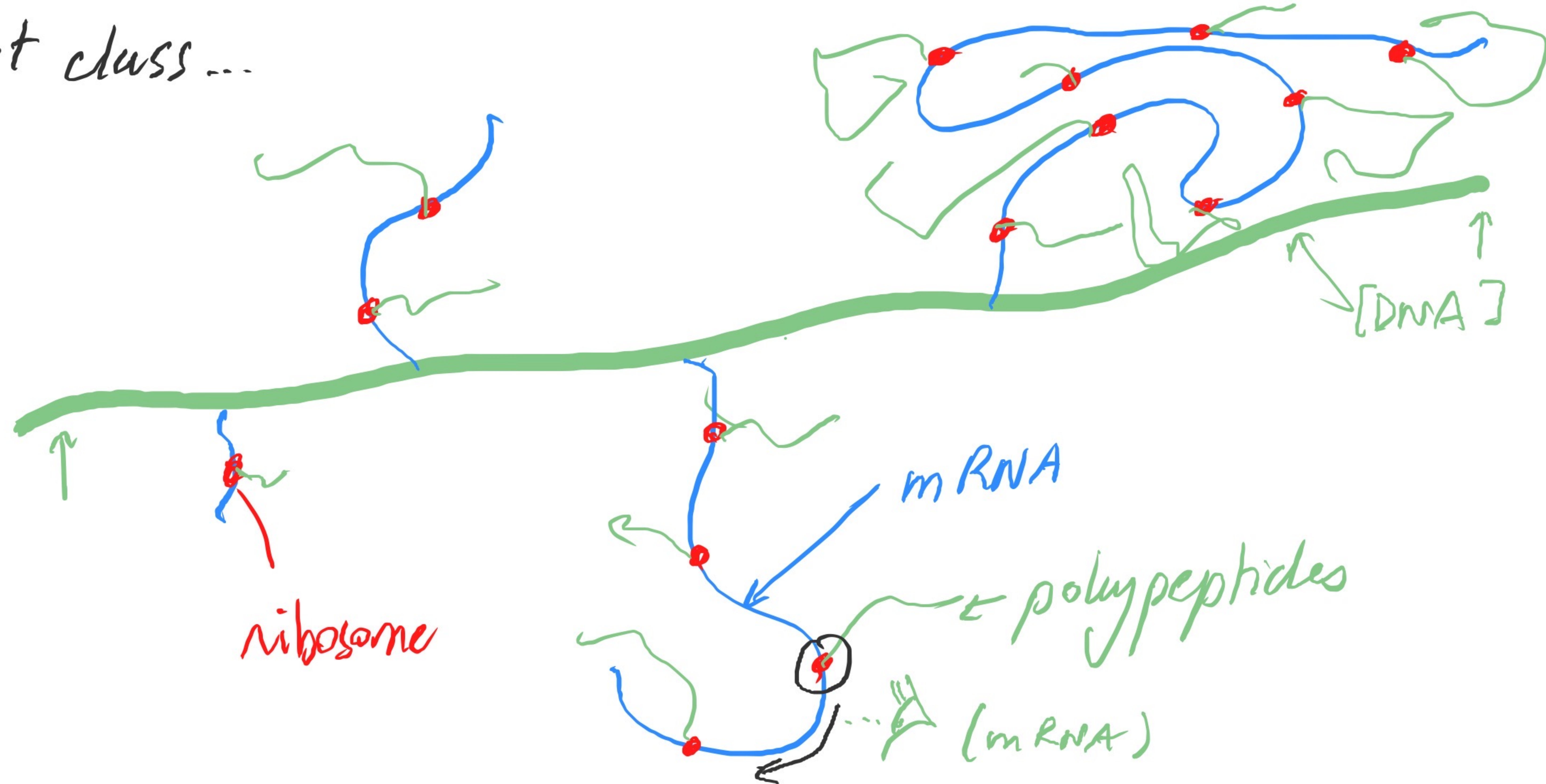


last class ...



