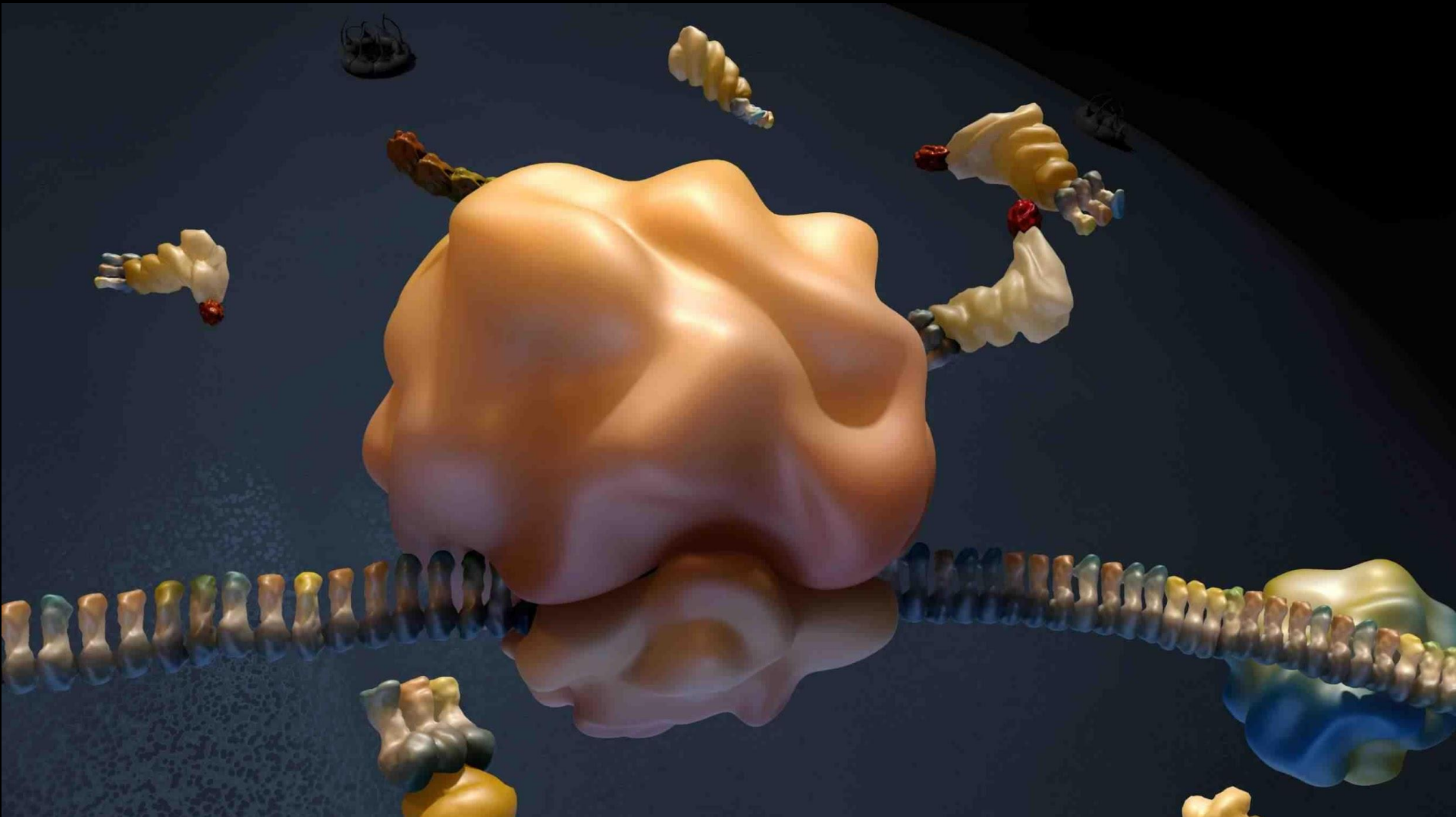


# Steps of Translation



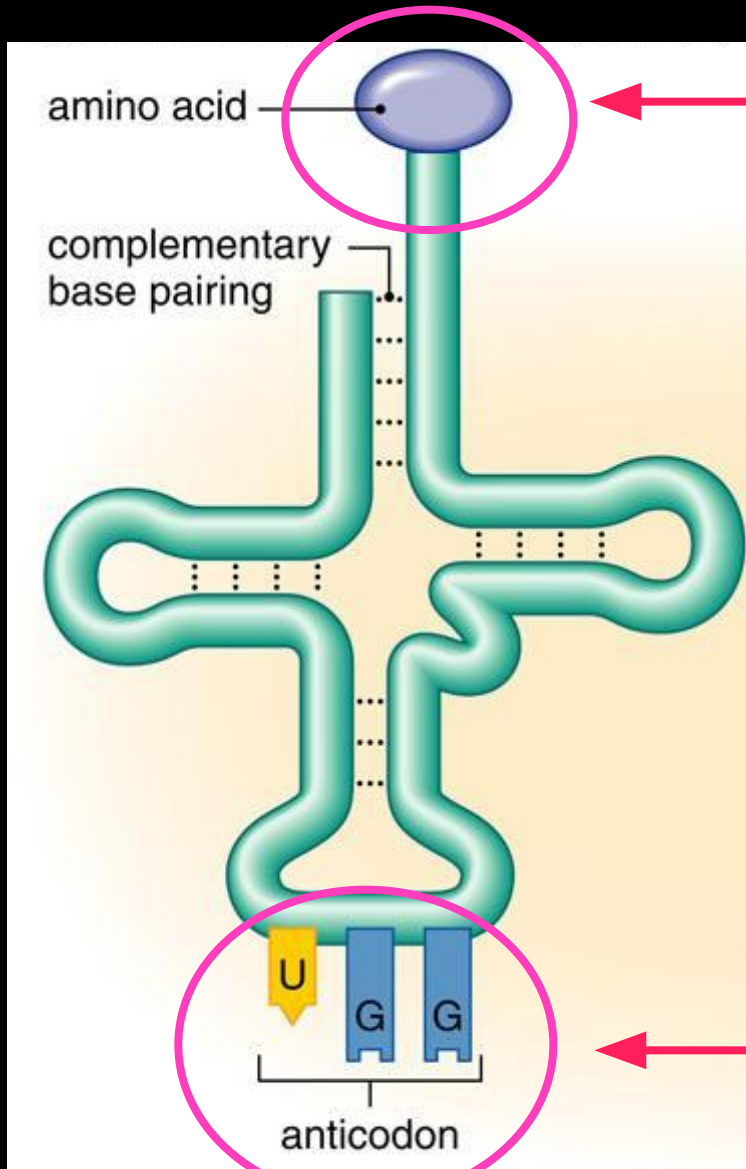
# Learning Objectives

- Describe the steps of DNA translation

How are the amino acids  
brought together to make  
