GENTIEC CODE

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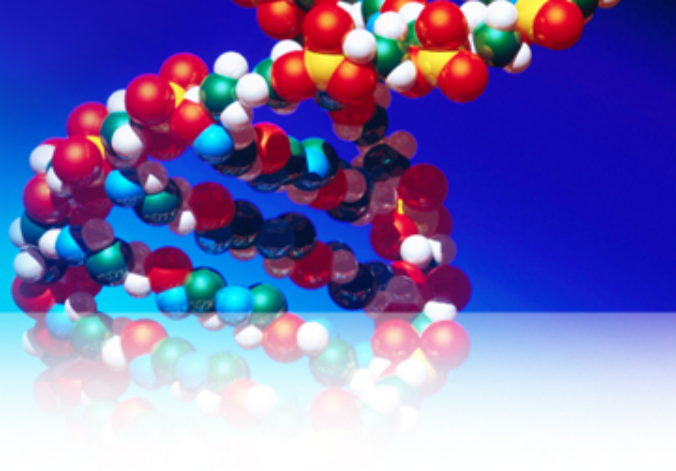

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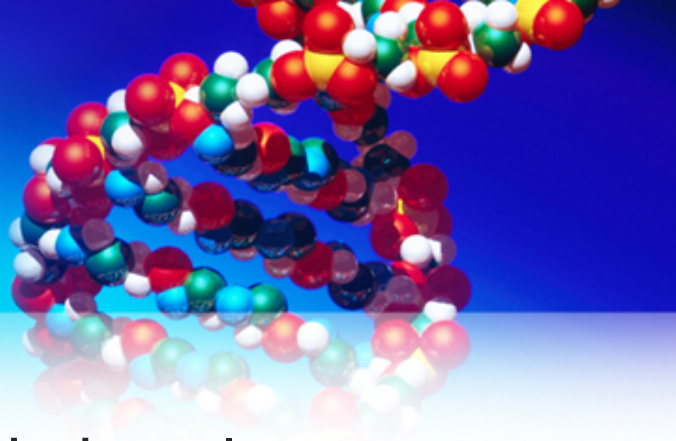
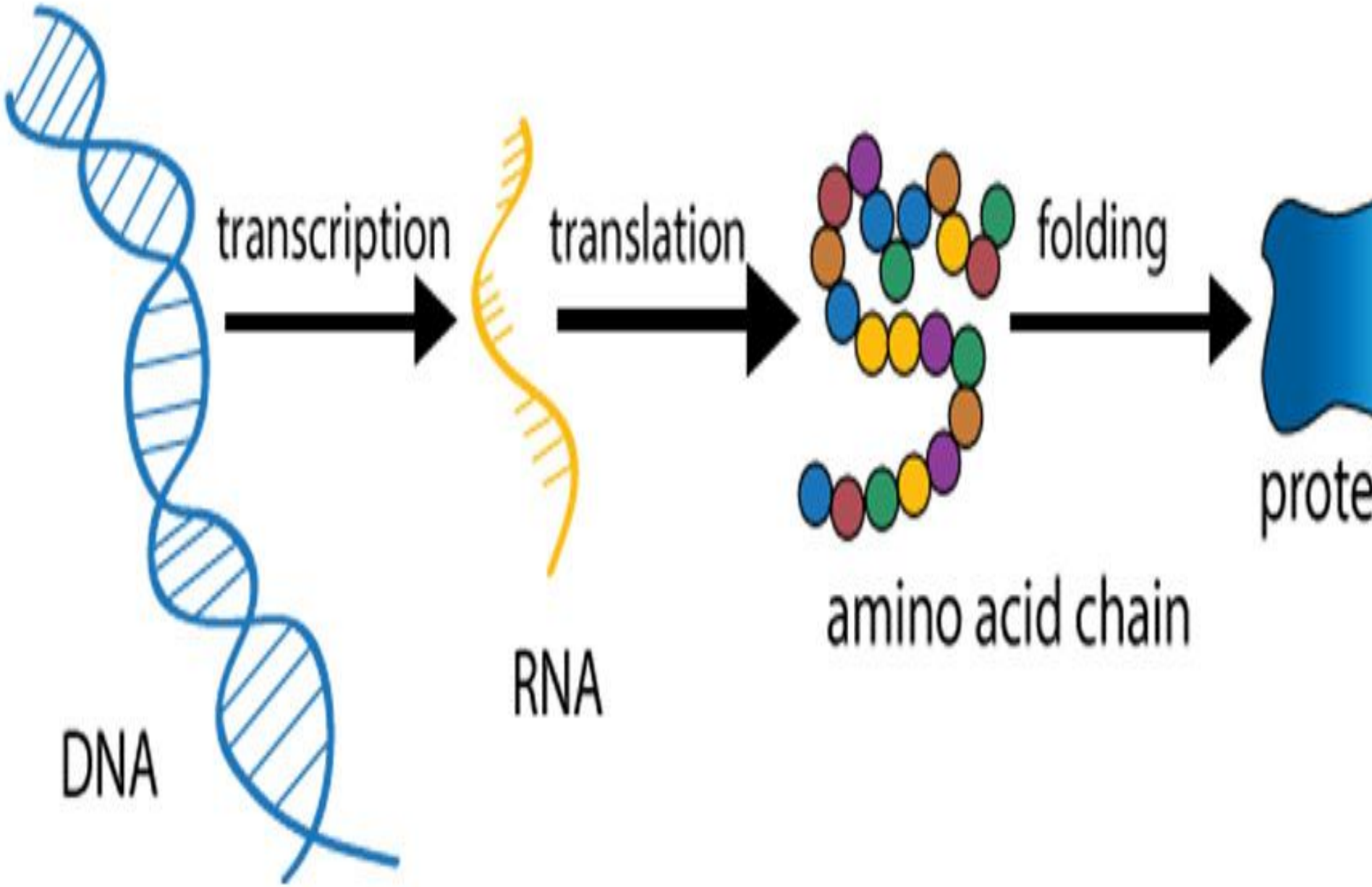
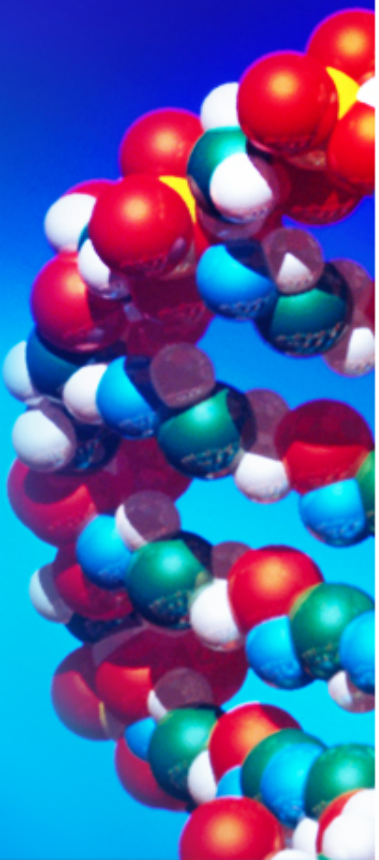
- Overview of gene expression
- Explain the genetic code
- Identify anticodons
- Describe table triplet codes of genetic codes
- List characteristics of genetic code
- Summary