Primary RNA transcript:



(succession of
exons and intron)



RNA processing → 3 actions: Remove introns
5' cap
poly-A tail



= mature mRNA

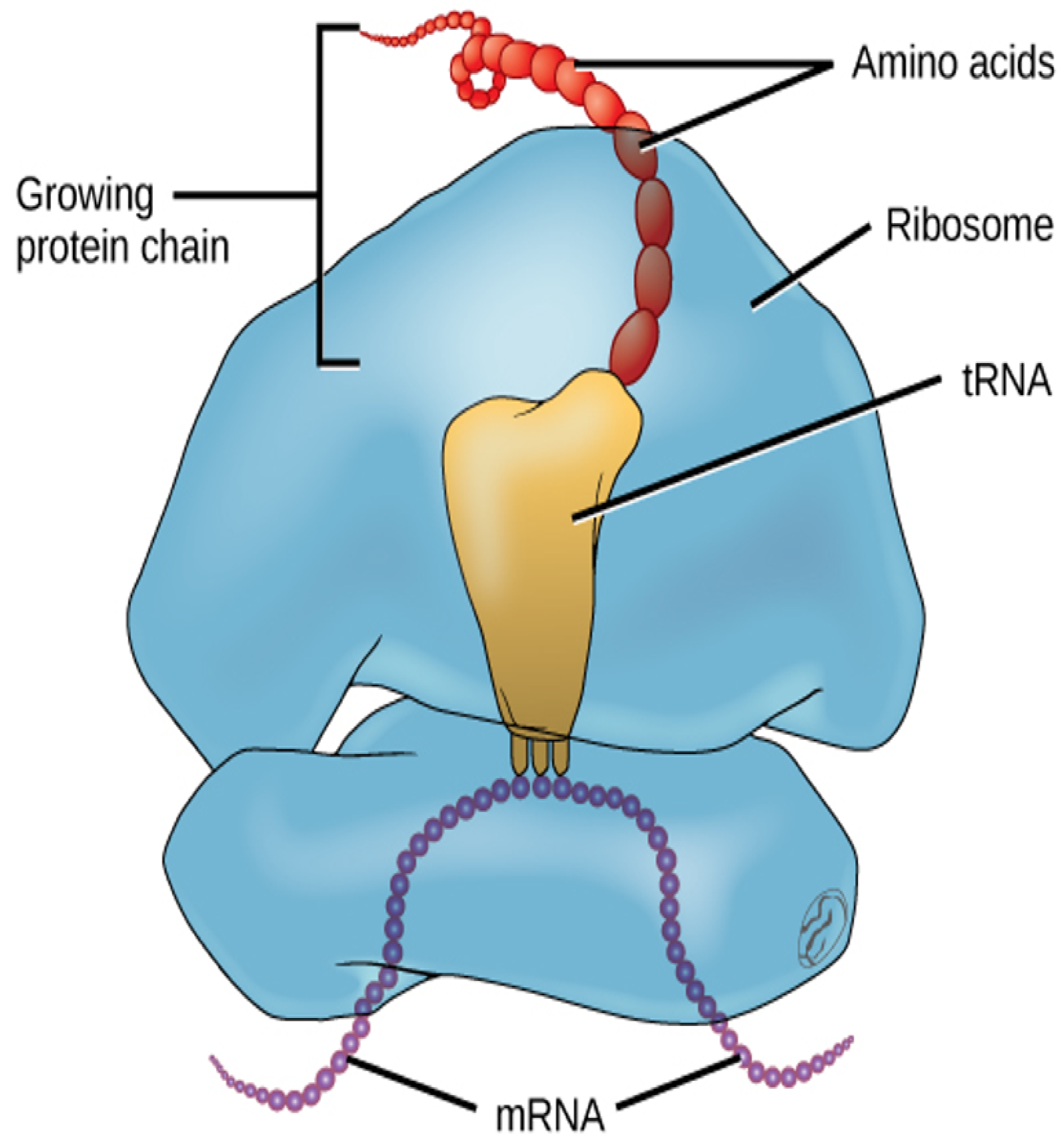
The tRNA associates 3 nucleotides
reading to 1 amino acid.

[combinations 123 → aa X]

● amino acids
● nucleotide

ribosome





cell is coming up with code: trio of nucleotides
↓ coding
specific amino acid

if tRNA reads $\left. \begin{array}{l} UUU \\ \text{or } UUC \end{array} \right\}$, tRNA is going to join Phe...
(see table next slide).

if tRNA reads $\left. \begin{array}{l} UAA \\ UAG \\ UGA \end{array} \right\}$, tRNA is going to STOP
(end of protein)

		Second letter					
		U	C	A	G		
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	U C A G	Third letter
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G	
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G	
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G	

