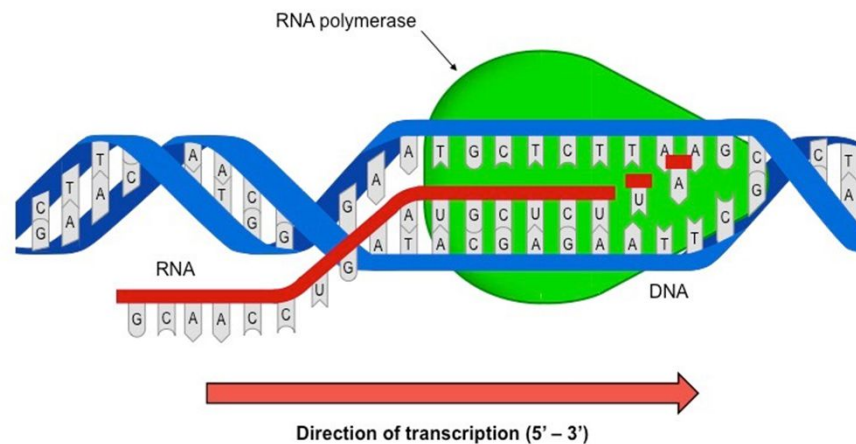
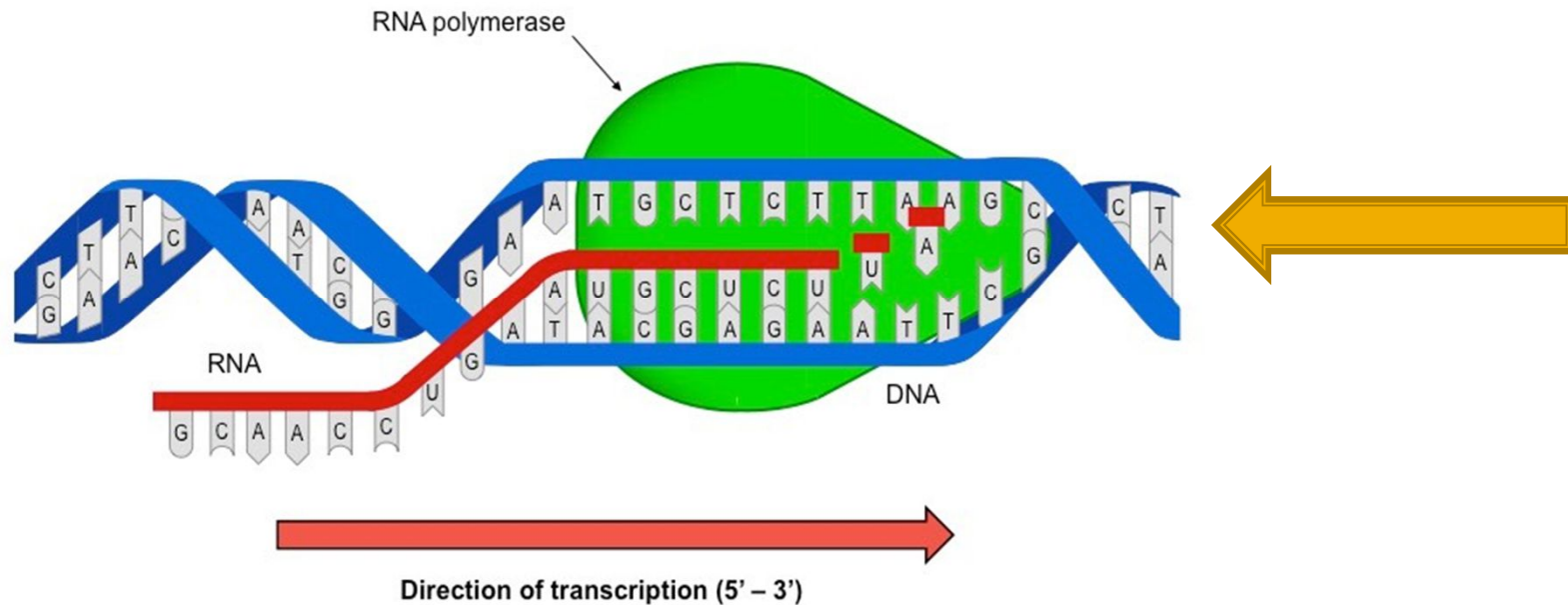


# Transcription

- Making mRNA from DNA
- DNA code is transferred to mRNA in the nucleus
- mRNA takes the code to the cytoplasm
- The code is then read to make proteins