proteins?

**tRNA!**

# Transfer RNA (tRNA)

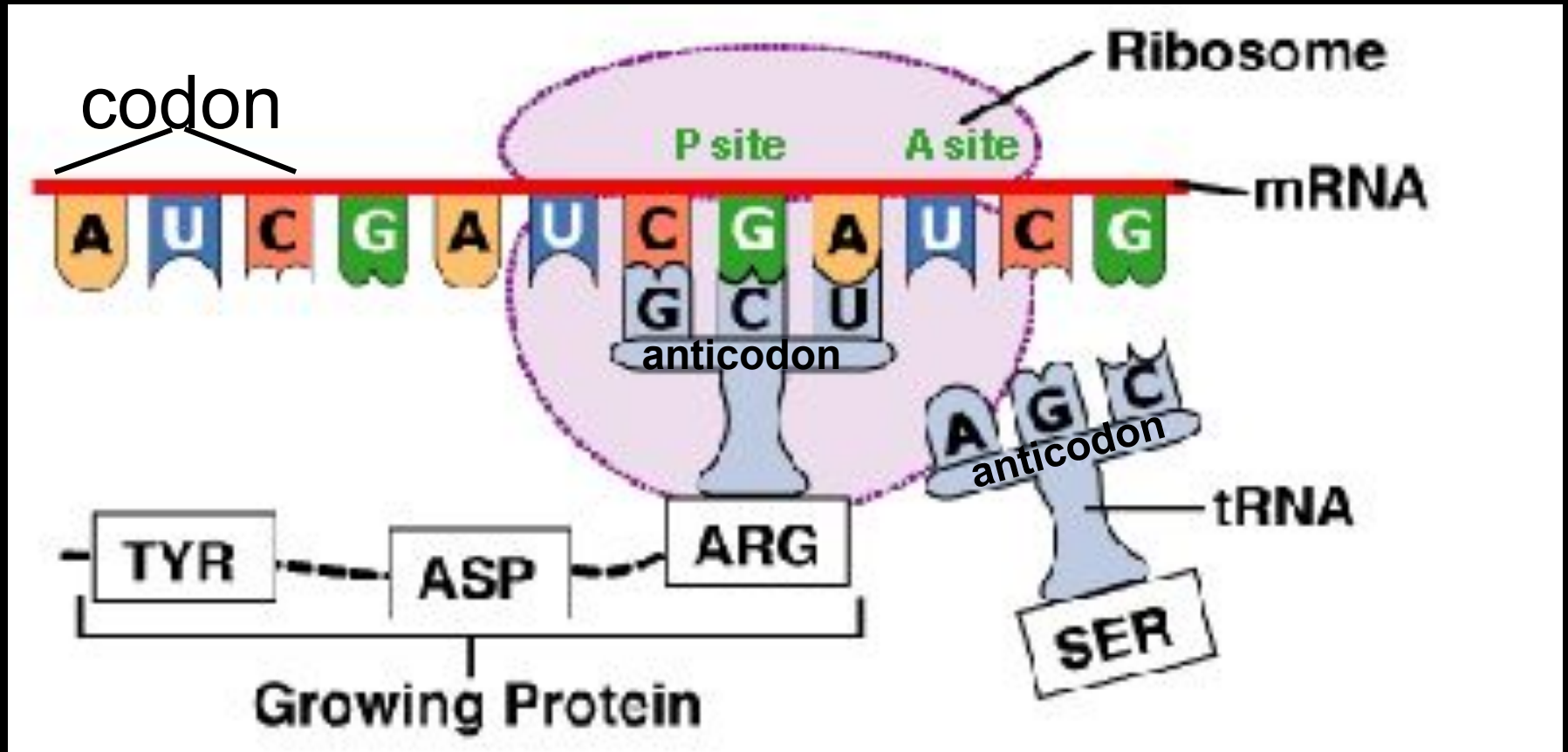


Amino Acid

Each tRNA molecule is **specific** for one amino acid. It carries an amino acid on one end and an anticodon on the other end.