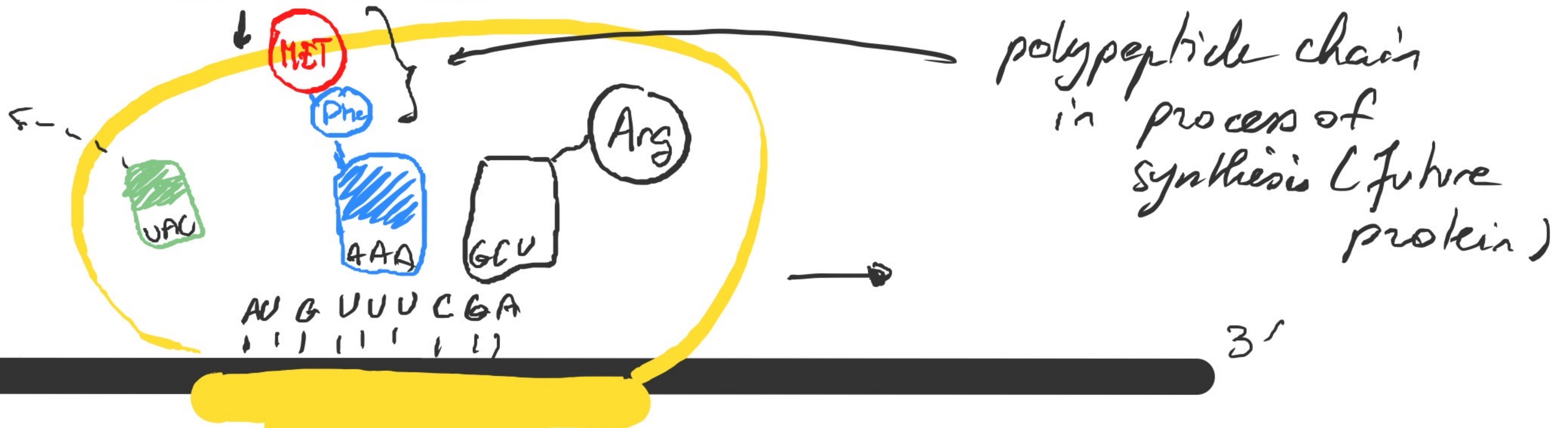
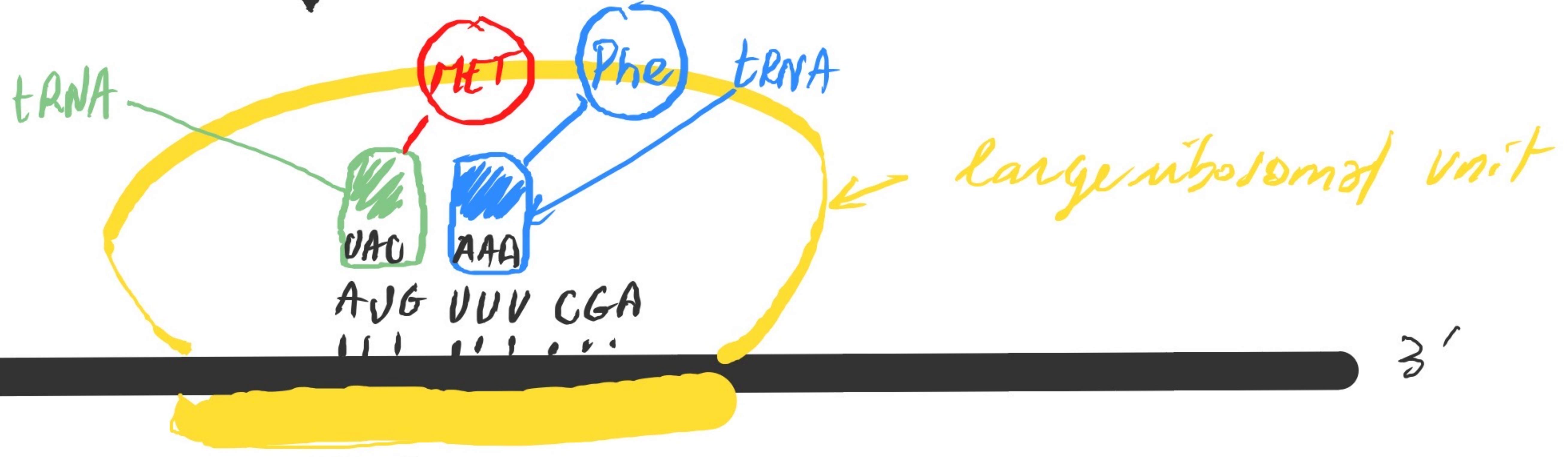
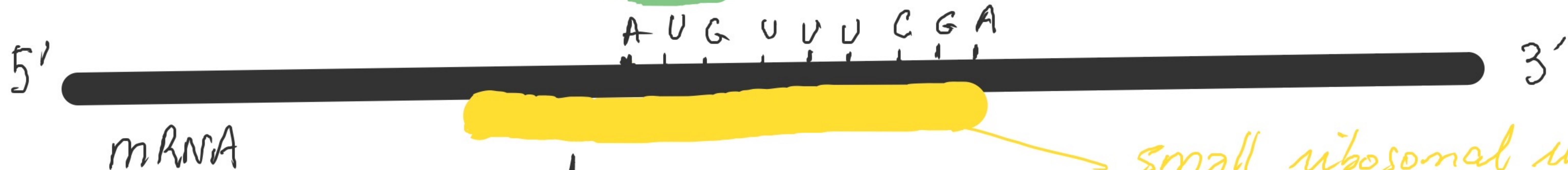
This figure shows the genetic code for translating each nucleotide triplet, or codon, in mRNA into an amino acid or a termination signal in a nascent protein

