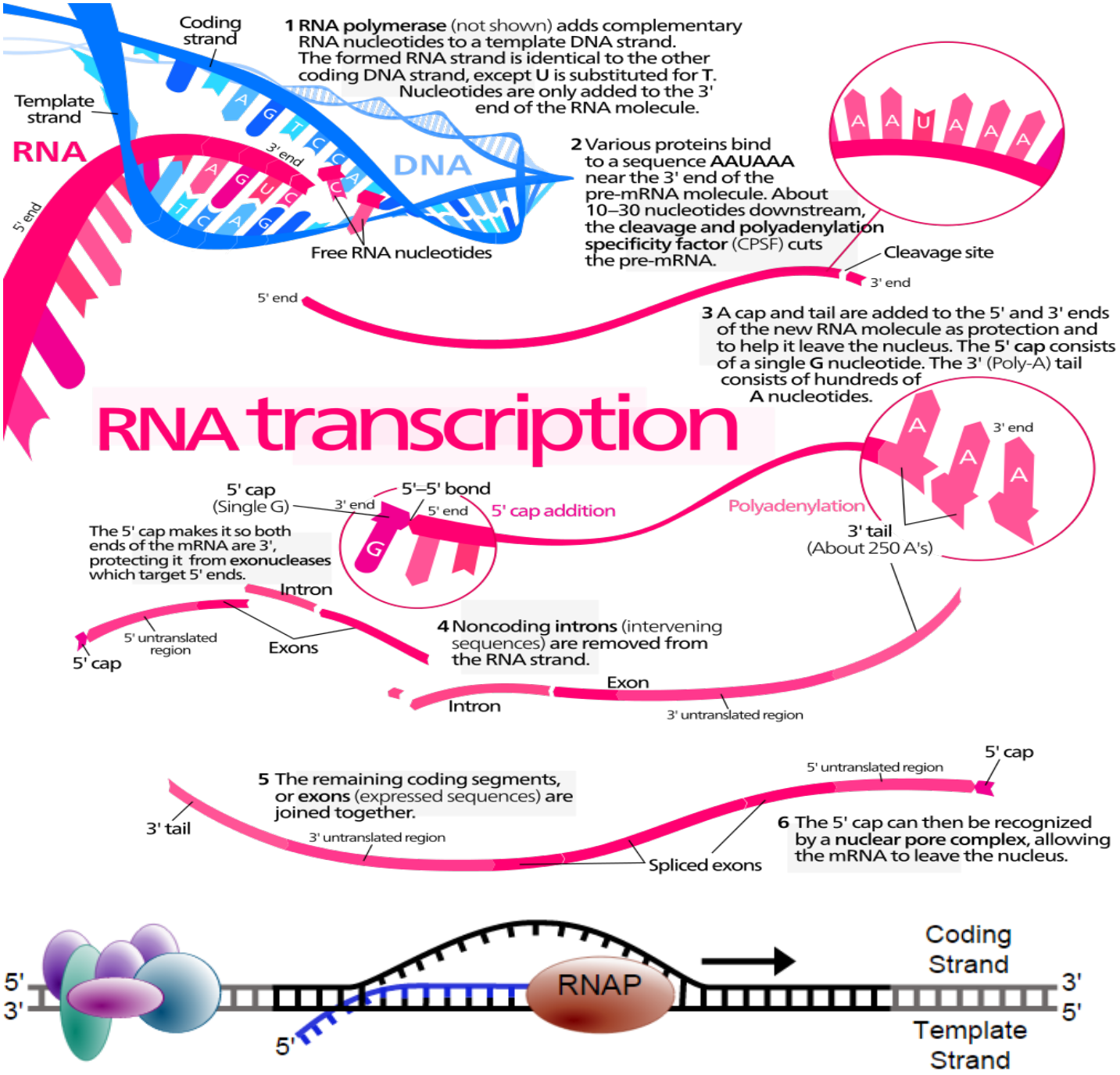
The Central Dogma: DNA → RNA → Protein

DNA → RNA: Transcription



Base Pairing: In RNA, T is replaced by U **DNA: A → T, C → G RNA: A → U, C → G**

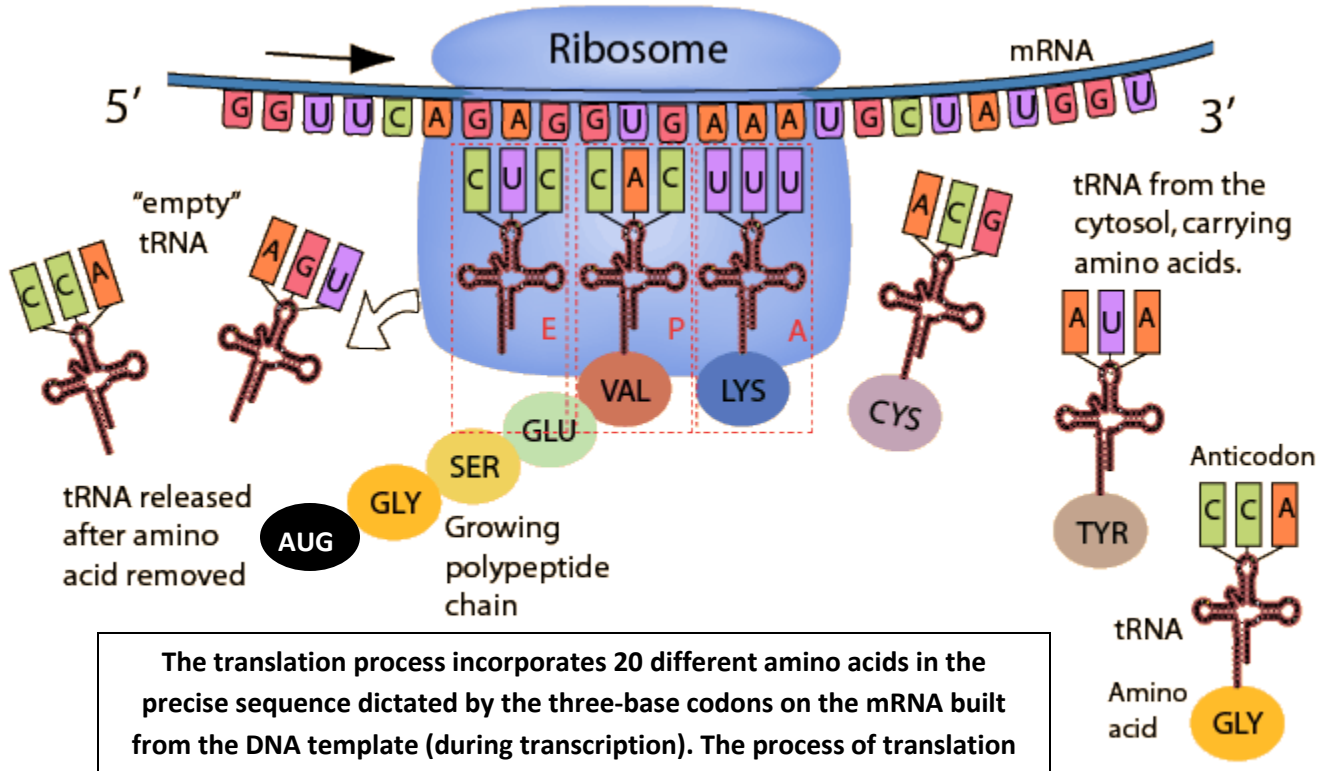
Every three letters (bases) is a codon which codes for a specific amino acid (basic unit of a protein).

The RNA is decoded by ribosomes into a functional protein by the process of translation (protein synthesis). Turn Over.

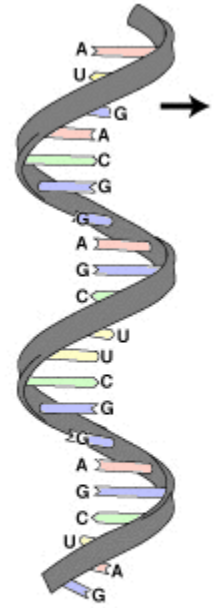
This resource was prepared by the Tallahassee Community College Learning Commons

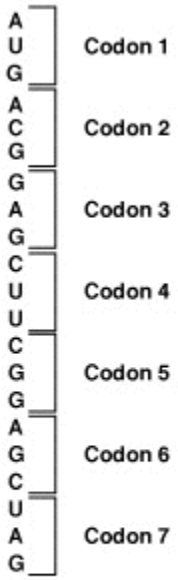
The Central Dogma: DNA → RNA → Protein

RNA → Protein: Translation



The translation process incorporates 20 different amino acids in the precise sequence dictated by the three-base codons on the mRNA built from the DNA template (during transcription). The process of translation (in ribosomes) builds the polypeptide chains that will become proteins.