Anticodon

# Transfer RNA (tRNA)



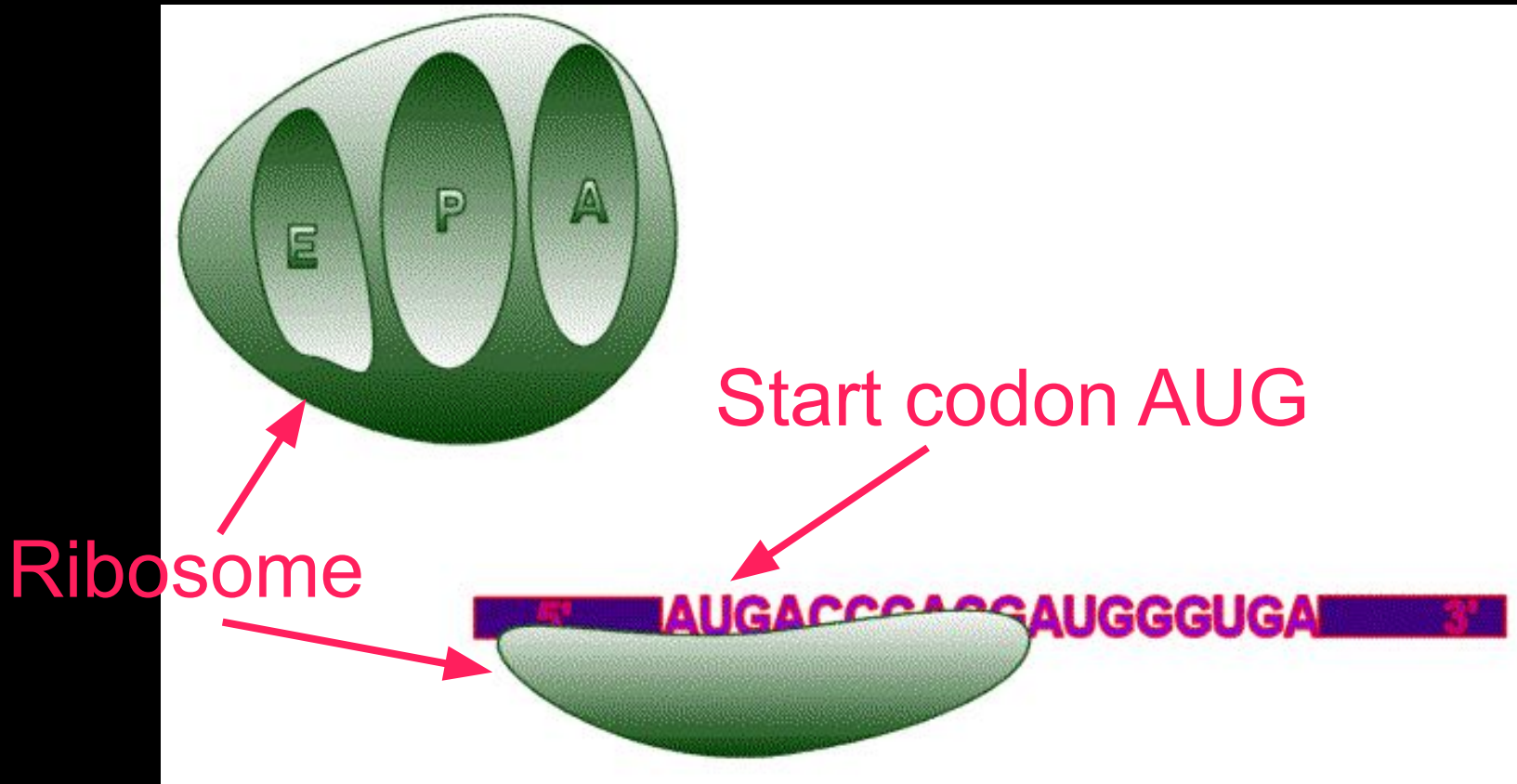
The **anticodon** is complementary to the 3 bases of the codon on the mRNA molecule.

# Steps of Translation

(occurs in the cytoplasm)

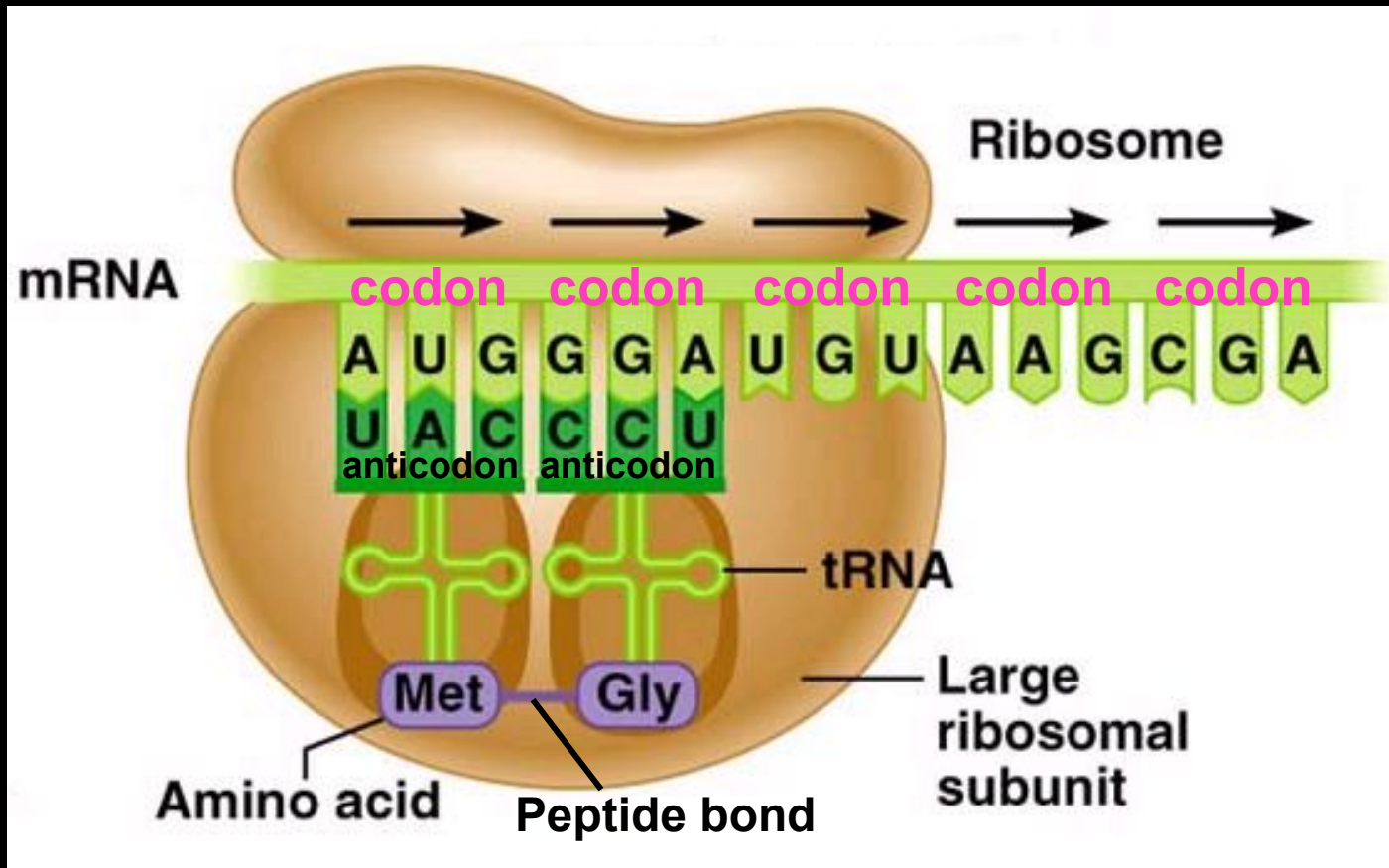
1. Initiation
2. Elongation
3. Termination