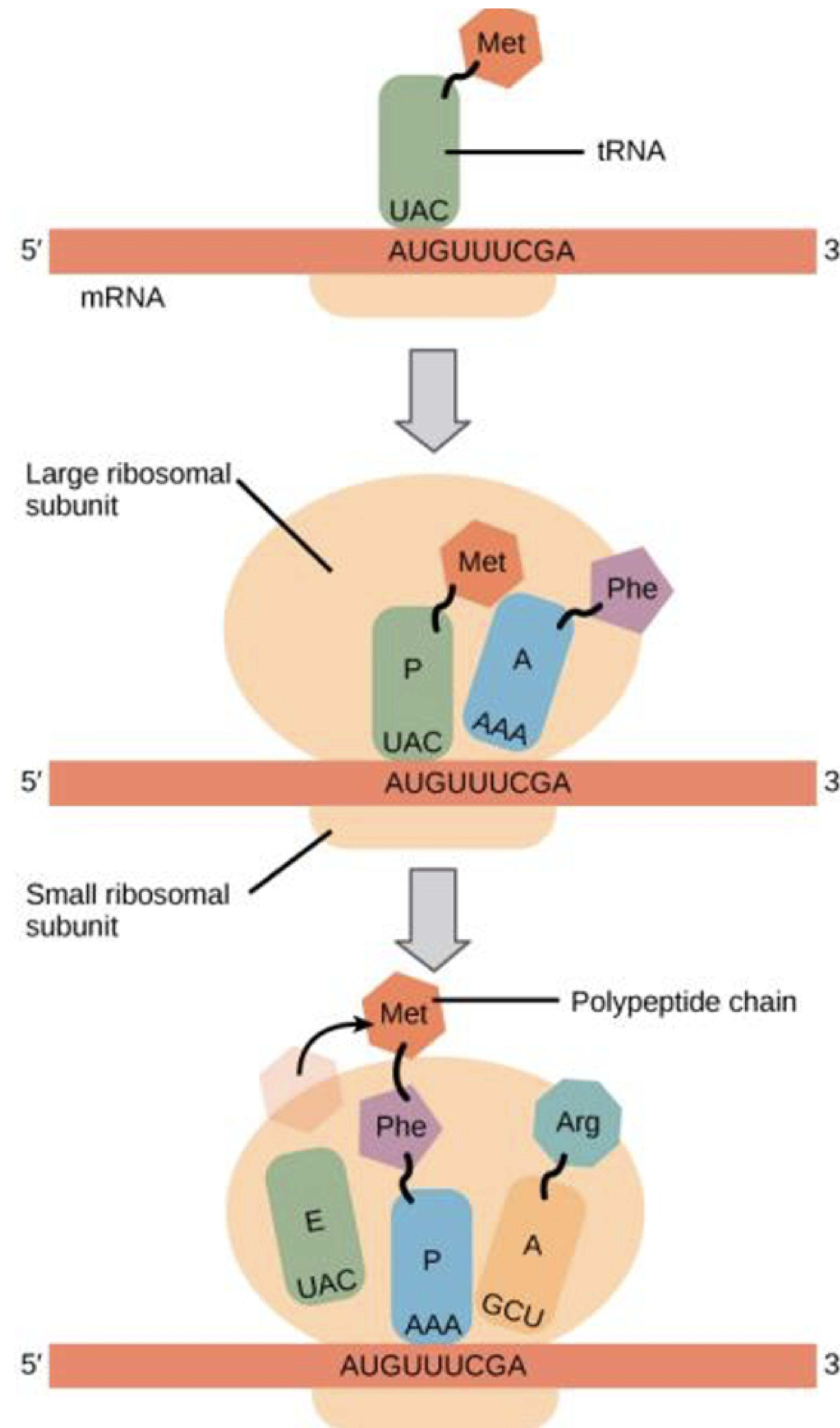


tRNA

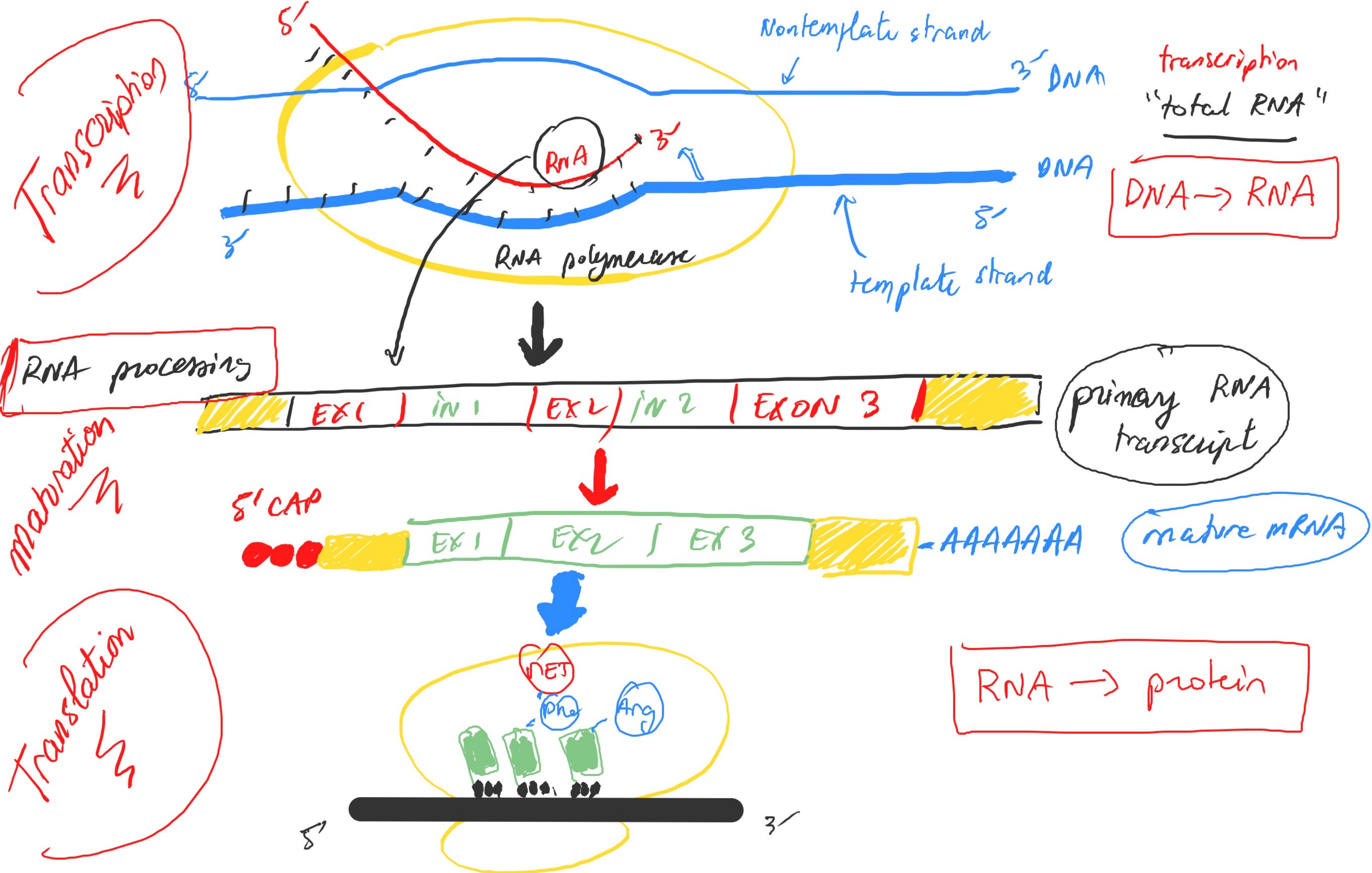
Met

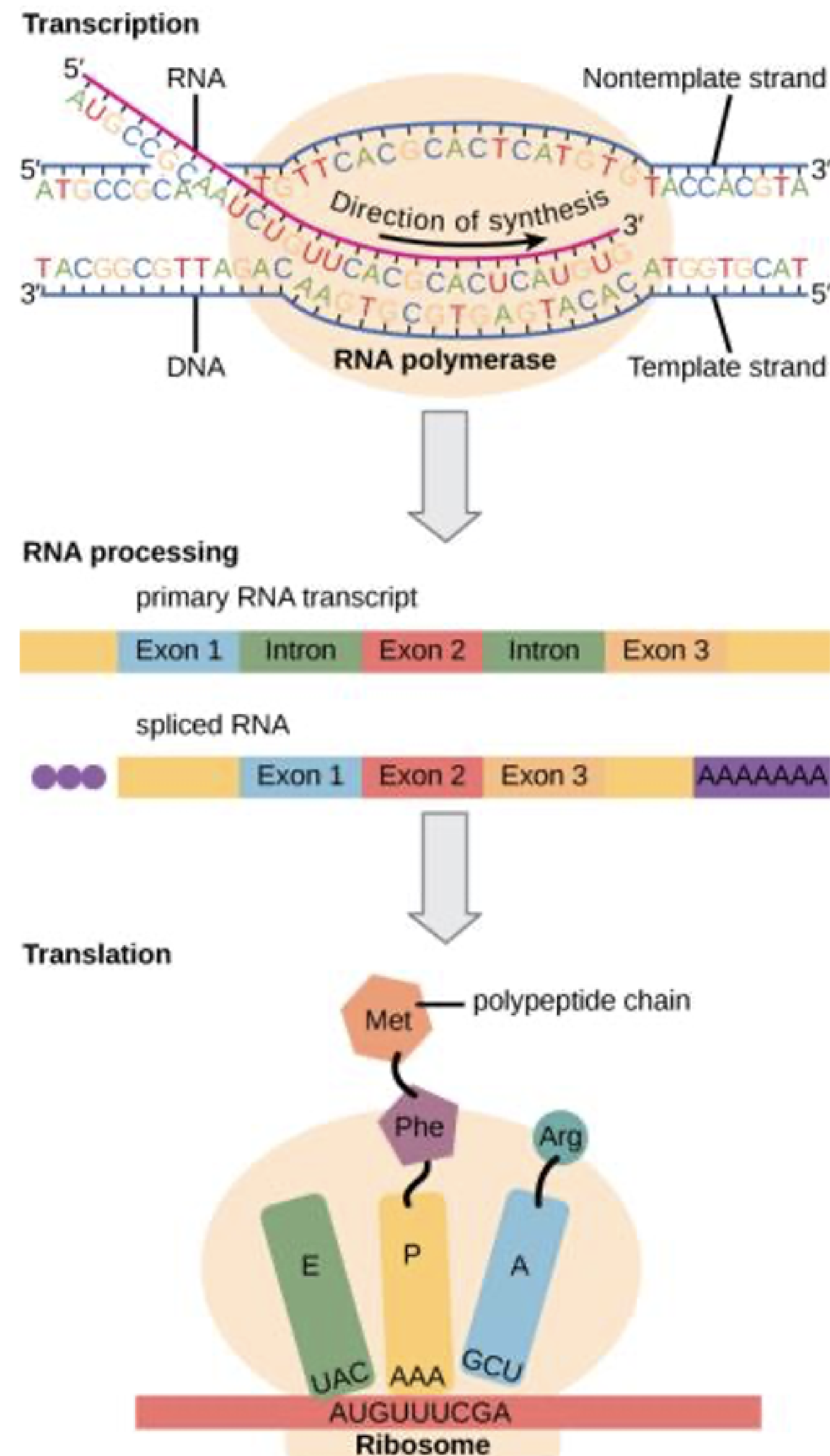
Each tRNA hold his specific amino acid
AUG coding for MET





- Translation begins when a tRNA anticodon recognizes a codon on the mRNA. The large ribosomal subunit joins the small subunit, and a second tRNA is recruited. As the mRNA moves relative to the ribosome, the polypeptide chain is formed. Entry of a release factor into the A site terminates translation and the components dissociate.