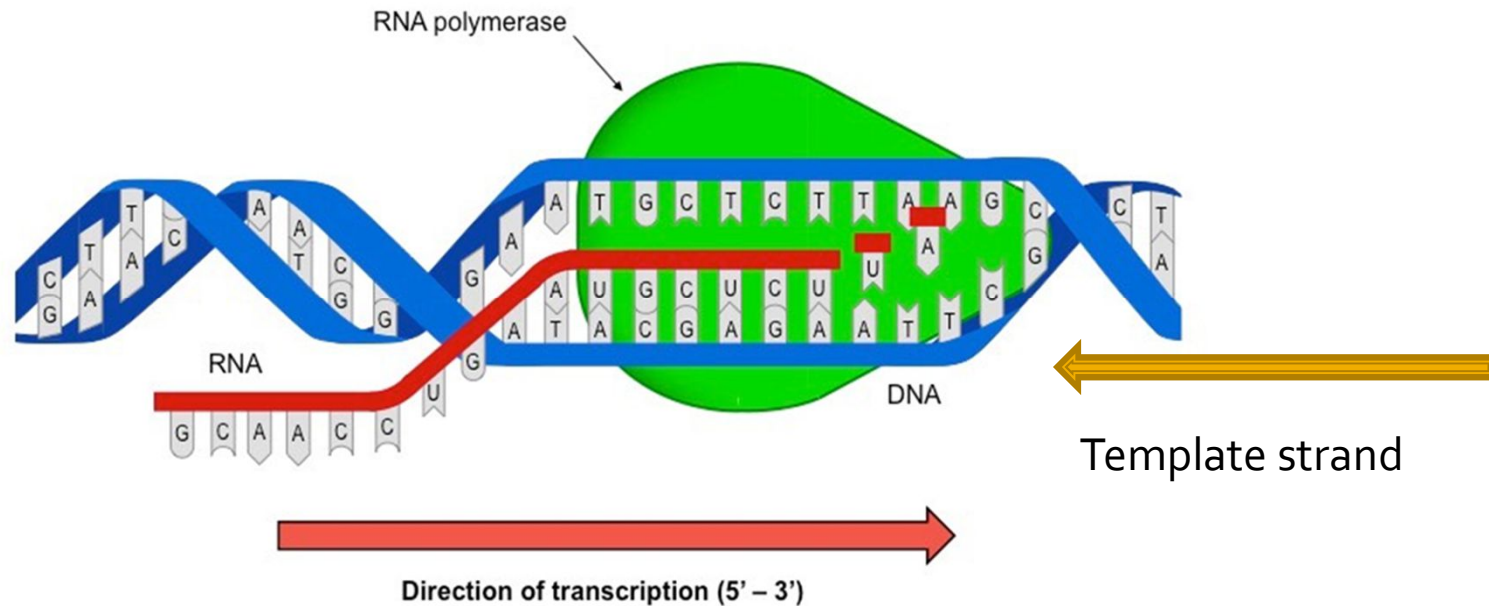


# Transcription



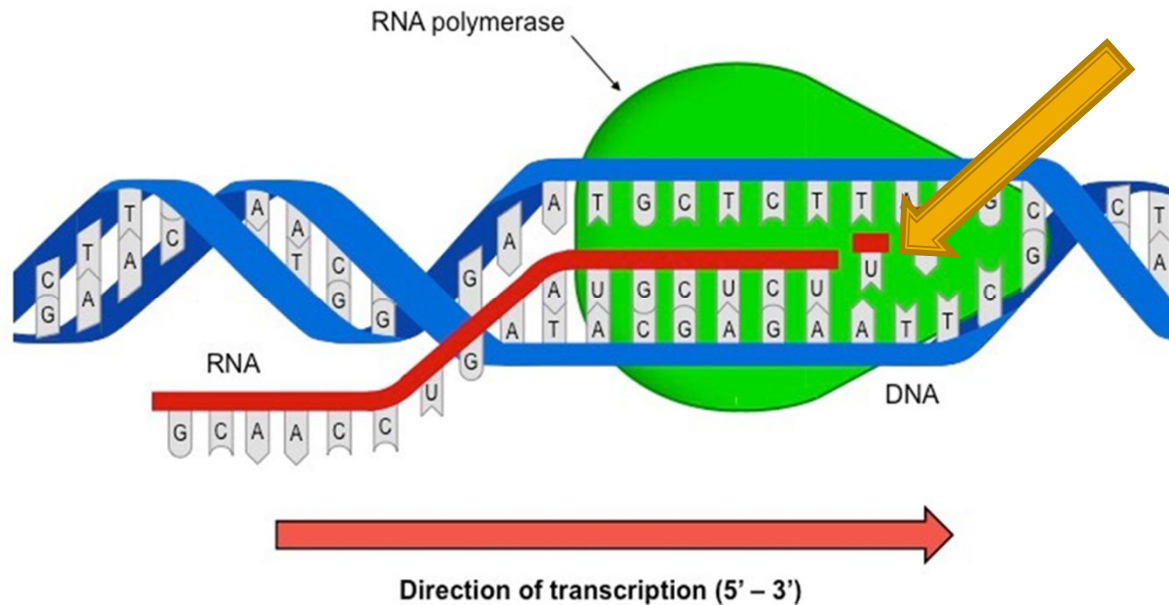
- RNA polymerase unzips the DNA
  - Different outcome from DNA polymerase!