# Step 1: Initiation



Ribosome attaches to the mRNA. Start codon on mRNA is always AUG.

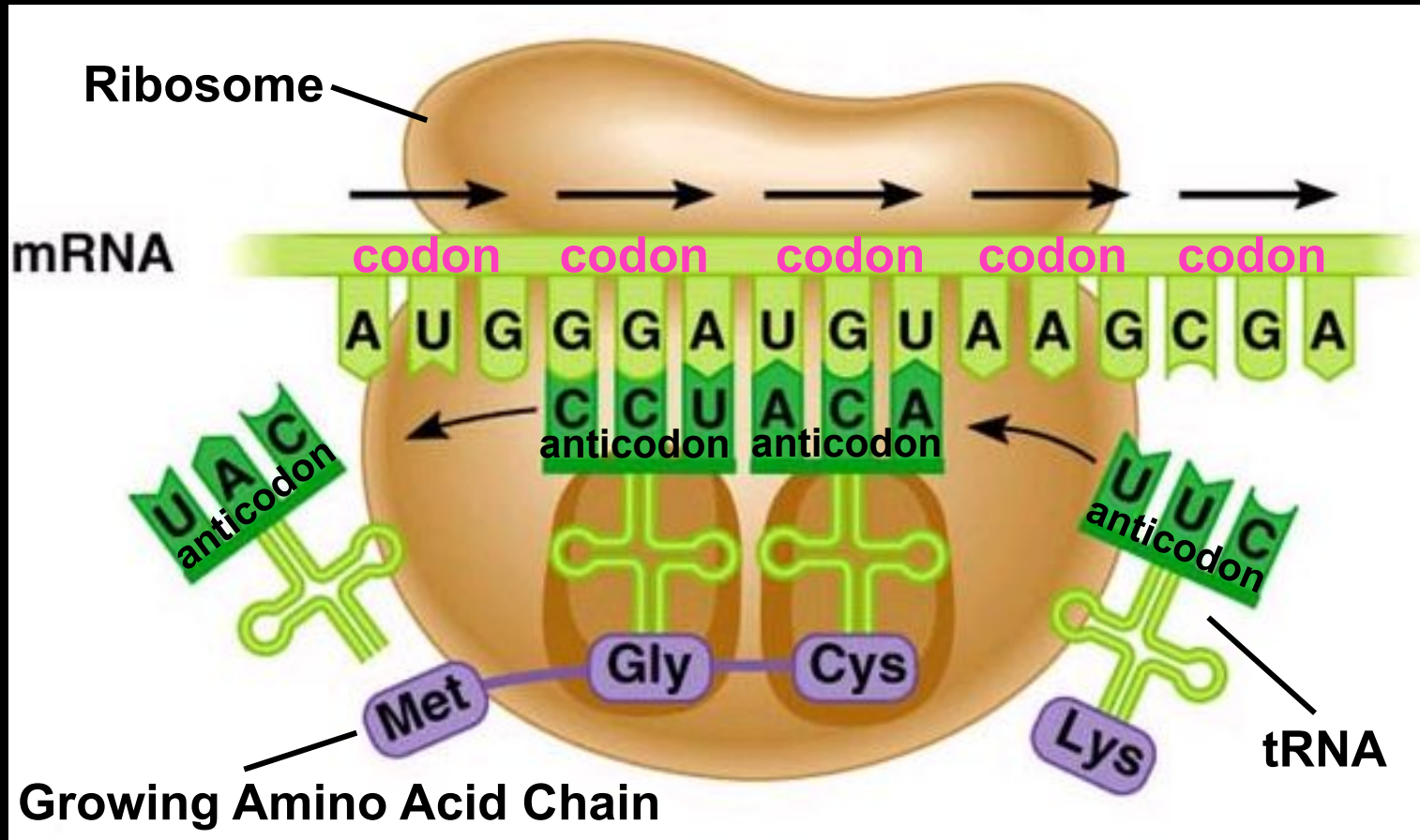
# Step 2: Elongation



tRNA anticodon matches with codon on mRNA.  
Peptide bonds are formed between amino acids.

