

SAY IT WITH DNA: Making New Messages

Since you will be expected to decipher a DNA message in the unit exam, it would be wise to get as much practice as possible. If you can have fun in the process, so much the better! You are to think up at least one good (clever? funny?) message which can be written using only the 20 symbols representing the 20 amino acids. Those 20 amino acids are represented by a universal single letter code, using all the letters in the English alphabet except B, J, O, U, X, and Z. This means, of course, that your message cannot have any B, J, O, U, X, or Z letters in it! A little restrictive, you see, so you will need to be a bit creative.

After you have created your message (in English) on scratch paper, carefully print its DNA code along the length of a full separate sheet of notebook paper, held horizontally, using DNA triplets ONLY. Try to keep it to one long row; make the letters clear. Do NOT include the English translation; just keep it to your self. Now place your name and period at the top and hand it in. Your message will be exchanged with that from another message-creator for translation practice, and will be entered into our annual DNA Message Contest. CAUTION: obscene or derogatory messages are not acceptable, so use good judgment. You may enter one or more times. Hand in your translated message with your name as "translator".

You will quickly notice that there is more than one codon for nearly every amino acid. Make a point of using different codons whenever you can for the same (amino acid) letter-symbol, especially when they occur side by side in succession.

Use the DNA-Amino Acid Dictionary below to help make your messages. You will need the tRNA Dictionary on your Protein Synthesis Worksheet for solving the messages.

“DNA - AMINO ACID DICTIONARY”

DNA Codons and the Amino Acids (symbols and abbreviations) for which they code.

DNA codon	AA sym	AA abr
CGA	A	ala
CGC	A	ala
CGG	A	ala
CGT	A	ala
ACA	C	cys
ACG	C	cys
CTA	D	asp
CTG	D	asp
CTC	E	glu
CTT	E	glu
AAA	F	phe
AAG	F	phe
CCA	G	gly
CCC	G	gly
CCG	G	gly
CCT	G	gly

DNA codon	AA sym	AA abr
GTA	H	his
GTG	H	his
TAA	I	iso
TAG	I	iso
TAT	I	iso
TTC	K	lys
TTT	K	lys
AAC	L	leu
AAT	L	leu
GAA	L	leu
GAC	L	leu
GAG	L	leu
GAT	L	leu
TAC	M	met
TTA	N	asn
TTG	N	asn

DNA codon	AA sym	AA abr
GGA	P	pro
GGC	P	pro
GGG	P	pro
GGT	P	pro
GTC	Q	glu
GTT	Q	glu
GCA	R	arg
GCC	R	arg
GCG	R	arg
GCT	R	arg
TCC	R	arg
TCT	R	arg
AGA	S	ser
AGC	S	ser
AGG	S	ser
AGT	S	ser

DNA codon	AA sym	AA abr
TCA	S	ser
TCG	S	ser
TGA	T	thr
TGC	T	thr
TGG	T	thr
TGT	T	thr
CAA	V	val
CAC	V	val
CAG	V	val
CAT	V	val
ACC	W	trp
ATA	Y	tyr
ATG	Y	tyr
ACT	-	space
ATC	-	space
ATT	-	space

Letters NOT available: B J O U X Z