Introduction



- DNA molecules are double-stranded, only one strand acts as a template for the process of transcription.
- The “non-template” strand is called the coding strand, as the sequence of this strand is the same as the sequence of the RNA molecule that is generated.


transcription
translation
folding
DNA
RNA
amino acid chain
prote



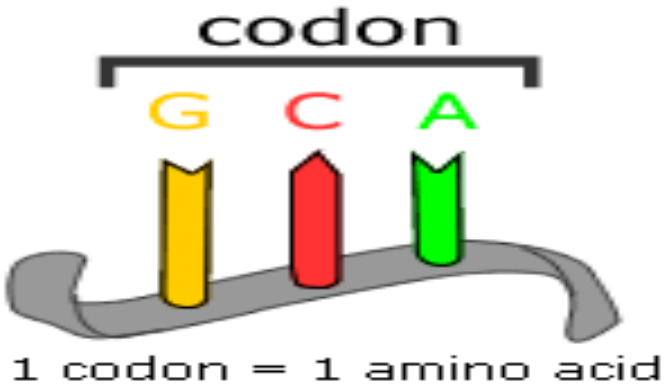
Explain genetic code

- RNA contains 4 different bases: A,U,C,G
- The genetic code is responsible for building all the proteins in the body using 20 different amino acids.
- 64 codons, 61 specify one of the 20 amino acids. The other 3 codons are chain-terminating codons .There are "start" codons & "stop" codons.
- Tells ribosome where to start reading the RNA strand.
- The process by which mRNA is read and protein produced is called Translation

