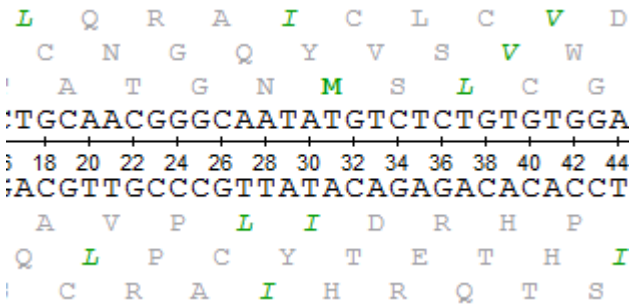
Translating Nucleotide Sequence

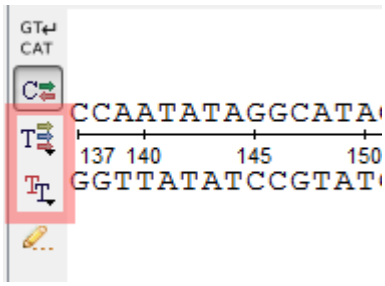
When a nucleotide sequence is opened in the *Sequence View*, the sequence and its complementary sequence are shown by default in the *Details View*.

Showing/hiding the amino acid sequences

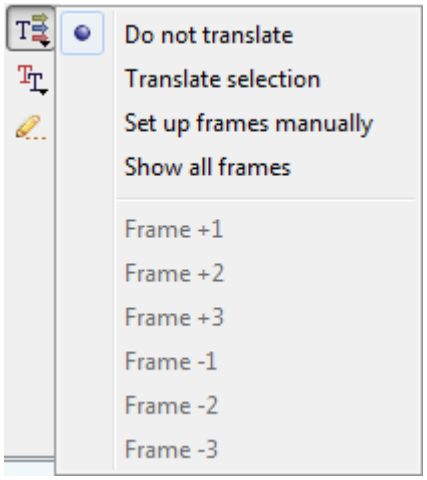
It is possible to translate them and show also the corresponding amino acid sequences:



The translation settings are available on the left toolbar of the *Details View*:

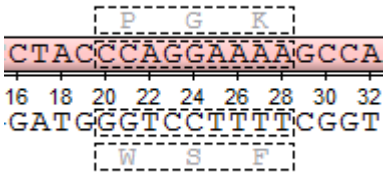


The *Show/hide amino acid translations* menu allows one to set up the mode of the amino acid sequences visualization:

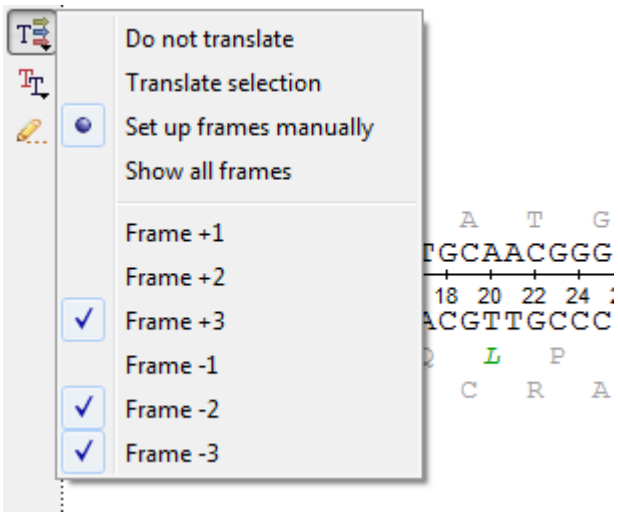


The following options are available:

- *Do not translate*— hide the amino acid sequences.
- *Translate selection* — translate only a selected region of the sequence and the complementary sequence.



