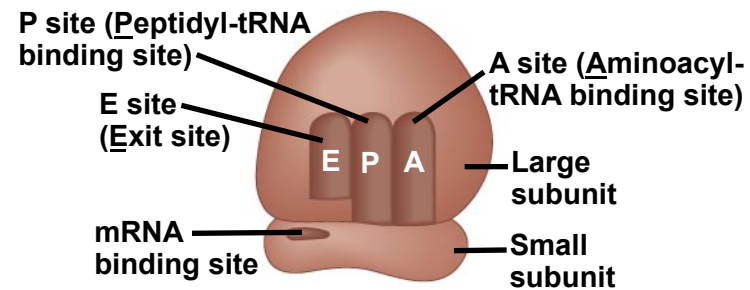
(c) Symbol used in this book

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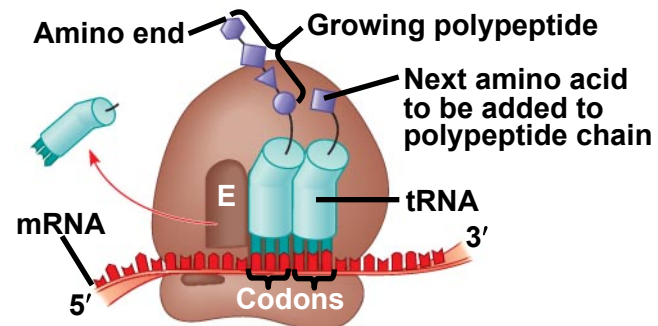




