RNA translation – Reference Summary

Translation is the process by which mRNA is decoded (via tRNA) and a corresponding protein is produced in the ribosome.

A **codon** is a set of 3 consecutive nucleotides that together code for an amino acid.

Adaptor RNA molecules called **tRNAs** identify mRNA encoded amino acids and bring them to the ribosome.
The tRNAs have **anticodons** that pair (antiparallelly) with the corresponding mRNA codons to ensure that the correct amino acid is being added.

The Codon Chart

The **codon chart** is used to determine which amino acid corresponds to which codon. Notice that some amino acids have multiple codons but each codon only codes for one amino acid.

Here is a codon chart.

1st letter 5′	Second Letter: U	Second Letter: C	Second Letter: A	Second Letter: G	3rd letter 3′
U	UUU Phe UUC UUA Leu UUG	UCU UCC UCA Ser UCG	UAU Tyr UAC UAA Stop UAG Stop	UGU Cys UGC UGA Stop UGG Trp	U C A G
C	CUU CUC CUA Leu CUG	CCU CCC CCA Pro CCG	CAU His CAC CAA Gln CAG	CGU CGC CGA Arg CGG	U C A G
A	AUU AUC AUA Ile AUG Met	ACU ACC ACA Thr ACG	AAU Asn AAC AAA Lys AAG	AGU Ser AGC AGA Arg AGG	U C A G
G	GUU GUC GUA Val GUG	GCU GCC GCA Ala GCG	GAU Asp GAC GAA Glu GAG	GGU GGC GGA Gly GGG	U C A G

When using this chart, remember that nucleic acids are read from 5' to 3'. Therefore, the first nucleotide, or letter, will always be the one closest to the 5' end and the third nucleotide will always be the one closest to the 3' end.

(A codon chart will always be given to you, so you do not need to memorize it.)