# Transcription



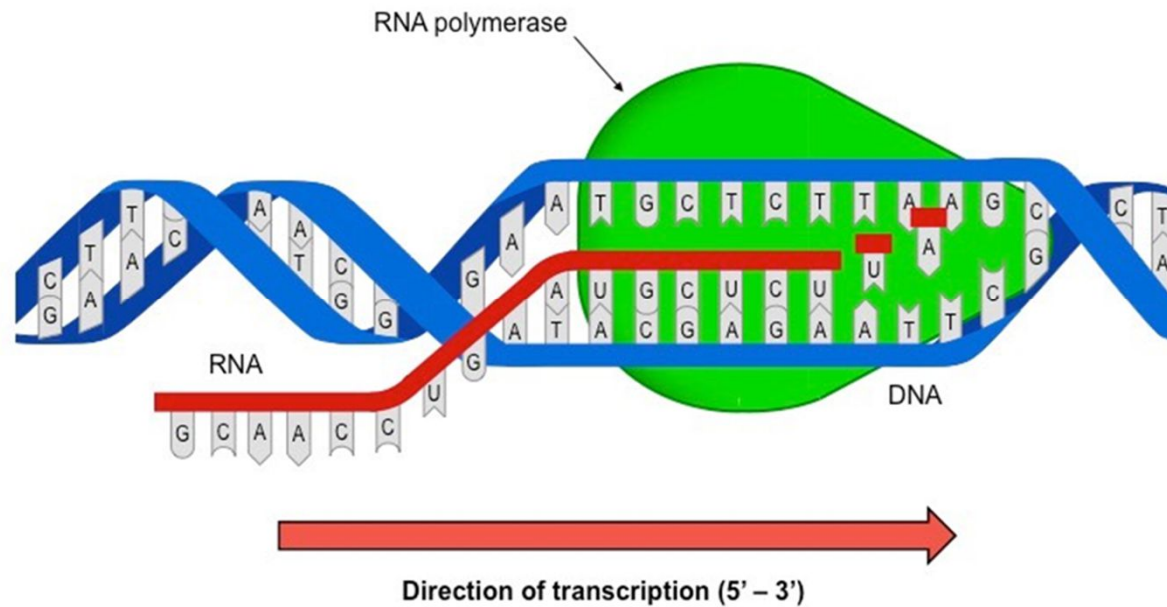
- DNA strand that is read is called the template strand
  - mRNA is a complement to the DNA strand

# Transcription



- Uracil is used on the mRNA instead of thymine
  - Anywhere a T would be used, put a U

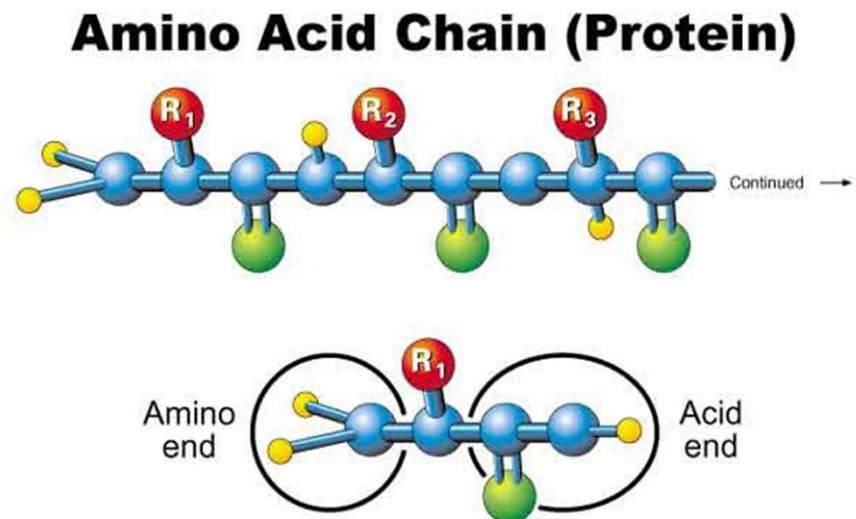
# Transcription



- When mRNA is completed, RNA polymerase unattaches
- New mRNA goes to the cytoplasm