(a) Computer model of functioning ribosome

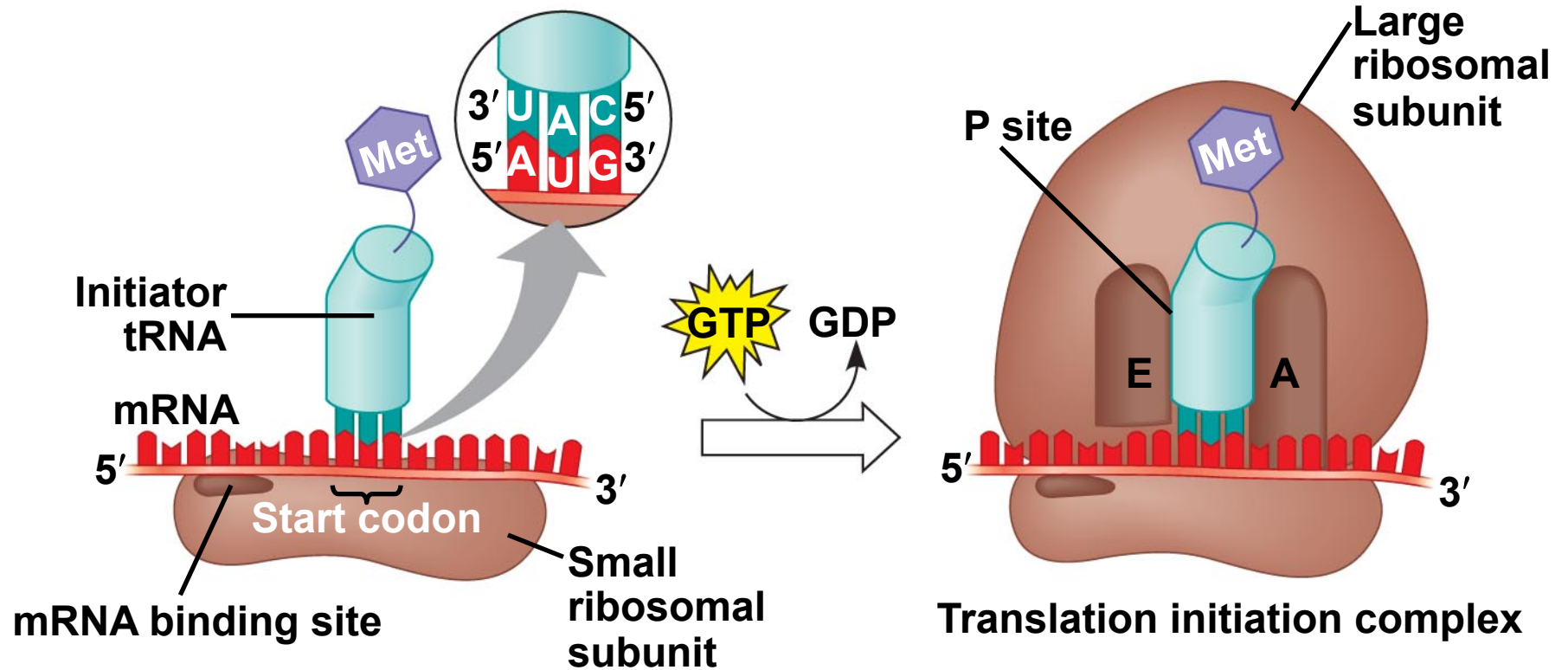


(b) Schematic model showing binding sites