On the Ribosome:

"A Site" – Amino site

"P Site" – Peptide site (growing peptide)

"E Site" – Exit site (tRNA leaves ribsome)

Codons:

Anticodon on tRNA must match mRNA codon

Codons code for amino acids

ALL proteins *start* with AUG (Methionine)

ALL proteins *stop* with 1 of 3 stop codons

Codons Found in Messenger RNA

First Base	Second Base U	Second Base C	Second Base A	Second Base G	Third Base
U	Phe	Ser	Tyr	Cys	U
	Phe	Ser	Tyr	Cys	C
	Leu	Ser	Stop	Stop	A
	Leu	Ser	Stop	Trp	G
C	Leu	Pro	His	Arg	U
	Leu	Pro	His	Arg	C
	Leu	Pro	Gln	Arg	A
	Leu	Pro	Gln	Arg	G
A	Ile	Thr	Asn	Ser	U
	Ile	Thr	Asn	Ser	C
	Ile	Thr	Lys	Arg	A
	Met	Thr	Lys	Arg	G
G	Val	Ala	Asp	Gly	U
	Val	Ala	Asp	Gly	C
	Val	Ala	Glu	Gly	A
	Val	Ala	Glu	Gly	G

The Genetic Code: Three bases (a codon) code for amino acids.

This resource was prepared by the Tallahassee Community College Learning Commons