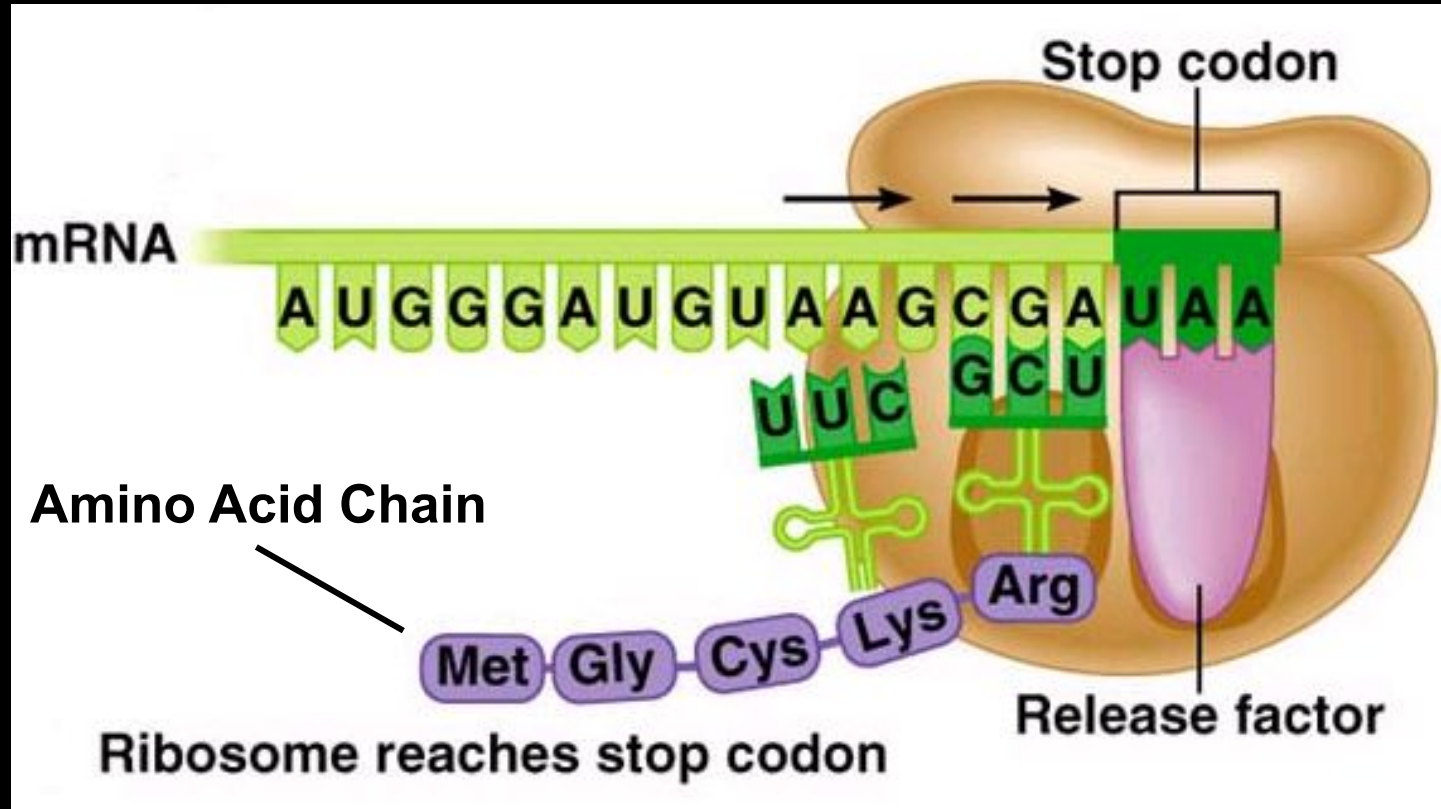


# Step 2: Elongation



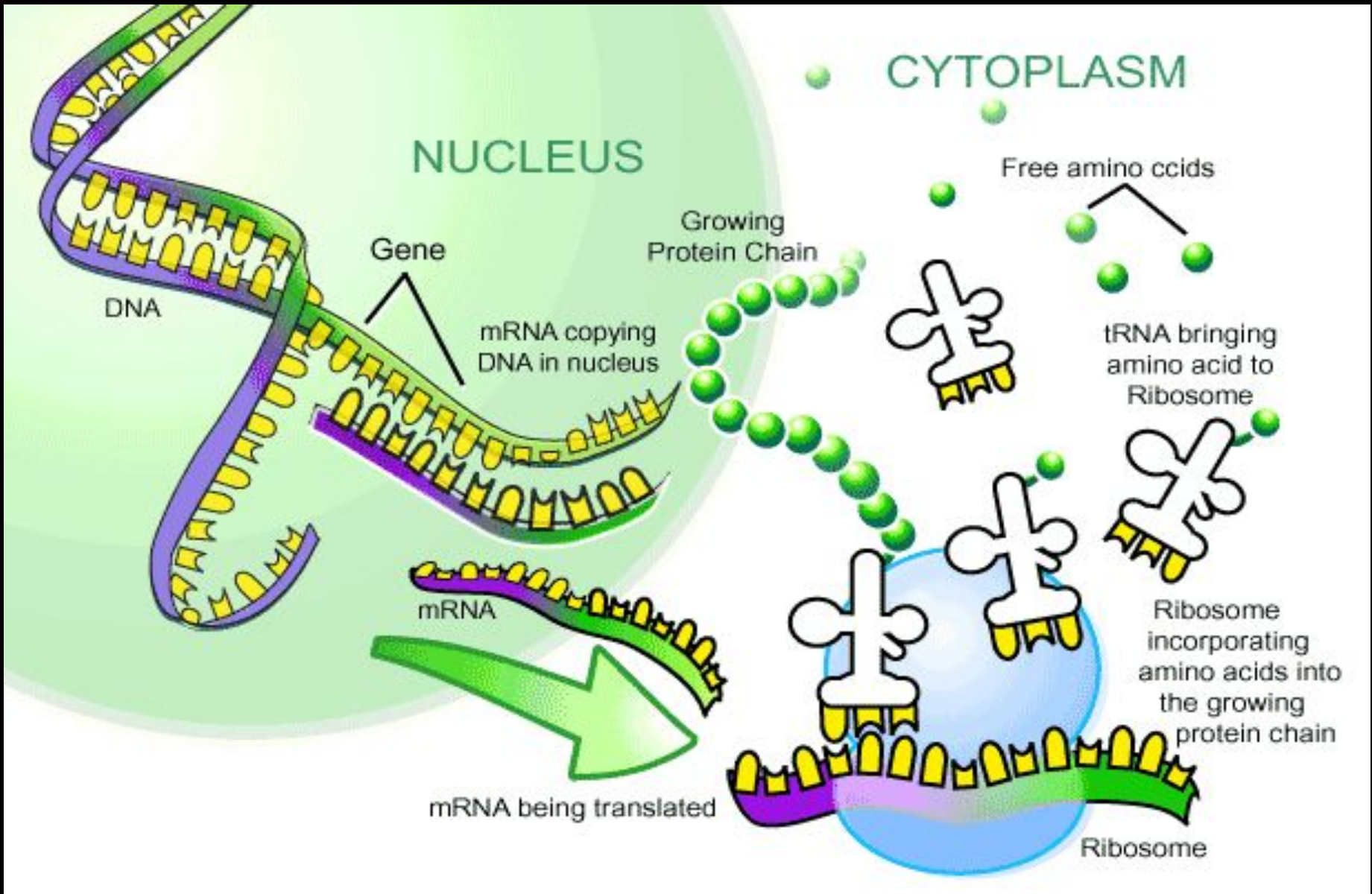
**Amino acid** released from tRNA. Ribosome moves along the mRNA and continues adding amino acids.