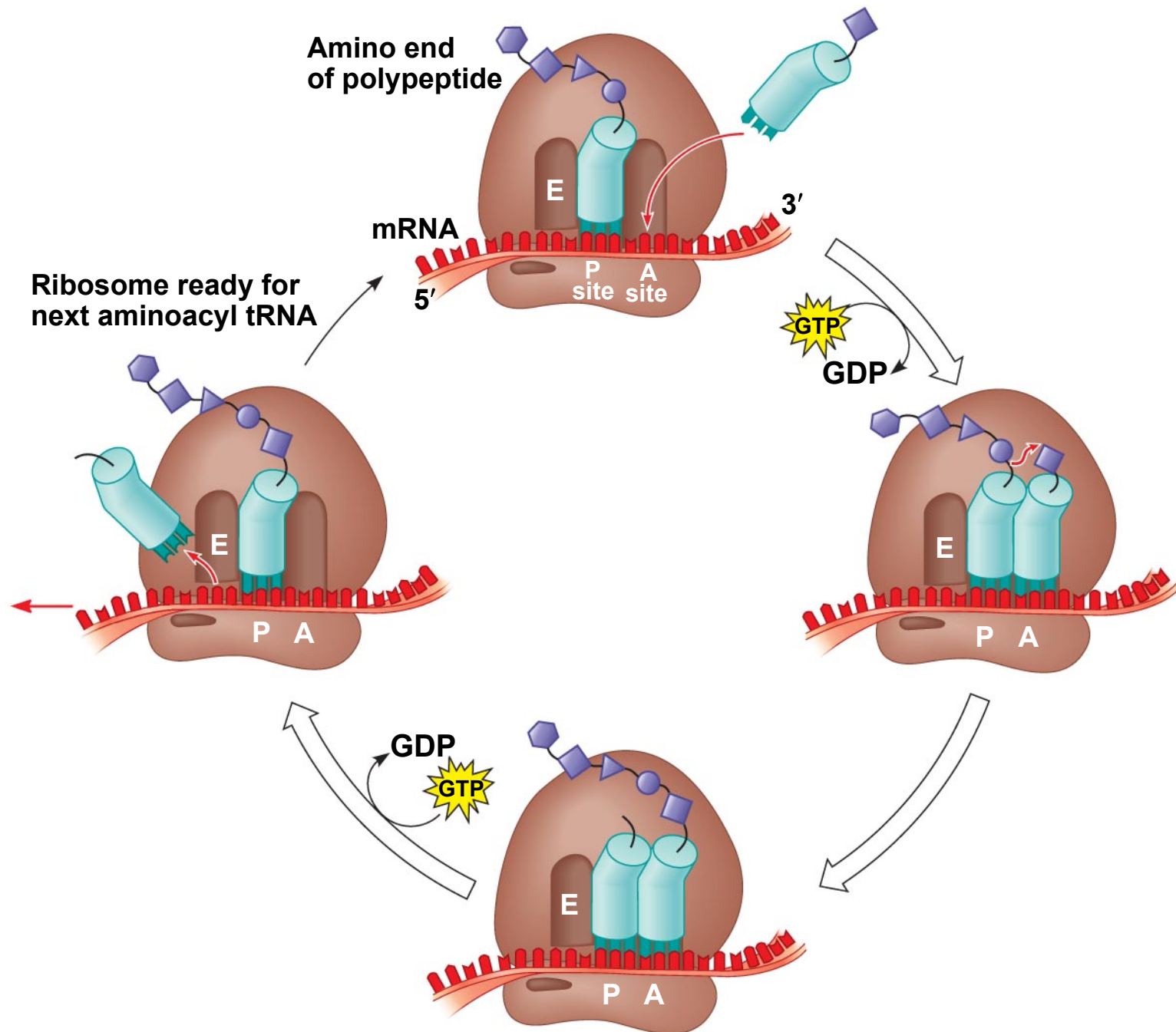


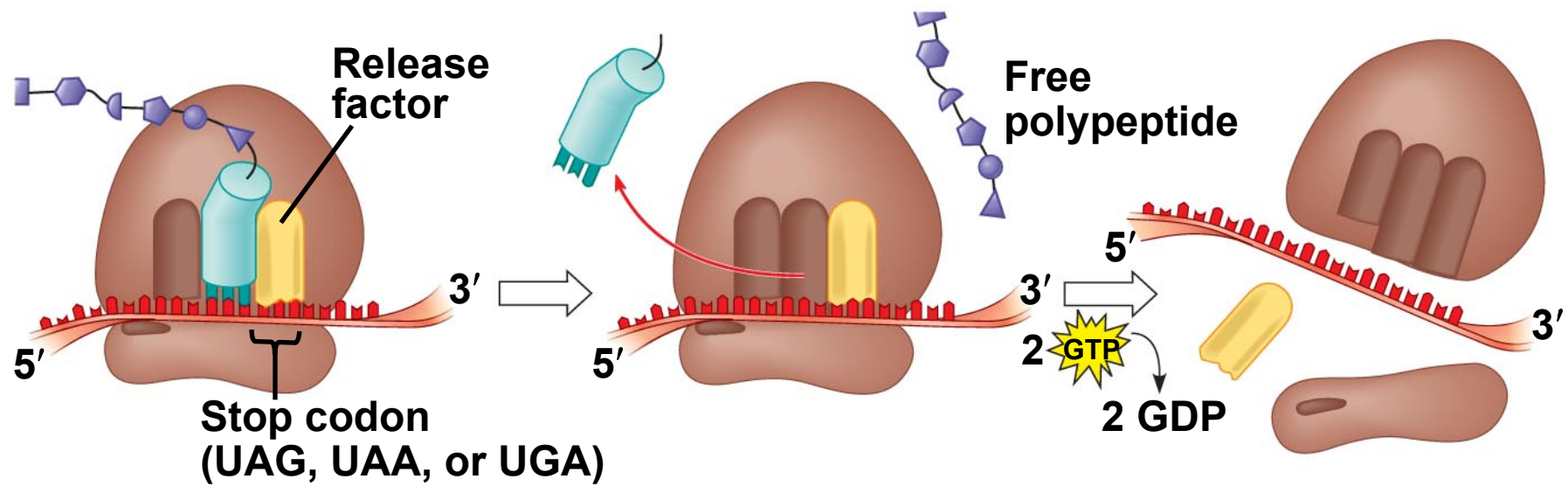
(c) Schematic model with mRNA and tRNA

