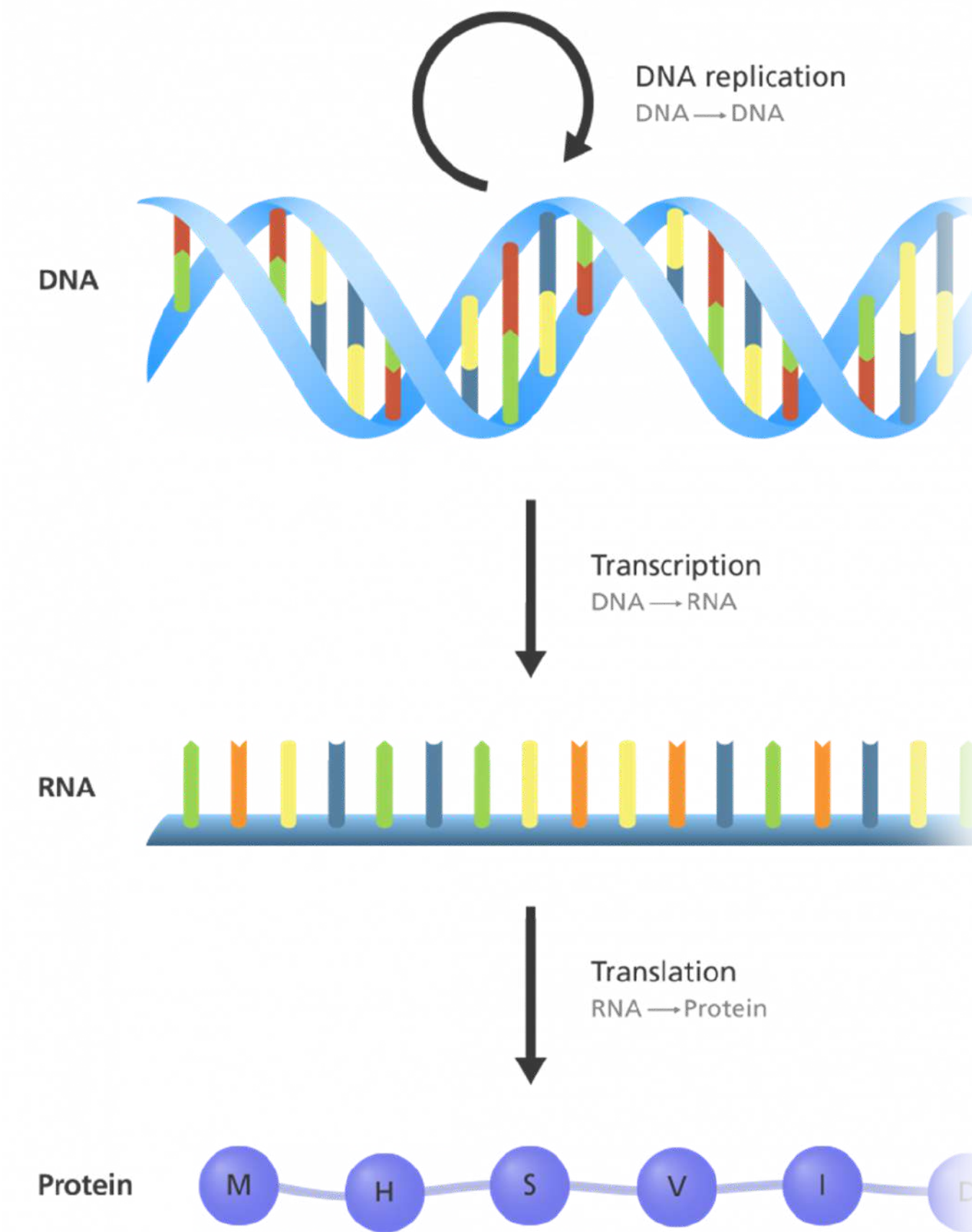
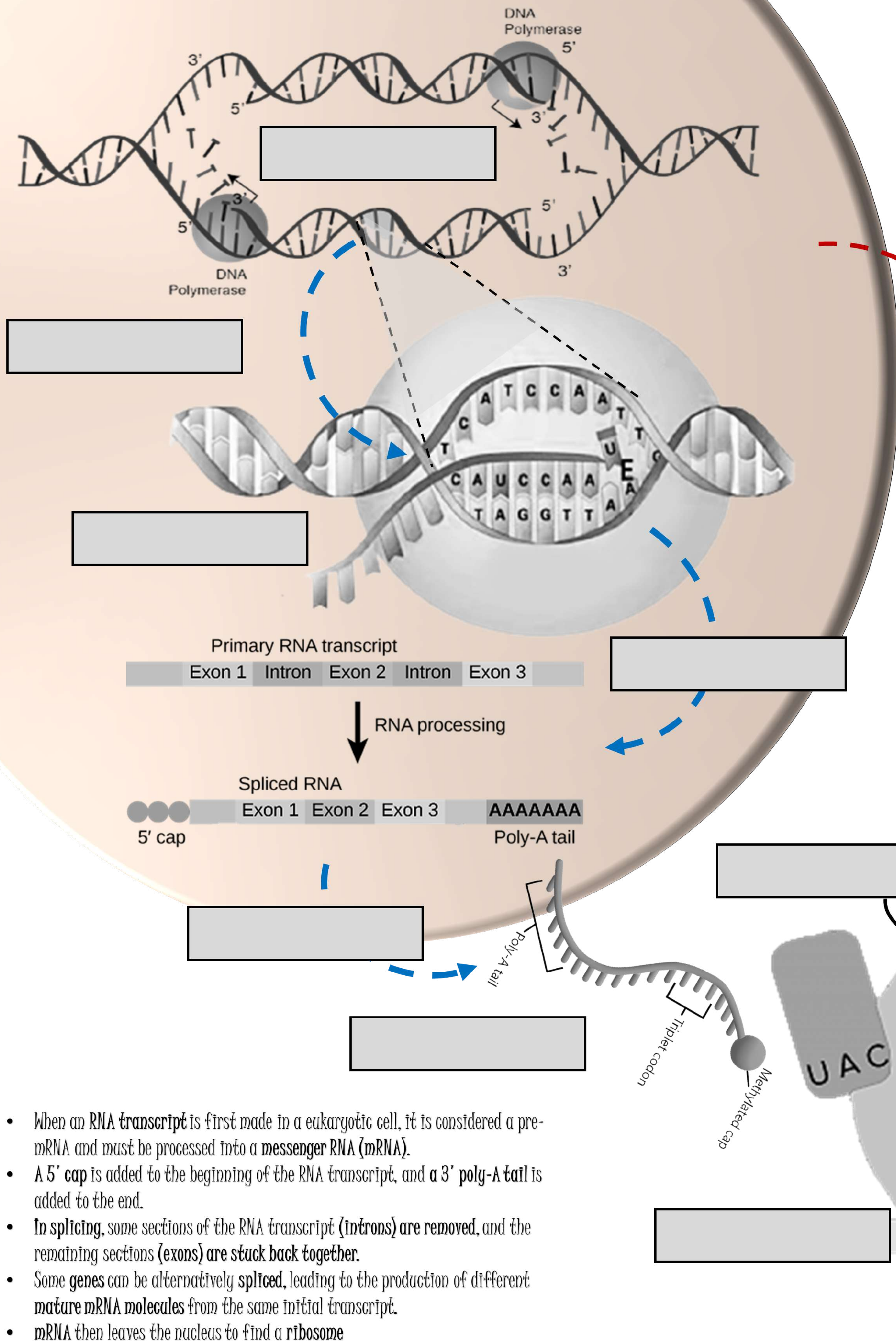