- **Codons**

Cells decode mRNAs by reading their nucleotides in groups of three, called codons. Here are some features of codons:

- Most codons specify an amino acid
- Three "stop" codons mark the end of a protein
- One "start" codon, **AUG**, marks the beginning of a protein and also encodes the amino acid methionine



Identify anticodons

- **Anticodons**

They pair with a three-nucleotide codon sequence in mRNA by complementary base pairing during translation, The four bases of RNA are Adenine, Cytosine, Guanine, and Uracil.

- A - U G - C
  U - A C - G

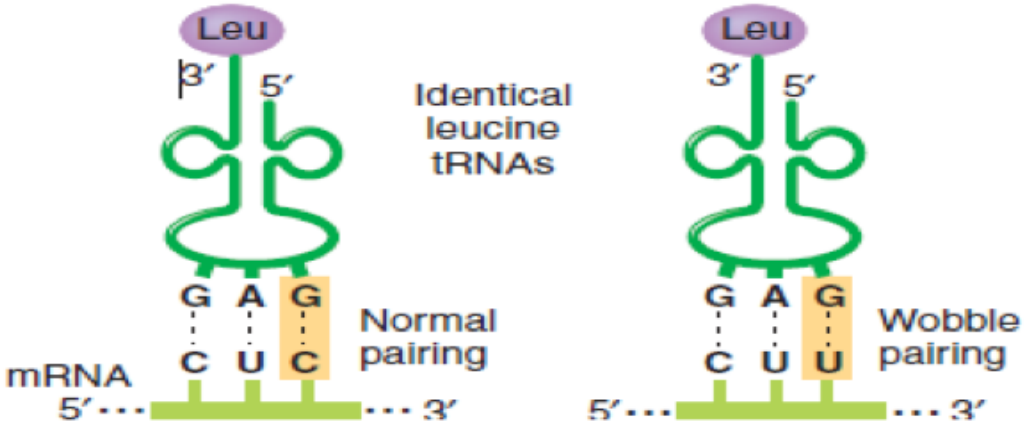
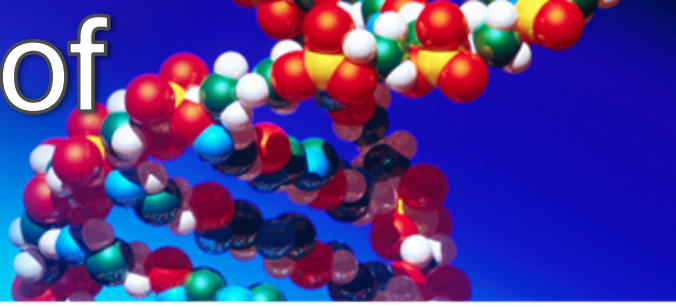