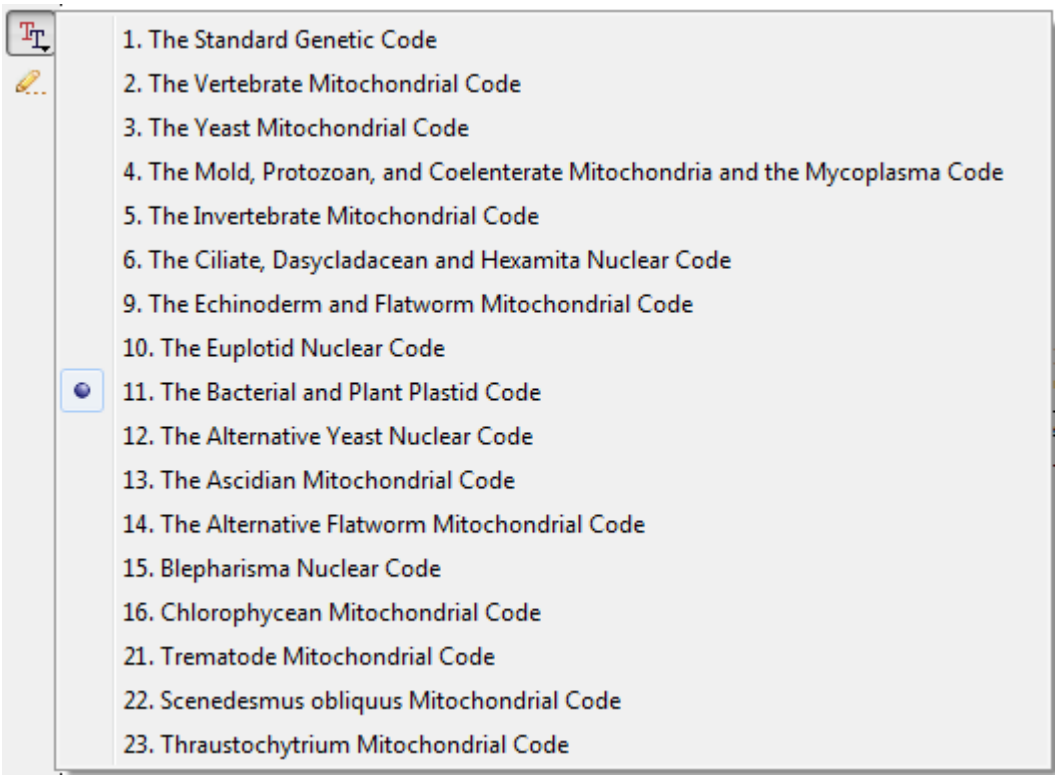
- *Set up frames manually* — select the reading frames to show. There are three frames for the sequence ("+1", "+2", "+3") and three frames for the complementary sequence ("-1", "-2", "-3"). Note that the complementary frame items are hidden in the menu, if the complementary sequence is hidden.



- *Show all frames* — show all amino acid sequences.

Setting the genetic code

The default value for the genetic code for a nucleotide sequence translation is read by UGENE from the sequence file when it is available. One can also set up the genetic code for the sequence using the *Select genetic code* menu:



All analysis routines (like HMMER, ORF finding, etc.) will use this code by default.

Codon table

To refresh the knowledge about the amino acid codes, select the *Show codon table* button  on the *Sequence View* global toolbar. The codon table appears at the upper part of the window:

1st base	2nd base								3rd base
	U		C		A		G		
U	UUU	Phenylalanine (Phe, F)	UCU	Serine (Ser, S)	UAU	Tyrosine (Tyr, Y)	UGU	Cysteine (Cys, C)	U
	UUC		UCC		UAC		UGC		C
	UUA	Leucine (Leu, L)	UCA		UAA	Stop codon (*)	UGA	Stop codon (*)	A
	UUG		UCG		UAG		UGG	Tryptophan (Trp, W)	G
C	CUU		CCU	Proline (Pro, P)	CAU	Histidine (His, H)	CGU	Arginine (Arg, R)	U
	CUC		CCC		CAC		CGC		C
	CUA		CCA		CAA	Glutamine (Gln, Q)	CGA		A
	CUG		CCG		CAG		CGG		G
A	AUU	Isoleucine (Ile, I)	ACU	Threonine (Thr, T)	AAU	Asparagine (Asn, N)	AGU	Serine (Ser, S)	U
	AUC		ACC		AAC		AGC		C
	AUA		ACA		AAA	Lysine (Lys, K)	AGA	Arginine (Arg, R)	A
	AUG	Methionine (Met, M)	ACG		AAG		AGG		G
G	GUU	Valine (Val, V)	GCU	Alanine (Ala, A)	GAU	Aspartic acid (Asp, D)	GGU	Glycine (Gly, G)	U
	GUC		GCC		GAC		GGC		C
	GUA		GCA		GAA	Glutamic acid (Glu, E)	GGA		A
	GUG		GCG		GAG		GGG		G