Eukaryotic gene expression is regulated during transcription and RNA processing, which take place in the nucleus, as well as during protein translation, which takes place in the cytoplasm. Further regulation may occur through post-translational modifications of proteins.

RNA processing:

(a) Exon skipping:



mRNA 1

mRNA 2
(common process)

(b) mutually exclusive exons:

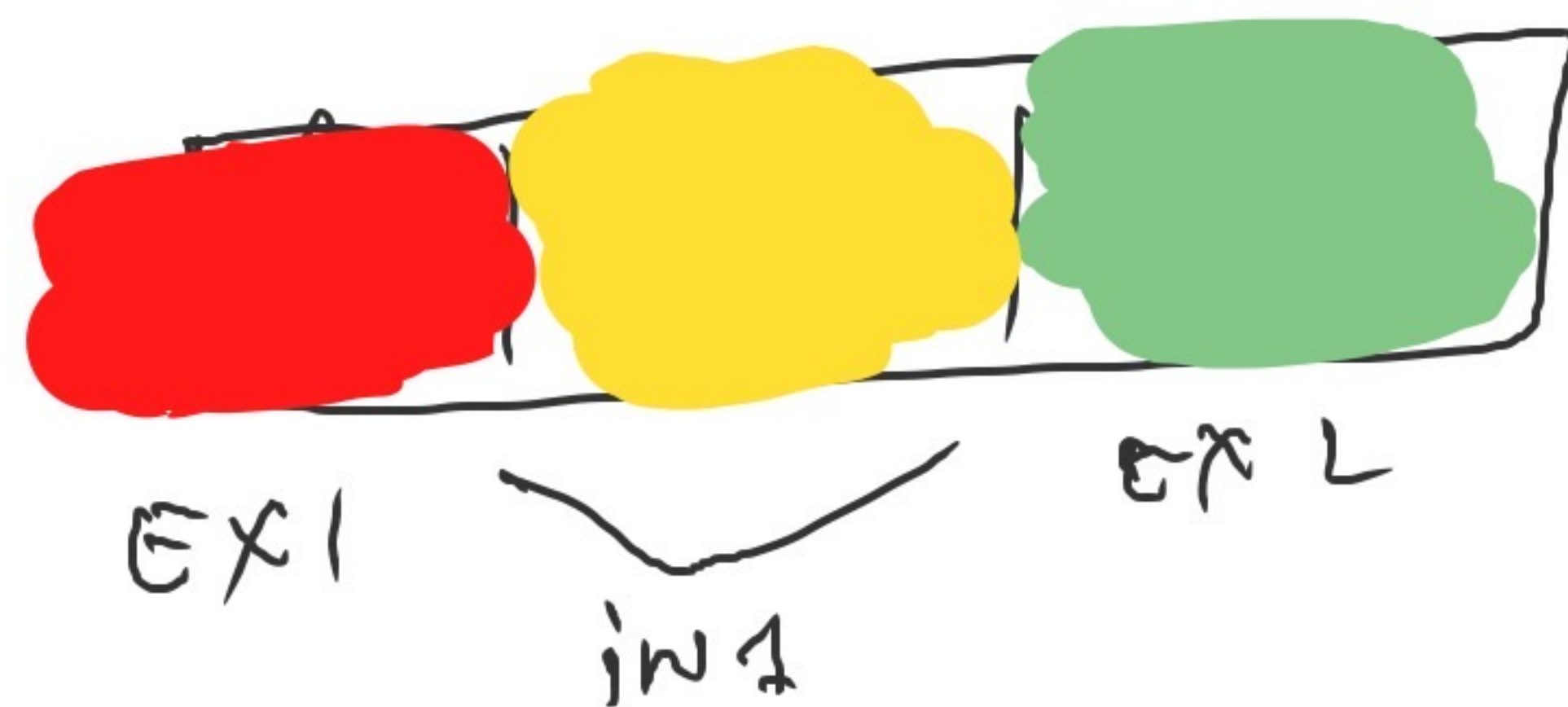


mRNA 3

mRNA 4

... other options (Alternative 5' donor site (mRNA 5, 6)
Alternative 3' acceptor site (mRNA 7, 8))

(c) intro retention:



mRNA 9
EX 1 EX 2

mRNA 10
EX 1 in 2 EX 2

END OF CHAP