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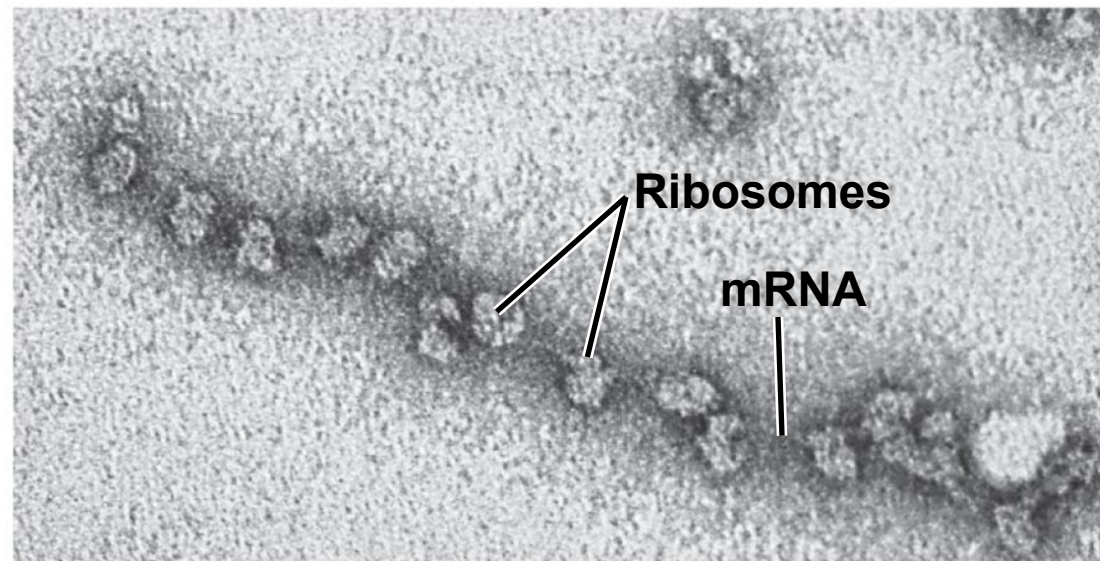
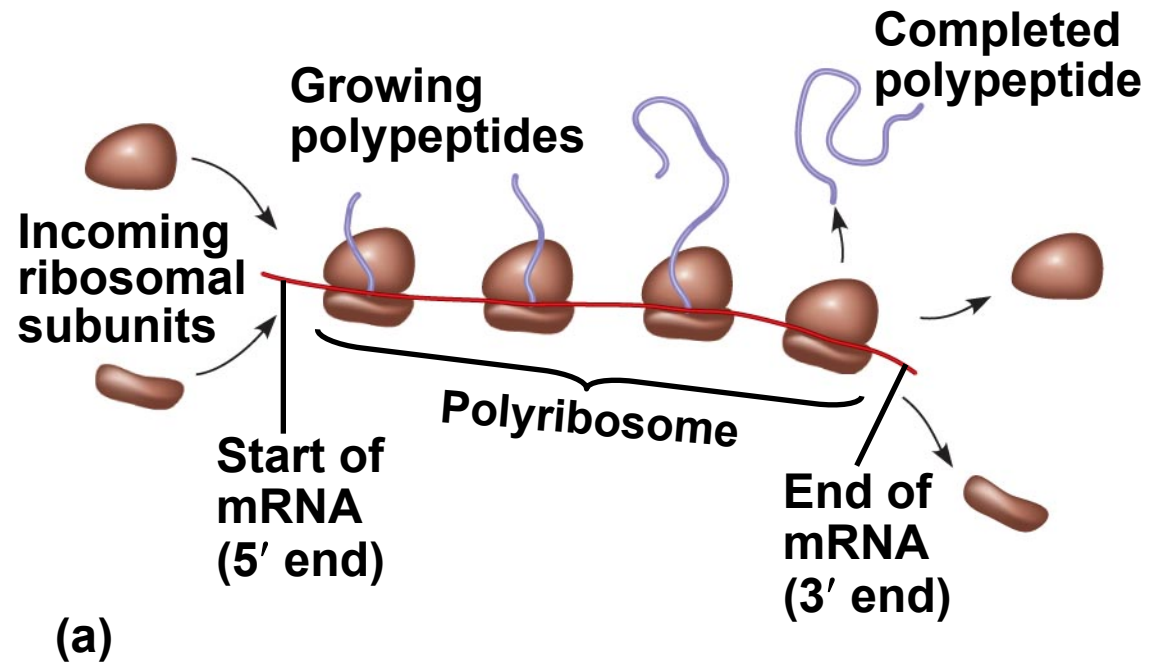