Table of triplet codes of genetic code

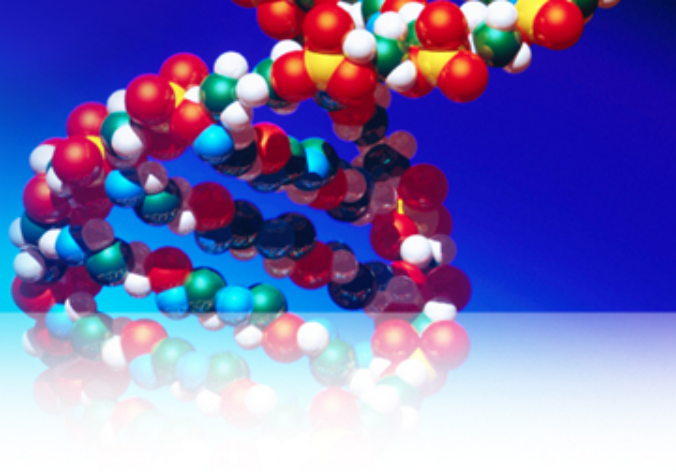


First letter	Second letter: U	Second letter: C	Second letter: A	Second letter: G	Third letter
U	UUU Phe (F)	UCU Ser (S)	UAU Tyr (Y)	UGU Cys (C)	U
	UUC Phe (F)	UCC Ser (S)	UAC Tyr (Y)	UGC Cys (C)	C
	UUA Leu (L)	UCA Ser (S)	UAA Stop	UGA Stop	A
	UUG Leu (L)	UCG Ser (S)	UAG Stop	UGG Trp (W)	G
C	CUU Leu (L)	CCU Pro (P)	CAU His (H)	CGU Arg (R)	U
	CUC Leu (L)	CCC Pro (P)	CAC His (H)	CGC Arg (R)	C
	CUA Leu (L)	CCA Pro (P)	CAA Gln (Q)	CGA Arg (R)	A
	CUG Leu (L)	CCG Pro (P)	CAG Gln (Q)	CGG Arg (R)	G
A	AUU Ile (I)	ACU Thr (T)	AAU Asn (N)	AGU Ser (S)	U
	AUC Ile (I)	ACC Thr (T)	AAC Asn (N)	AGC Ser (S)	C
	AUA Ile (I)	ACA Thr (T)	AAA Lys (K)	AGA Arg (R)	A
	AUG Met (M)	ACG Thr (T)	AAG Lys (K)	AGG Arg (R)	G
G	GUU Val (V)	GCU Ala (A)	GAU Asp (D)	GGU Gly (G)	U
	GUC Val (V)	GCC Ala (A)	GAC Asp (D)	GGC Gly (G)	C
	GUA Val (V)	GCA Ala (A)	GAA Glu (E)	GGA Gly (G)	A
	GUG Val (V)	GCG Ala (A)	GAG Glu (E)	GGG Gly (G)	G

= Chain termination codon (stop)

= Initiation codon

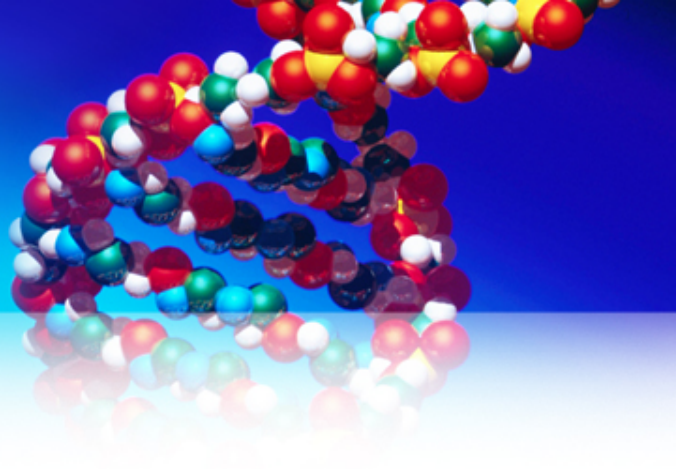
List characteristics of genetic code



1. The **code** is a triplet codon
2. The **code** is non-overlapping
3. The **code** is commaless
4. The **code** is non-ambiguous
5. The **code** has polarity
6. The **code** is degenerate
7. Some **codes** act as start codons (AUG)
8. Some **codes** act as stop codons 3(UGA , UAA ,UAG)

Summary

- The body contain 20 amino acids and 64 codons, one of which starts the translation and 3 stop codon termination.
- The location of the codon on the mRNA, and the anticodon on the tRNA .
- There are 8 character's specialize the genetic code.
- Start codon AUG , stop codon UAA,UAG,UGA



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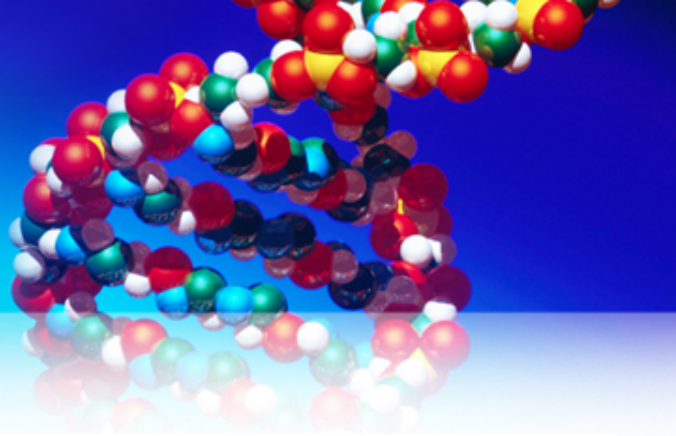

Thank you!