Solution:

				1				1	1																															
A C T T G C C G C G T G G C T										G	$\mid T \mid$	$\mid G \mid$	G	\Box	T	G	A	Α	A	Α	T	$\mid G \mid$	A	A	Α	C	$\mid T \mid$	A	T	Γ	$\mid T \mid$	G	Т	T	Γ	C	Т	$\mid G \mid$	A	
G C C G T G T G A A A A A T G A A A C T C T C C T T C C T C T C A A A A	С	C	Т	Т	G	С	С	G	С	G	Τ	G	G	G	Т																									
A C T C G T G T G T G A A A A T G	A	С	Т	Т	G	С	С	G	С	G	Т	G	G	С	Т																									
G C G T G A A A A T G A A A C T G A A A C T G A A A A T G A A A T G A A A A T G A A A A					G	С	С	G	С	G	Т	G	G	G	Т	G	A	A	Α																					
T G A G T G A A A A T G A A A C T G A A C T G A A A A A T G A A A C T G A A A A T G A A A A T G A A A A C T G G G T G A A A A A T G A A A A C T G G G T G A A A A A T G A A A C T G G G T A A A A A A T G A A A A C T G G G G G A A A A A T G A A A A C T C G G G A A A A A T G A A A A C T C G G G G A A A A A T G A A A C T T T T G T T C C T G A A A A C T A T T T G A T T C C T G G A A A A C T A T T T G A T T C C T G G A A A A C T A T T T G A T T C C T G G A A A A C T A T T T G A T T C C T G G A A A A C T A T T T G T T C C T G A A C C T A T T T C C T G A C C T C T C T T T T C C T G A C C T C T C T C T T T C C T T C T C T						Α	С	Т	С	G	Т	G	Т	G	Т	G	Α	Α	Α	Α																				
G G T G A A A A T G A A A C T G G G T G G G G T G A A A A T G A A A C T G G G T G G G T G A A A A A T G A A A A								G	С	G	Т	G	G	G	Т	G	Α	Α	A	Α	Т	G																		
G G T G A A A A T G A A A C T G G G A A A A A T G A A A C T G G G G A A A A A T G A A A C T C G G G A A A A A T G A A A C T C G G G A A A A A C T G A A A C T C A A A A A A T G A A A C T T T T T T T T T T T T T T T T											Т	G	Α	G	Т	G	Α	Α	Α	Α	Т	G	Α	Α	Α															
G T A A A A A T G A A A C T C G G G G A A A A A T G A A A C T C G G G G G A A A A A T G A A A C T T T T T G T T C C T G A A A A C T T T T G T T C C T G A A C T A T T T T G T T C C T G A A C T A T T T T G A A A A C T A T T T T G A A A A C T A T T T T G A A A A A C T A T T T T G T T C C T G A A A A A C T A T T T T G T T C C T G A A A A A C T A T T T T T T T T T T T T													G	G	Т	G	Α	Α	Α	Α	Т	G	Α	Α	Α	С	Т													
G G G A A A A T G A A A C T C													G	G	Т	G	Α	Α	Α	Α	Т	Α	Α	Α	Α	С	Т													
A A A A T G A A A C T A T T T G G T C C T G A C T A T T T G T C C T G A C T G A C T A T T T T G T T C C T T G A C T G A C T A T T T T G T T C C T T G A C T G A C T A T T T T G T T T C C T T T T G A C T C T T T T T T T T T T T T T T T T														G	Т	A	A	A	Α	A	Т	G	Α	Α	Α	С	Т	G												
A A A T G A A A C T A T T T G G G T C C A A A A C T A A T T T T G G T C C A A A A C T A A T T T T G G T T C C T														G	G	G	Α	A	Α	A	Т	G	Α	Α	Α	С	Т	С												
G A A A C T A T T T G G T C C T A C T A T T T G A T T T C C T T C T C T T T C C T T C T C T T C T C T T T C C T T C T C T T T C C T T C T C T C T T T C C T T C T																	Α	Α	Α	Α	Т	G	Α	Α	Α	С	Т	Α	Т	Т	Т									
A A A C T C T T T G T T C C T G A C																		Α	Α	Α	Т	G	Α	Α	Α	С	Т	Α	Т	Т	Т	G								
C T A T T G T T C C T G A C																						G	Α	Α	Α	С	Т	Α	Т	Т	Т	G	G	Т	С	С				
																							A	A	A	С	Т	С	Т	Т	Т	G	Τ	Т	С	С	Т			
																										С	Т	A	Т	Т	Т	G	Τ	Т	С	С	Т	G	A	С
																										С	G	Α	Т	Т	Т	G	Τ	Т	С	С	Τ	G	A	С

	Amino acid sequence in each three reading fra	imes:									
Nucleotide sequence:											
$C \mid C \mid T \mid T \mid G \mid C \mid$											

Reads - cut out TGC ACT CGC G G G C T A A A С Τ TT G Τ Τ $C \mid C \mid T$ CCT Т G CCCCC G G G G T CGA GT С T G A C GCC G G TGG G G A A A A A C T GGT G G G A A C T C Α G

G A A A

A A T G

T G A C

G T C C

G G G T

G A A A A

G

T T G

G A C

TTT

CTG

G A A A

GC

CT

G A

 $A \mid A \mid$

GT

GG

TGA

A A A

G

Α

Α

Α

Τ

G

G

Second base in codon

	T	С	A	G	
	TTT Phe F	TCT Ser S	TAT Tyr Y	TGT Cys Y	Τ
$\mid T \mid$	TTC Phe F	TCC Ser S	TAC Tyr Y	TGC Cys Y	\mathbf{C}
1	TTA Leu L	TCA Ser S	TAA Stop *	TGA Stop *	A
	TTG Leu L	TCG Ser S	TAG Stop *	TGG Trp W	G
	CTT Leu L	CCT Pro P	CAT His H	CGT Arg R	Τ
	CTC Leu L	CCC Pro P	CAC His H	CGC Arg R	\mathbf{C}
	CTA Leu L	CCA Pro P	$\operatorname{CAA}\operatorname{Gln}\ \operatorname{Q}$	CGA Arg R	A
	CTG Leu L	CCG Pro P	CAGGln Q	CGG Arg R	G
	ATT Ile I	ACT Thr T	AAT Asn N	AGT Ser S	Т
\ <u>\</u>	ATC Ile I	ACC Thr T	AAC Asn N	AGC Ser S	\mathbf{C}
A	ATA Ile I	ACA Thr T	AAALysK	AGA Arg R	A
	ATG Met M	ACG Thr T	AAG Lys K	AGG Arg R	G
	GTT Val V	GCT Ala A	GAT Asp D	GGT Gly G	Т
\mid G	$\operatorname{GTC}\operatorname{Val}\ \ \operatorname{V}$	GCC Ala A	$\operatorname{GAC}\operatorname{Asp}\ \operatorname{D}$	GGCGly G	\mathbf{C}
G	GTA Val V	GCA Ala A	GAAGlu E	GGAGly G	A
	GTG Val V	GCG Ala A	GAGGlu E	GGGGly G	G

Standard genetic code. The table shows how triplets of nucleic acid bases correspond to different amino acids. Besides the codon ATG with always codes for methionine, alternatively TTG, CTG, ATT, ATC, ATA and GTG can serve as initiation codons, in which case they are translated as methionine rather than the amino acid indicated.

First base in codon