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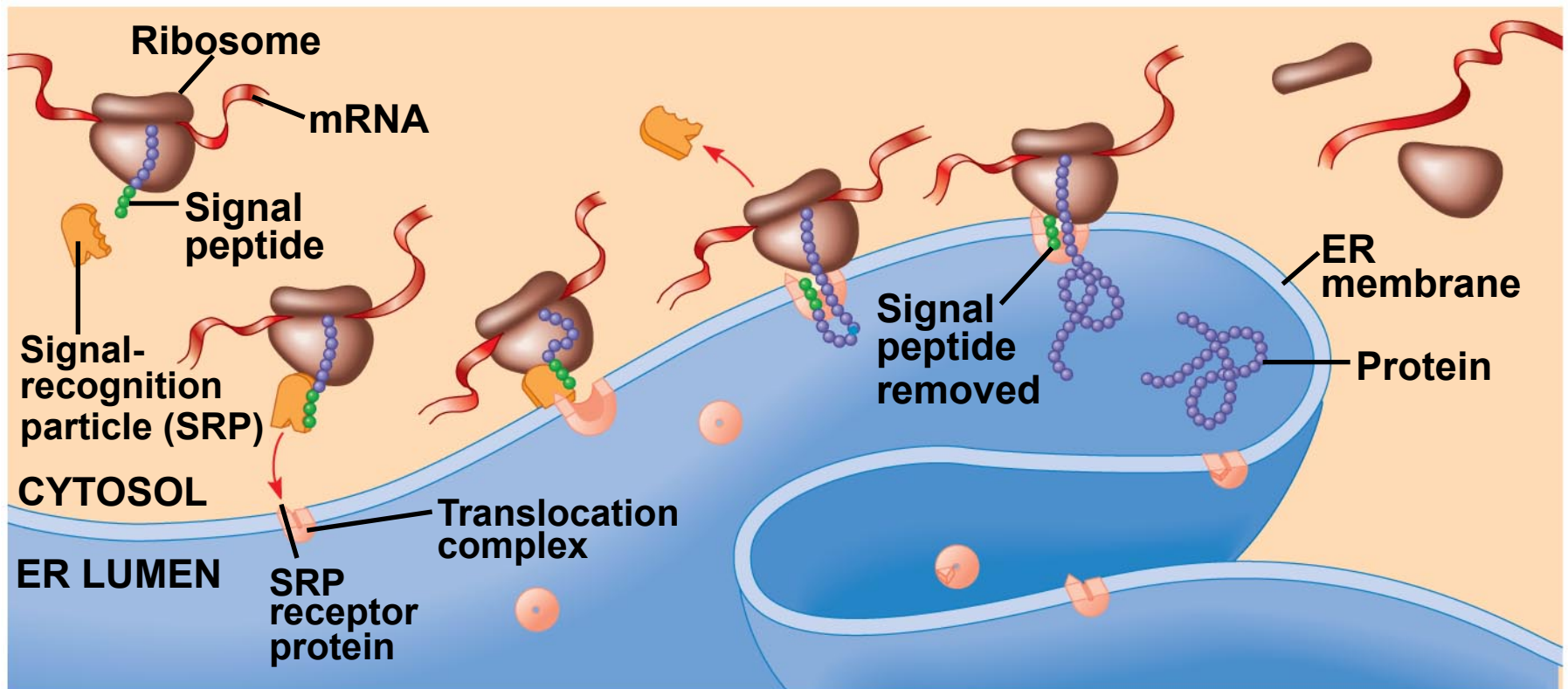


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(b)