# Step 3: Termination

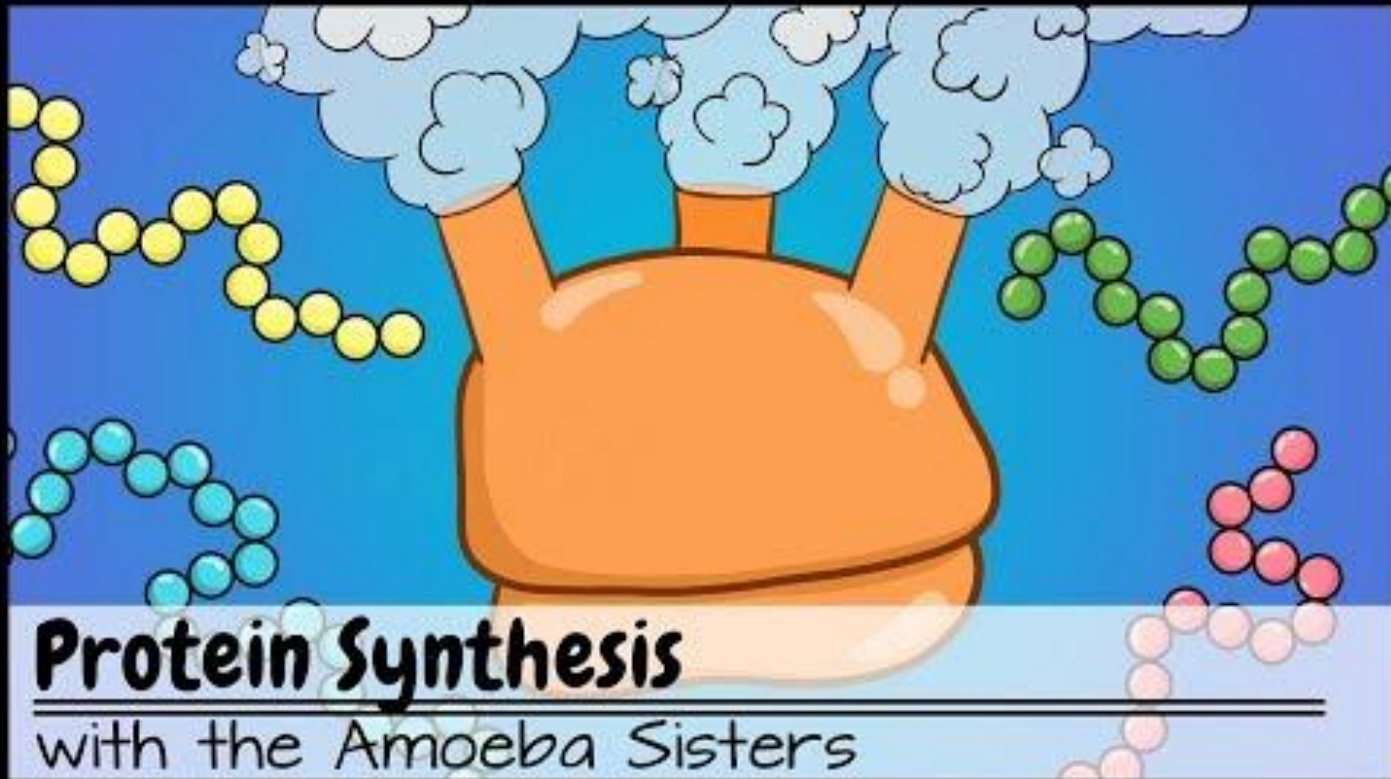


Translation ends when a **stop codon** (UAA, UAG, UGA) is reached. mRNA and protein (amino acid chain) are released into the cytoplasm.

