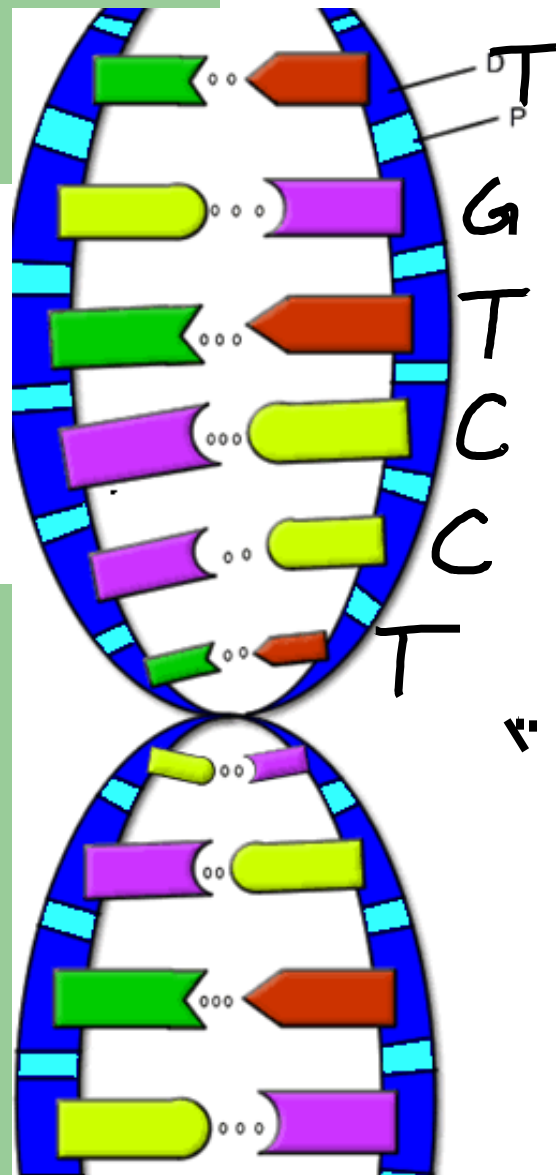


# Translation



- Thymine
- Adenine
- Guanine
- Cytosine
- D = Deoxyribose (sugar)
- P = Phosphate
- °°°° Hydrogen Bond

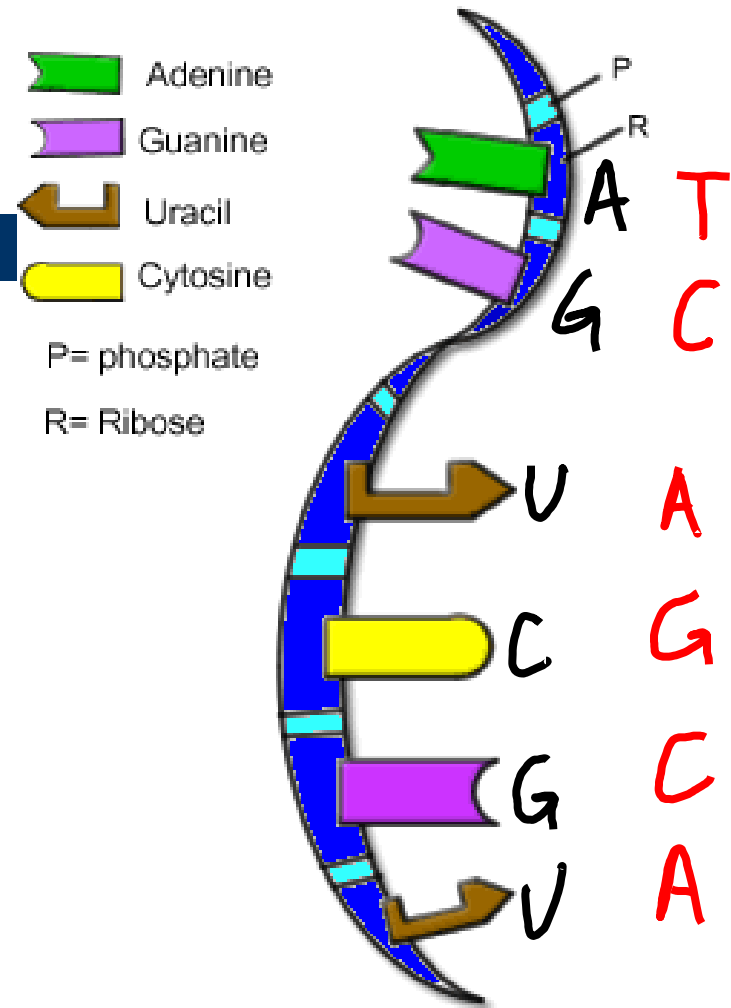
A  
C  
A  
G  
G  
A



mRNA to proteins ...