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Wild-type hemoglobin DNA



mRNA



Normal hemoglobin



Mutant hemoglobin DNA

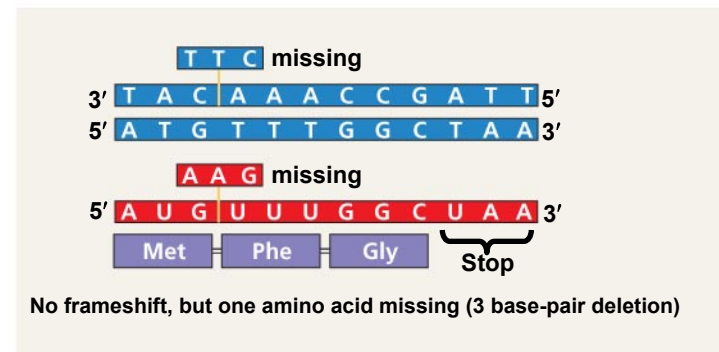
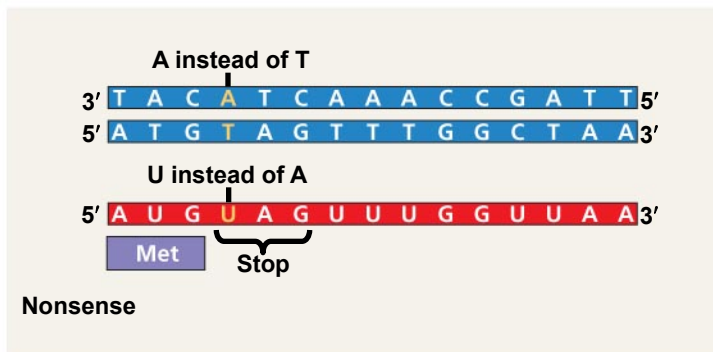
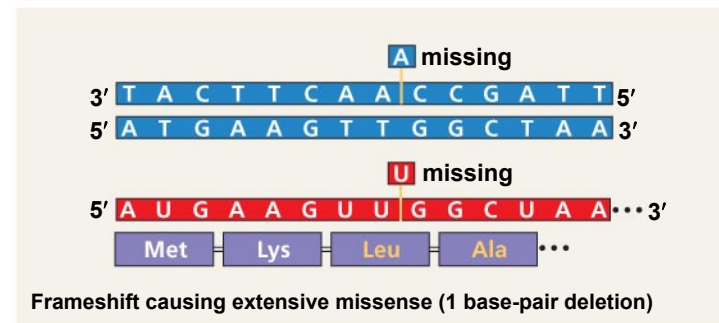
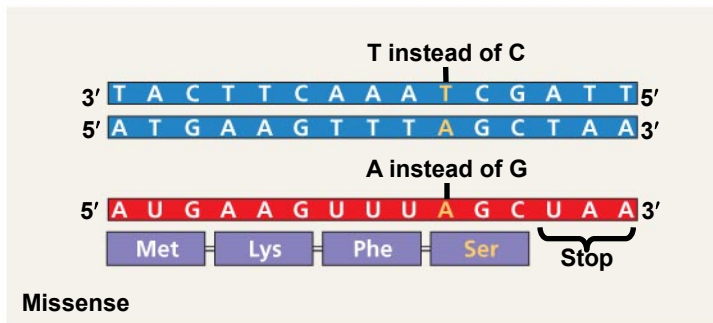
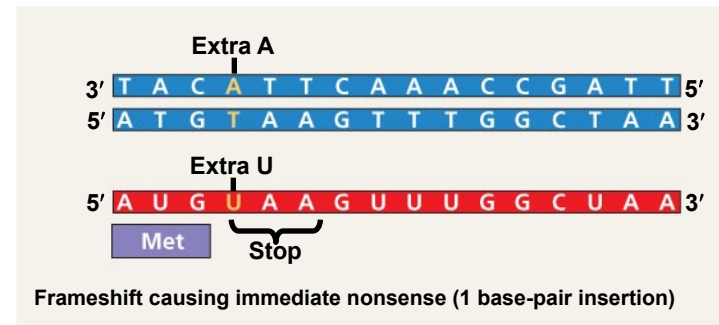
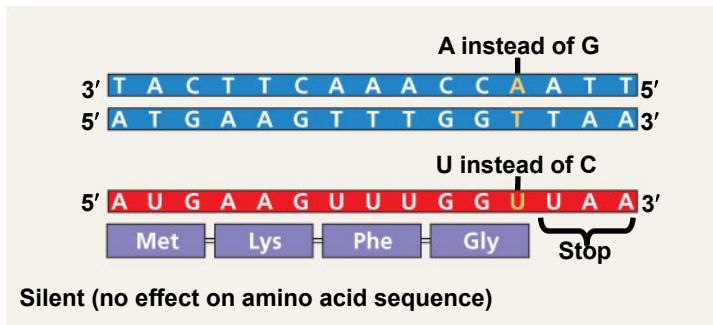
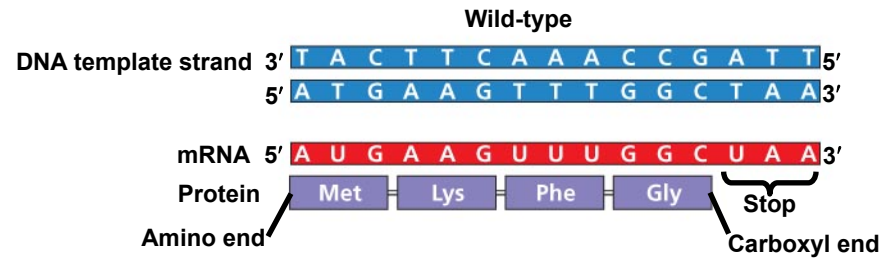


