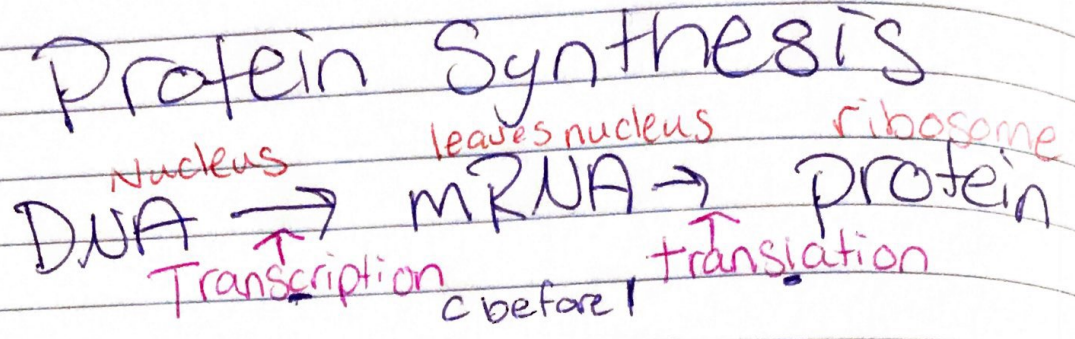


52 Transcription & Translation

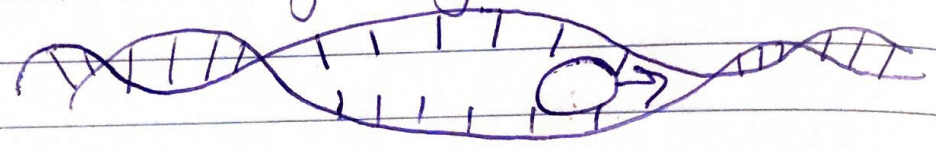
↑
copy into new format

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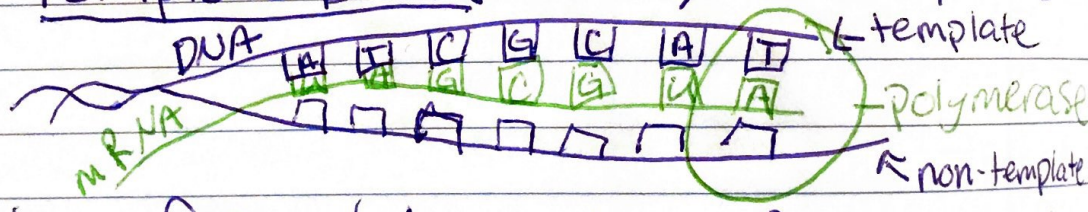


Process of Transcription

1. Helicase unzips the DNA strand at the target gene



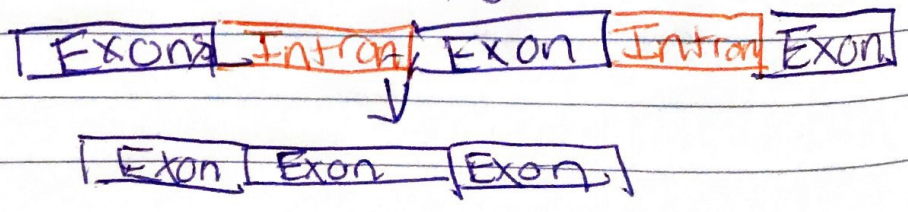
2. RNA Polymerase adds new nucleotides to template DNA (one half) C → G A → U



- when finished transcribing RNA leaves & DNA reattaches into double helix

3. RNA Processing - ^{sunk} Introns are cut out ^{Interruptions}

want → Exons are spliced together ↑ expressed



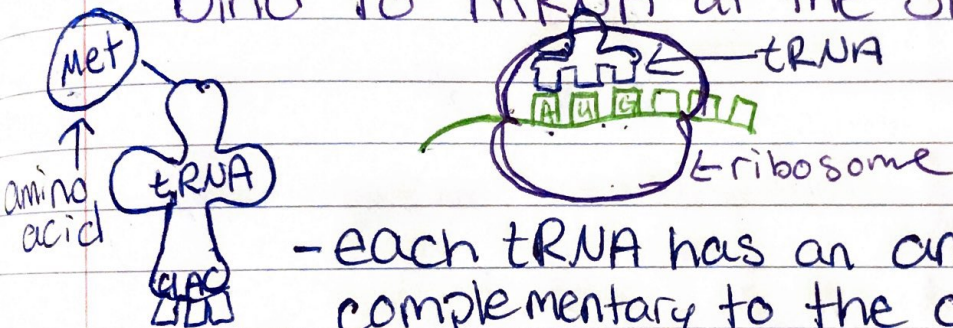
Translation

- second step of protein synthesis
- mRNA \rightarrow protein
- Occurs ~~at~~ ribosome
- mRNA is read in triplet codons - 3 bases
- each codon codes for 1 amino acid
- ex: AUG \rightarrow Met

Practice: CCA GAA UGG UAG
 pro glu Trp STOP

Process of Translation:

1. Initiation - ribosome & 1st tRNA bind to mRNA at the start codon (AUG)



- each tRNA has an anti-codon complementary to the codon
- brings in correct amino acid

2. Elongation - second tRNA attaches to the next codon

- polypeptide bond forms b/w amino acids
- 1st tRNA leaves
- mRNA shifts down & next tRNA arrives

3. Termination - amino acid chain continues to grow until STOP codon reached (UAA, UAG, UGA)

- STOP codons cause the ribosome to release the mRNA & protein
- protein leaves to be folded

Codon Chart and Wheel

2nd letter

1st letter

3rd letter

	U	C	A	G	
U	Phenylalanine Phenylalanine Leucine Leucine	Serine Serine Serine Serine	Tyrosine Tyrosine Stop Stop	Cysteine Cysteine Stop Tryptophan	U C A G
C	Leucine Leucine Leucine Leucine	Proline Proline Proline Proline	Histidine Histidine Glutamine Glutamine	Arginine Arginine Arginine Arginine	U C A G
A	Isoleucine Isoleucine Isoleucine Methionine	Threonine Threonine Threonine Threonine	Asparagine Asparagine Lysine Lysine	Serine Serine Arginine Arginine	U C A G
G	Valine Valine Valine Valine	Alanine Alanine Alanine Alanine	Aspartic acid Aspartic acid Glutamic acid Glutamic acid	Glycine Glycine Glycine Glycine	U C A G