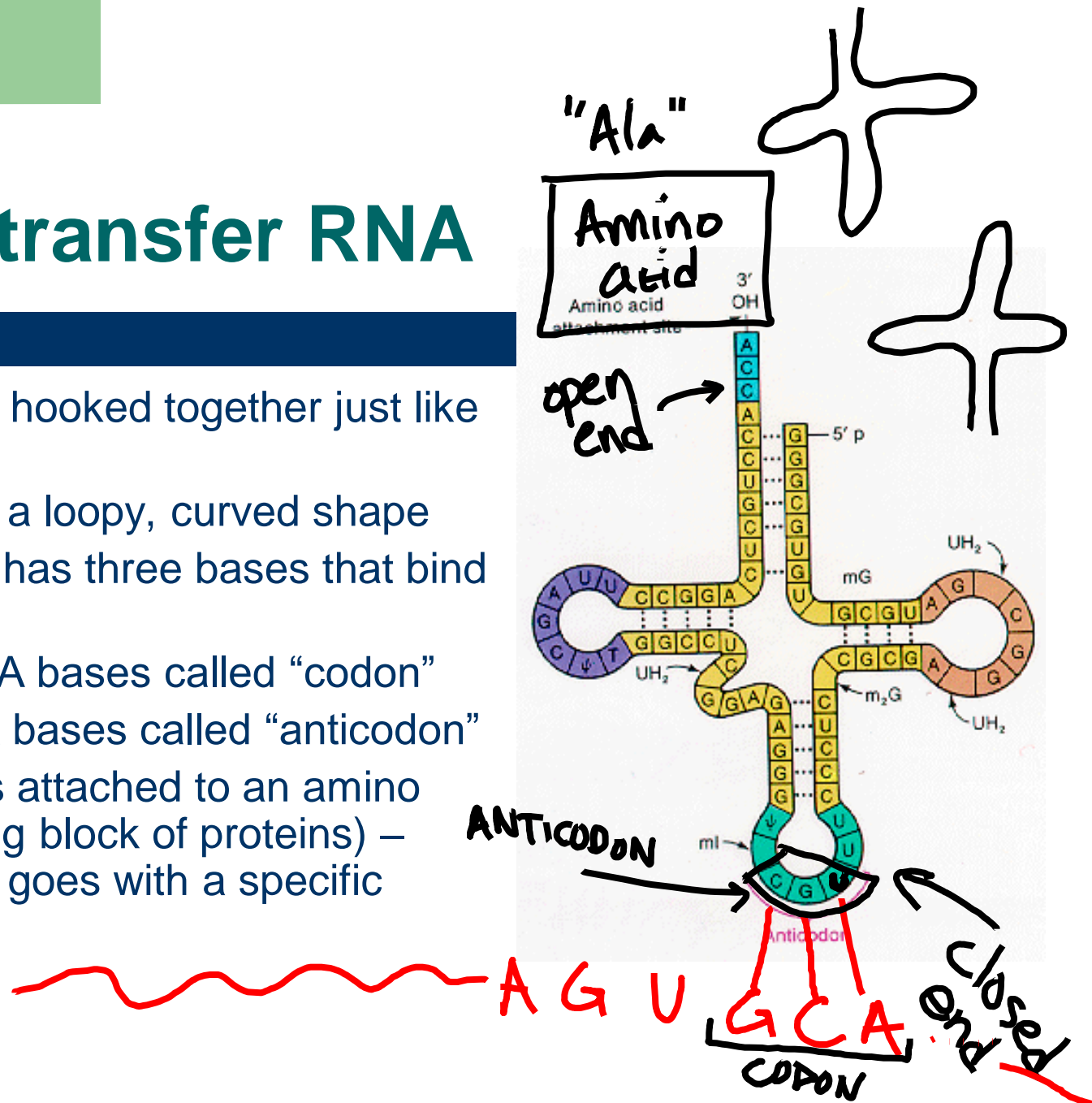
# mRNA

- RNA nucleotides (sugar + base) all hooked together
- Complementary to transcribed DNA strand