# Central Dogma Summary



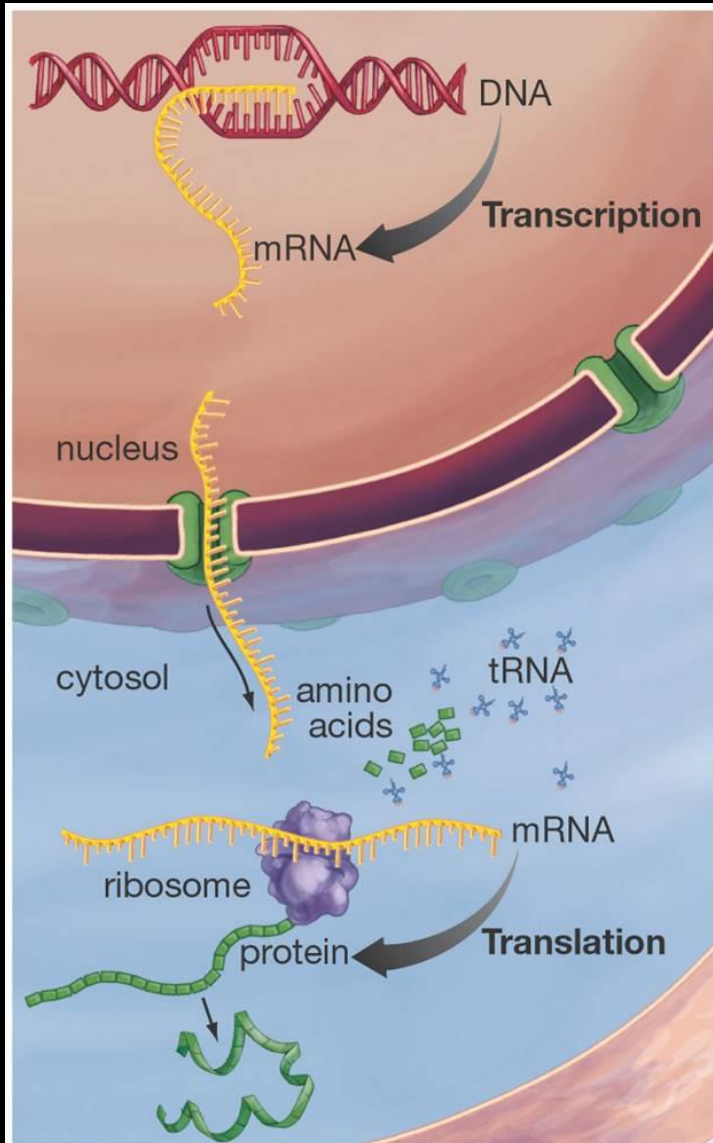
# YouTube Video



Stop Here



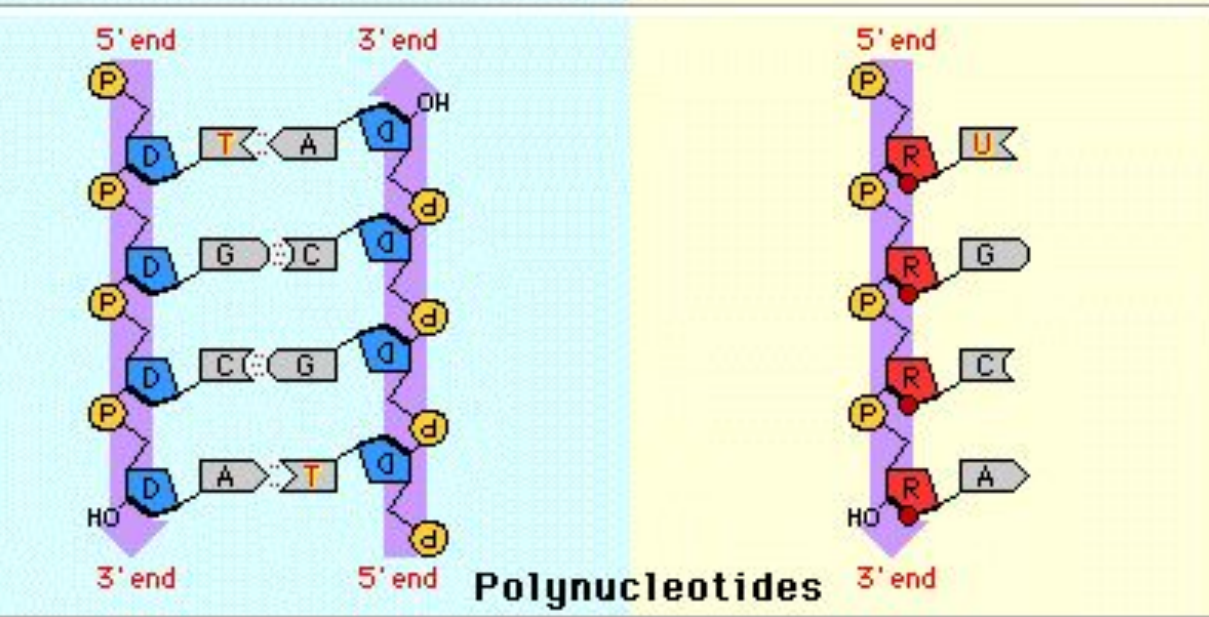
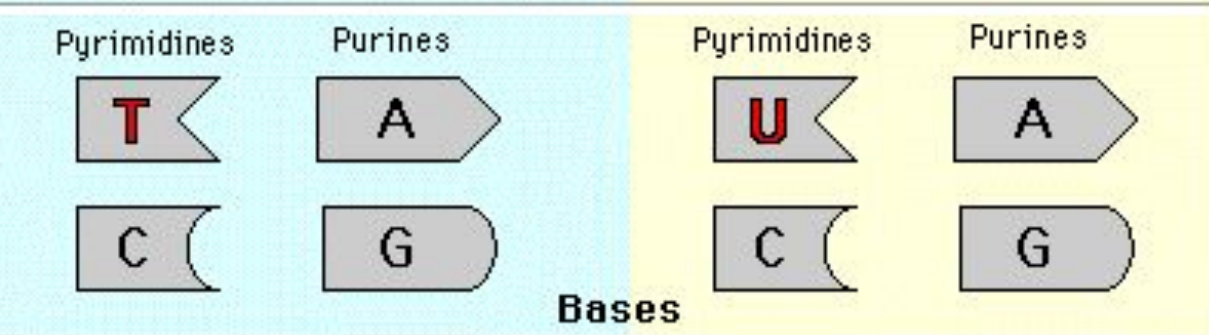
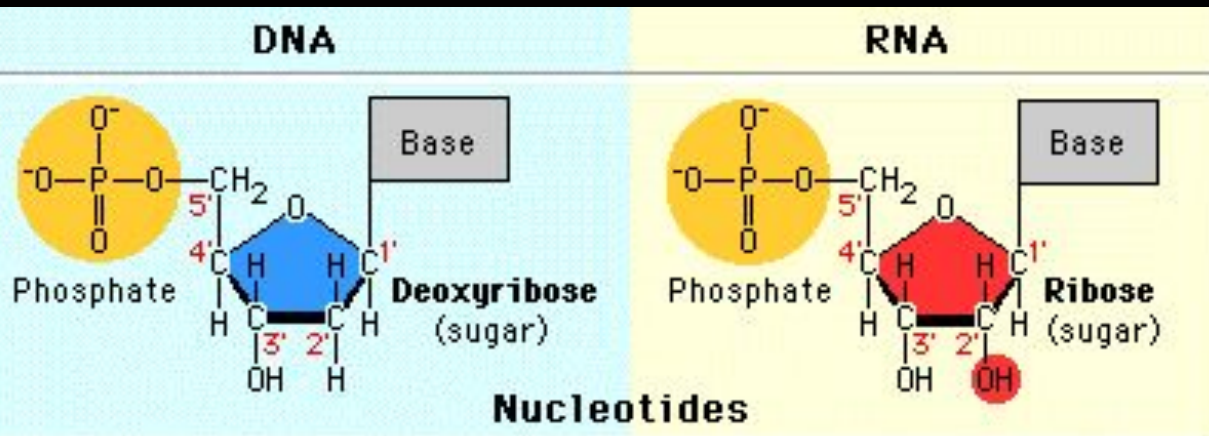
# DNA Transcription