The Central Dogma



Summary

- What:** The 'Central Dogma' is the process by which the instructions in DNA are converted into a functional product. It was first proposed in 1958 by Francis Crick, discoverer of the structure of DNA. ... In **transcription**, the information in the DNA of every cell is converted into small, portable RNA messages
- Why:** The information to produce a protein is encoded in the cell's DNA. When a protein is produced, a copy of the DNA is made (called **mRNA**) and this copy is **transported** to a ribosome. **Ribosomes** read the information in the mRNA and use that information to assemble **amino acids** into a protein.. Every cell in the human body contains protein. The basic structure of protein is a **chain of amino acids**. You **need protein** in your diet to help your **body repair cells and make new ones**.
- Where:** **Ribosomes** are the sites in a cell in which protein synthesis takes place. Cells have many ribosomes, and the exact number depends on how active a particular cell is in synthesizing proteins. It occurs in two stages: **transcription** and **translation**. **Transcription** is the transfer of genetic instructions in DNA to mRNA in the nucleus. It includes three steps: initiation, elongation, and termination. After the mRNA is processed, it carries the instructions to a ribosome in the cytoplasm. **Translation** is the process by which a **protein** is synthesized from the information contained in a molecule of **messenger RNA (mRNA)**. During **translation**, an mRNA sequence is read using the **genetic code**, which is a set of rules that defines how an mRNA sequence is to be translated into the 20-letter code of **amino acids**, which are the building blocks of proteins.

DNA Replication

TRANSCRIPTION

DNA → RNA

Processing

Nucleus

Cytoplasm

mRNA

mRNA

Growing POLYPEPTIDE Chain

Codon

TRANSLATION

Anticodon

mRNA → Protein

tRNA

Ribosome

DNA Triplet	mRNA Codon	tRNA Anticodon	Amino Acid
1.			Methionine (Met)
2.		GGA	
3. TTC			
4.	UAG		
5. GTC			
6.			Tryptophan (Trp)
7.		GUA	
8.	UUU		

Arg	CGU	CGC
	CGA	CGG
Gly	GGC	GGC
	GGA	GGG

Phe	UUU	UUC		Lys	AAA	AAG		TAC
Leu	UUA	UUG	CCU	CUC	CUA	CUG		GGA
Ile	AUU	AUC		Asp	GAU	GAC		ATC
Met	AUG		Glu	GAA	GAG		GTA	ACC
Val	GUU	GUC	GUA	GUG		Cys	UGU	UGC
Ser	UCU	UCC	UCA	UCG	AGU	AGC		AAA
Pro	CCU	CCC	CCA	CCG				
Thr	ACU	ACC	ACA	ACG				
Ala	GCU	GCC	GCA	GCG				
Tyr	UAU	UAC						
Stop	UAA	UAG	UGA					
His	CAU	CAC						
Gln	CAA	CAG		Trp				
Asn	AAU	AAC		UGG				

Codons Found in Messenger RNA

		Second Base				Third Base
First Base	U	U	C	A	G	
	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	