# tRNA – transfer RNA

- Nucleotides hooked together just like mRNA
- Arranged in a loopy, curved shape
- Closed end has three bases that bind to mRNA
- Three mRNA bases called “codon”
- Three tRNA bases called “anticodon”
- Open end is attached to an amino acid (building block of proteins) – each codon goes with a specific amino acid



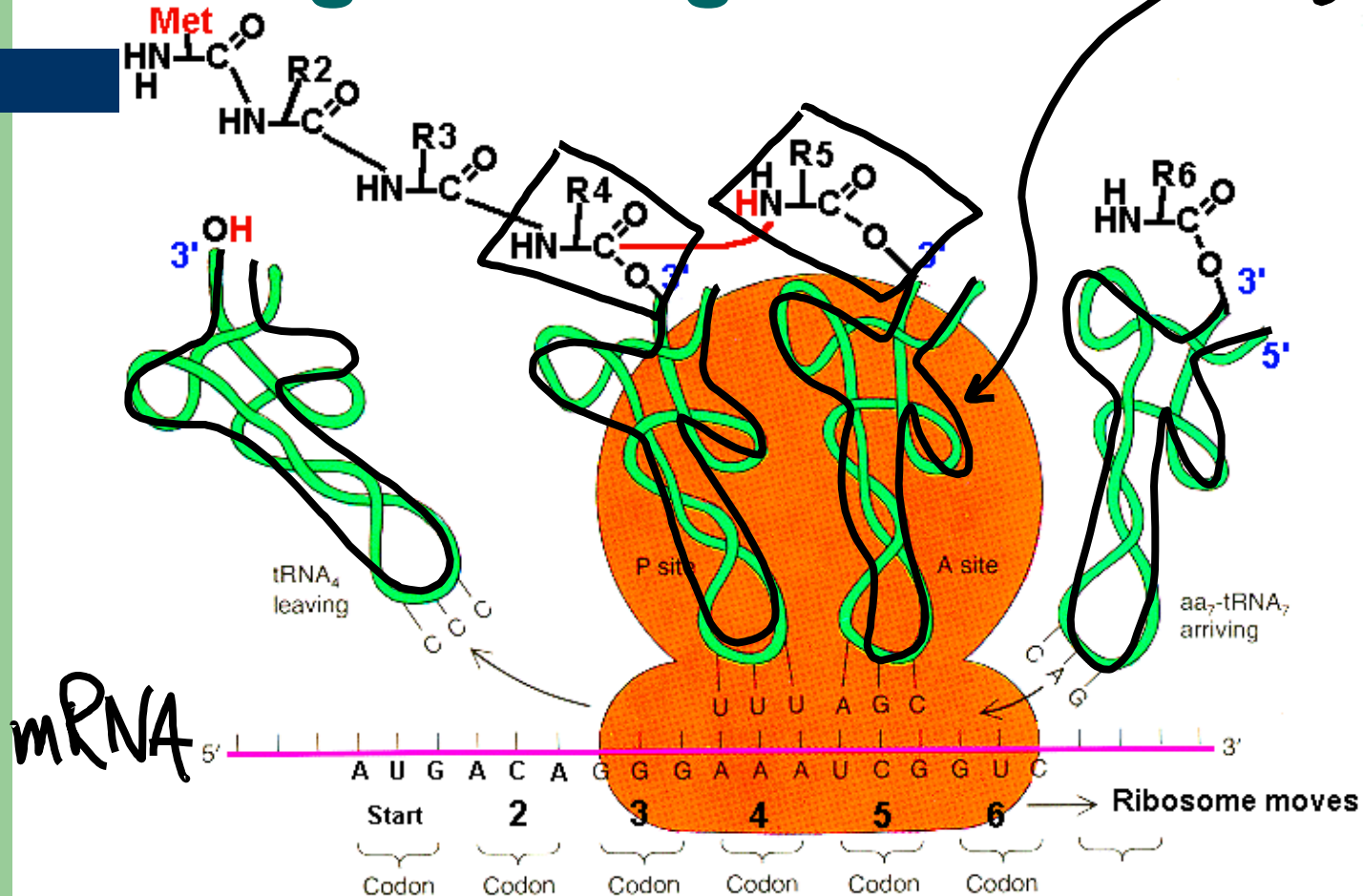
# Codons

- Three base sequences – many codons stand for one amino acid
- AUG – Methionine (start)
- UAA, UAG, UGA – stop
- 20 Different amino acids