# Translation

- Biologists figured out that proteins were made by a DNA code
  - Proteins are made of amino acids
  - Amino acids are made of a 3 part code
  - Codes = amino acid = proteins



# Translation

		Second Letter				
		U	C	A	G	
1st letter	U	UUU   Phe UUC UUA   Leu UUG	UCU   Ser UCC UCA UCG	UAU   Tyr UAC UAA   Stop UAG   Stop	UGU   Cys UGC UGA   Stop UGG   Trp	3rd letter
	C	CUU   Leu CUC CUA CUG	CCU   Pro CCC CCA CCG	CAU   His CAC CAA   Gln CAG	CGU   Arg CGC CGA CGG	
	A	AUU   Ile AUC AUA AUG   Met	ACU   Thr ACC ACA ACG	AAU   Asn AAC AAA   Lys AAG	AGU   Ser AGC AGA   Arg AGG	
	G	GUU   Val GUC GUA GUG	GCU   Ala GCC GCA GCG	GAU   Asp GAC GAA   Glu GAG	GGU   Gly GGC GGA GGG	

- There are 20 possible amino acids
- BUT THERE ARE THOUSANDS OF PROTEINS!
  - They figured the amino acids could be made from many different codes

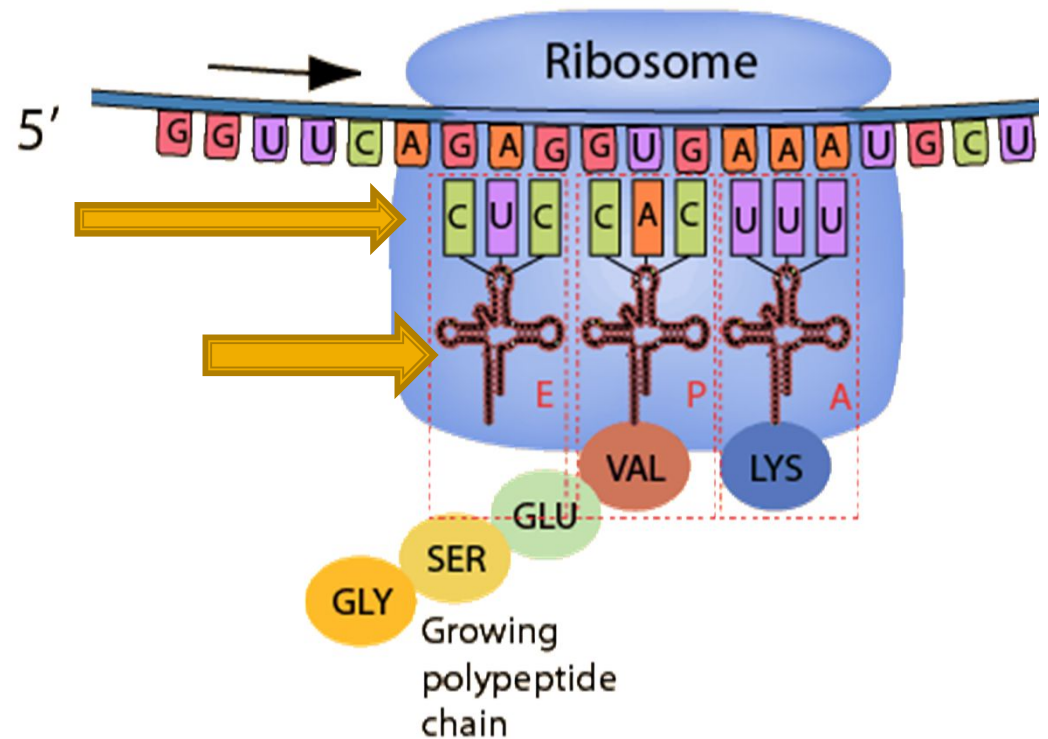
# Translation

- The DNA code is a 3 base code
  - This is either on the DNA or the mRNA
  - It is called a **CODON**
  - Some codons aren't actually amino acids
    - There are three STOP codons
    - There is one START codon
    - These tell the mRNA where to begin and where to end on the DNA



# Translation

- The mRNA enters the ribosome after the nucleus
- The code it holds is **translated** to make a protein
- tRNA acts as an interpreter of the mRNA codon sequence



# Translation

- The tRNA carries an anticodon
  - This is the complement of the mRNA where it binds
  - It starts with a CAU – so it find AUG to start on the mRNA
  - The anticodon corresponds to the amino acid
- Example:
  - mRNA codon reads: UUU
  - tRNA brings in anticodon: AAA
  - Amino acid for UUU: phenylalanine