mRNA



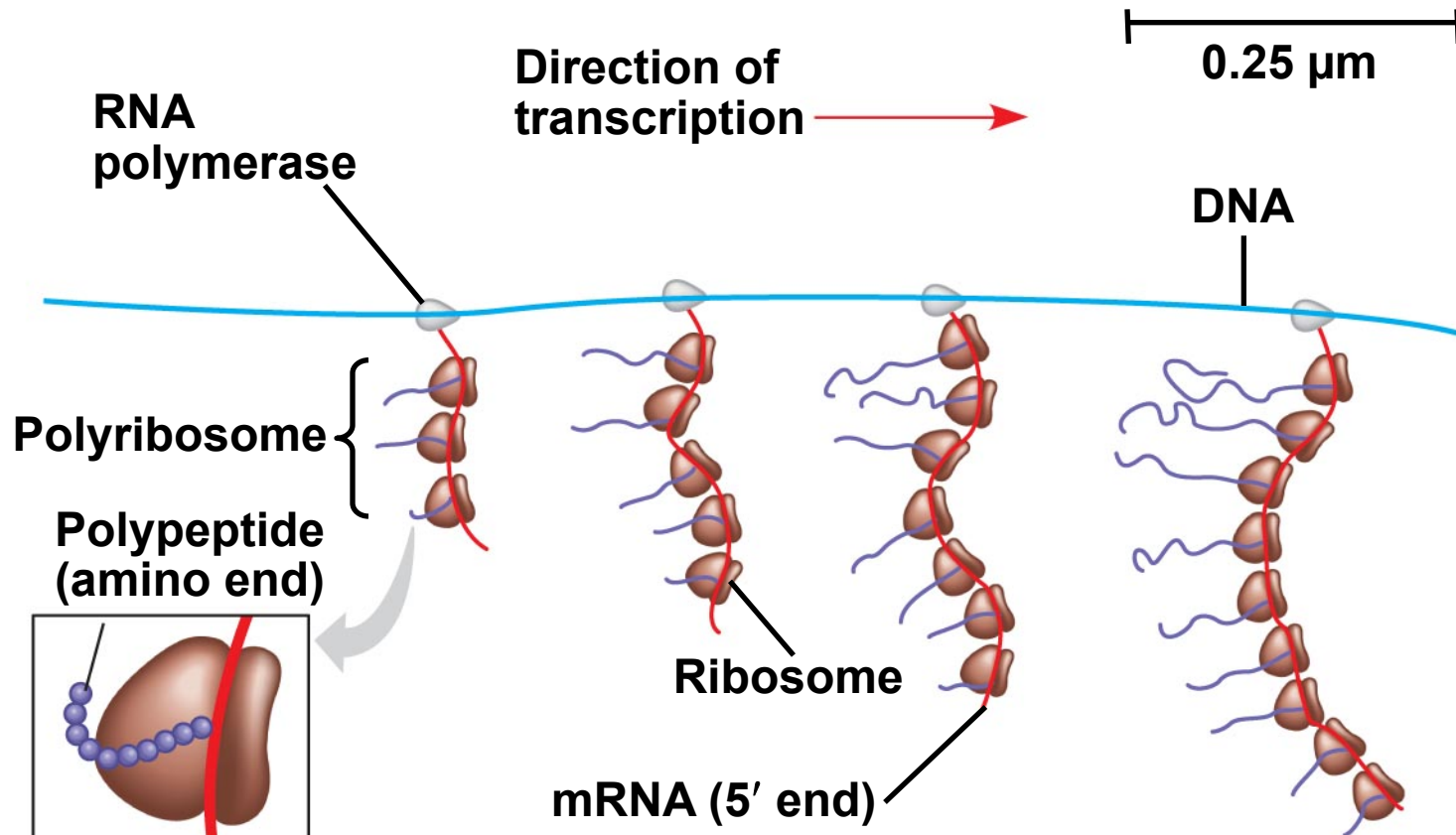
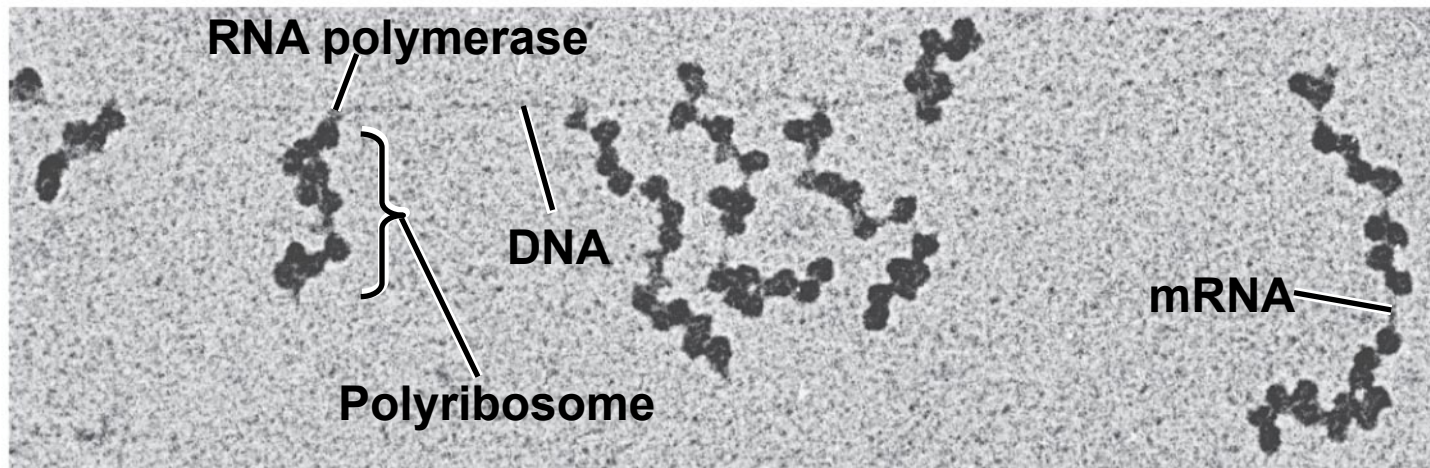
Sickle-cell hemoglobin



