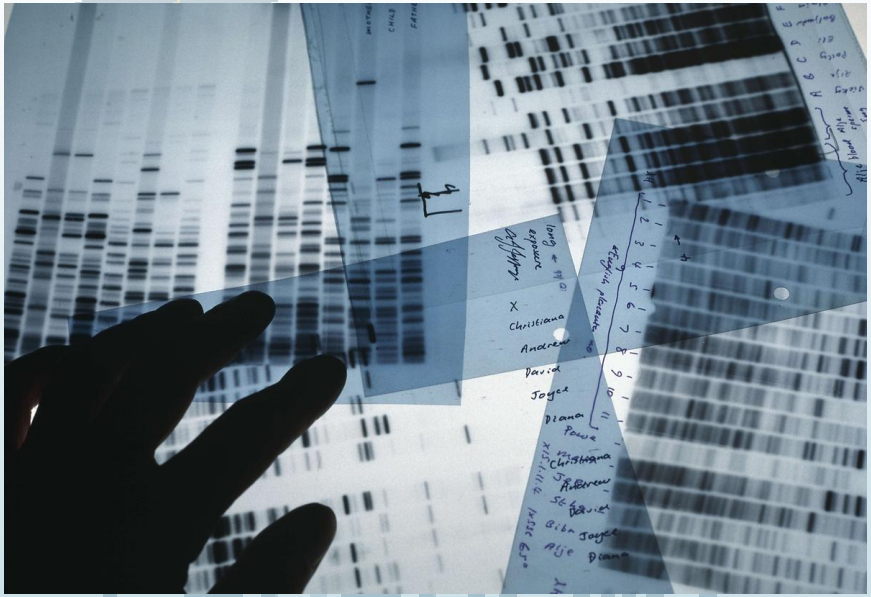
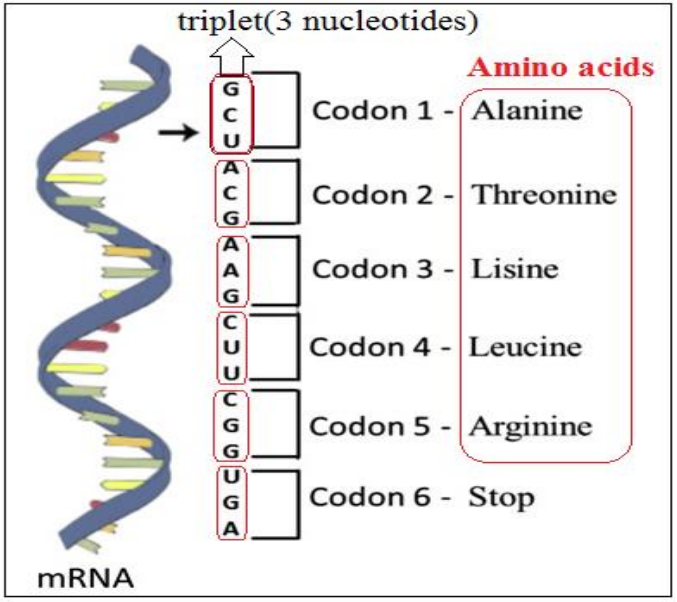
Chapter 3



- Remember:

➢ m-RNA is a single stranded molecule that carries the instructions to make proteins as codons.



➢ Codons (3 nucleotides):

- Are triplets of nucleotides (each codon is made up of 3 nucleotides).
- Each codon codes for one amino acid.
- 1 codon (3 nucleotides) → 1 amino acid.

*There are 20 kinds of amino acids in the body. However, there are 64 codons coding for these amino acids. This is because there are more than one codon coding for the same amino acid.

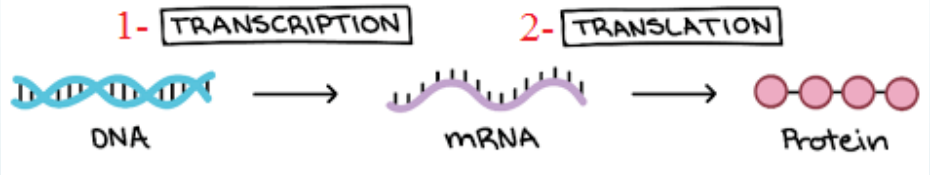
GENETIC CODE TABLE

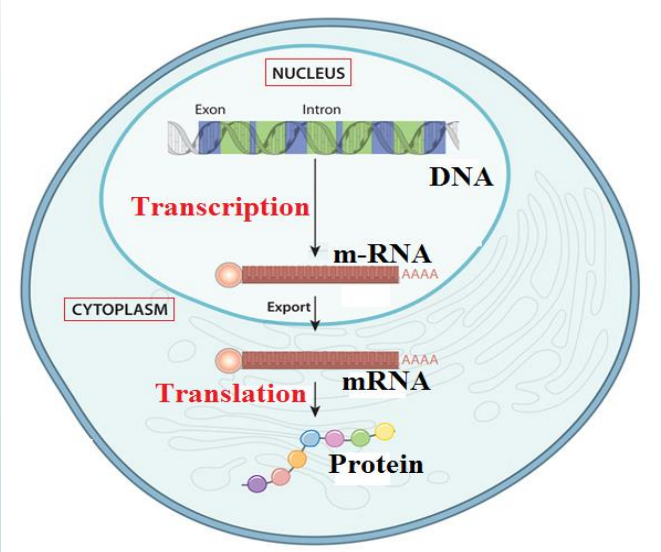
FIRST LETTER	SECOND LETTER: U	SECOND LETTER: C	SECOND LETTER: A	SECOND LETTER: G	THIRD LETTER
U	UUU Phe UUC Phe UUA Leu UUG Leu	UCU Ser UCC Ser UCA Ser UCG Ser	UAU Tyr UAC Tyr UAA Stop UAG Stop	UGU Cys UGC Cys UGA Stop UGG Trp	U C A G
C	CUU Leu CUC Leu CUA Leu CUG Leu	CCU Pro CCC Pro CCA Pro CCG Pro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

Be Smart ACADEMY

- **Gene expression leads to production or synthesis of specific protein.**

There are two steps involved in protein synthesis:





→ To know the sequence of amino acids I should know the codons on m-RNA (each codon on m-RNA codes for an amino acid except stop codons)

→ If non transcribed DNA strand is given:

⇨m-RNA is similar to this non-transcribed strand, but instead T there is U.

→If transcribed DNA strand is given:

⇨m-RNA is complementary to this transcribed strand (A with T,U with A, C with G and G with C).

Be Smart ACADEMY

→ Whether transcribed or non-transcribed DNA strand is given :

⇨m-RNA can be known ⇨amino acid sequence can be determined using the genetic code table