- mRNA is formed from DNA by a process called RNA transcription
- DNA is transcribed (copied) to mRNA
- mRNA goes from the nucleus to the ribosomes in the cytoplasm

# DNA

# RNA



Deoxyribose  
Sugar

Ribose  
Sugar

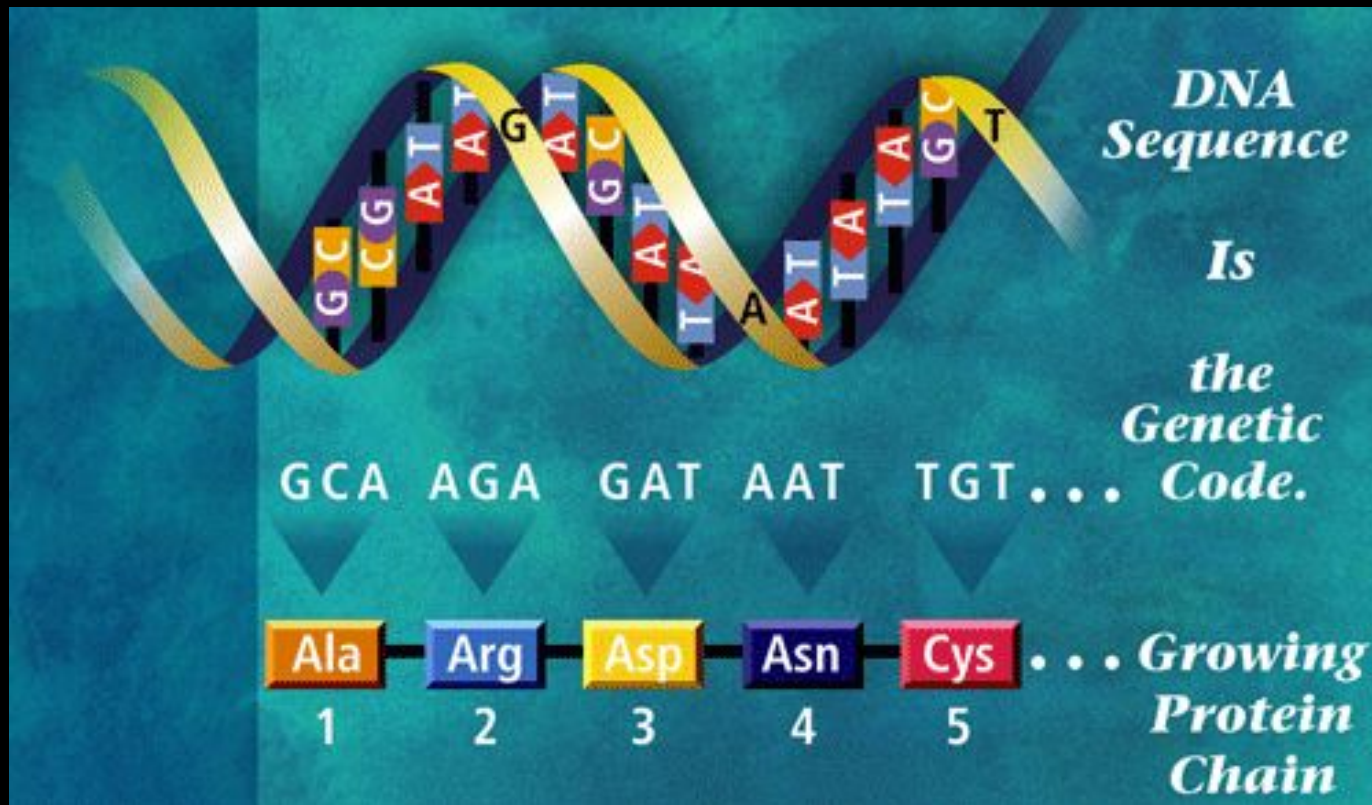
Thymine

Uracil

Double  
Stranded

Single  
Stranded

# Translation of mRNA into Amino Acids



The genetic code is a sequence of triplets or codons in a specific order, to make a protein.