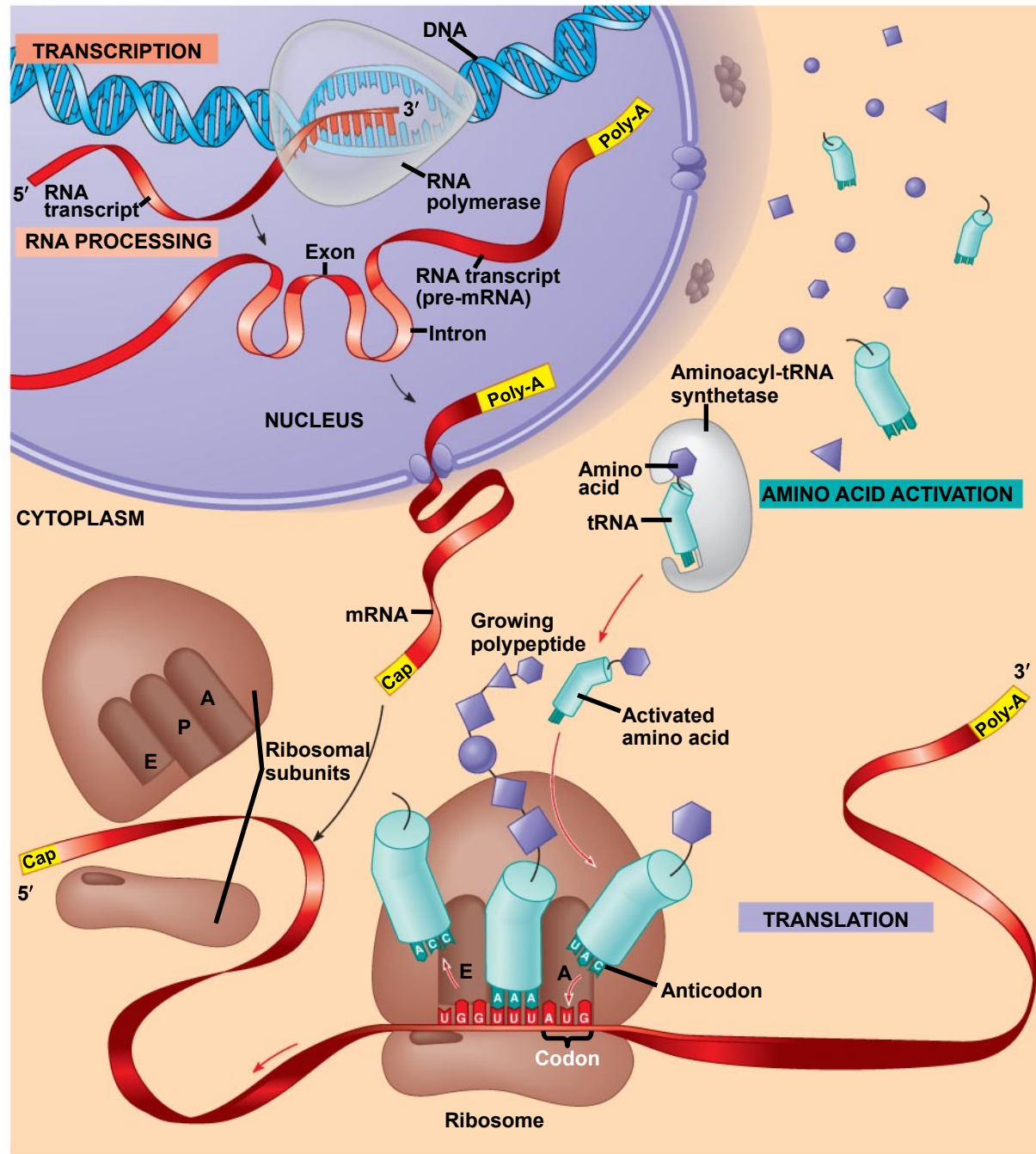


(a) Base-pair substitution

(b) Base-pair insertion or deletion



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