

Properties of Genetic Code

1. Code is a Triplet:

As pointed out earlier, the coding units or **codons for amino acids** comprise **three letter words**, $4 \times 4 \times 4$ or $4^3 = 64$. 64 codons are quite adequate to specify **20 proteinous amino acids**.

		Second base			
		A	C	G	U
First base	A	AA	AC	AG	AU
	C	CA	CC	CG	CU
	G	GA	GC	GG	GU
	U	UA	UC	UG	UU

Singlet Code: $4^1 = 4 \times 1 = 4$ codons

Doublet Code: $4^2 = 4 \times 4 = 16$ codons

		Second base					
		U	C	A	G		
First base	U	UUU } Phenyl-alanine UUC } UUA } Leucine UUG }	UCU } UCC } Serine UCA } UCG }	UAU } Tyrosine UAC } UAA } Stop codon UAG } Stop codon	UGU } Cysteine UGC } UGA } Stop codon UGG } Tryptophan	U C A G	
	C	CUU } CUC } Leucine CUA } CUG }	CCU } CCC } Proline CCA } CCG }	CAU } Histidine CAC } CAA } Glutamine CAG }	CGU } CGC } Arginine CGA } CGG }	U C A G	
	A	AUU } Isoleucine AUC } AUA } AUG } Methionine start codon	ACU } ACC } Threonine ACA } ACG }	AAU } Asparagine AAC } AAA } Lysine AAG }	AGU } Serine AGC } AGA } Arginine AGG }	U C A G	
	G	GUU } GUC } Valine GUA } GUG }	GCU } GCC } Alanine GCA } GCG }	GAU } Aspartic acid GAC } GAA } Glutamic acid GAG }	GGU } GGC } Glycine GGA } GGG }	U C A G	

Triplet Code: $4^3 = 4 \times 4 \times 4 = 64$ codons

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