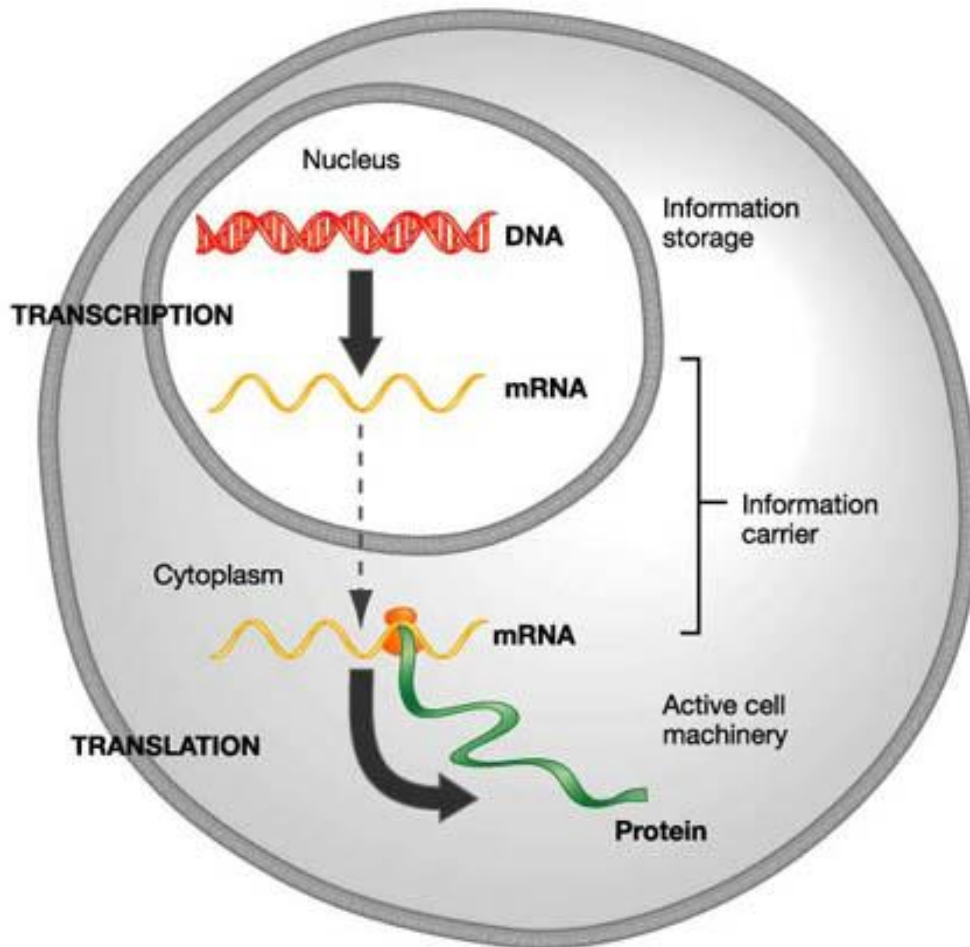
		Second Letter					
		U	C	A	G		
1st letter	U	UUU   Phe UUC   UUA   Leu UUG	UCU   UCC   Ser UCA   UCG	UAU   Tyr UAC   UAA   Stop UAG   Stop	UGU   Cys UGC   UGA   Stop UGG   Trp	U C A G	
	C	CUU   CUC   Leu CUA   CUG	CCU   CCC   Pro CCA   CCG	CAU   His CAC   CAA   Gln CAG	CGU   CGC   Arg CGA   CGG	U C A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

# Putting it all together ...

RIBOSOME



# “Central Dogma”



DNA is transcribed to RNA is translated to PROTEIN

