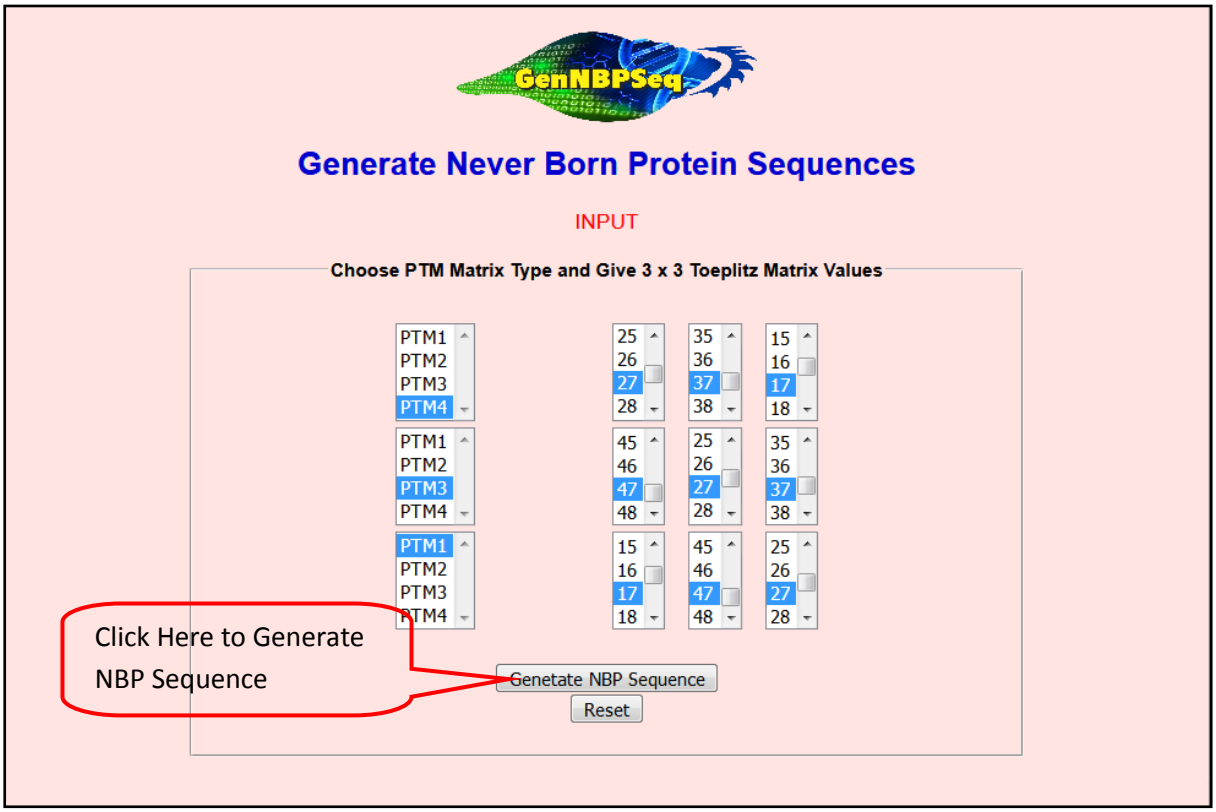
STEP 1:


GenNBPSeq
Generate Never Born Protein Sequences
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HOME
The "GenNBPSeq" is an online web server to generate a Never Born Protein (NBP) sequence and its corresponding DNA sequence, using the Partitioned Gray code representations of Universal Genetic Code combined with a novel Toeplitz matrix approach, as outlined in Muthugobal et. al. (2018)[1]. We generate the three sample NBP sequences NBP_SEQ_1, NBP_SEQ_2 and NBP_SEQ_3 using this "GenNBPSeq" online web server.
Choose Toeplitz Matrix Order
2x2 Matrix
3x3 Matrix
4x4 Matrix
Click Here
Click here for a brief Description of Generation of the three Sample NBP Sequences.
Click here to get Sample Input and Output NBP_SEQ_1, NBP_SEQ_2 and NBP_SEQ_3.
Click here to get Partitioned Toeplitz Matrix types PTM1, PTM2, PTM3 and PTM4.
Click here for Universal Genetic Code.
Please Cite
[1] B.K.N. Muthugobal, G. Ramesh, K. Muthuvel Prasath, S. Suvaithenamudhan and S. Parthasarathy*(2018) Gray Code Representation of the Universal Genetic Code and Generation of Never Born Protein Sequences using Toeplitz Matrix Approach: Sequence and Structure Analysis. To be communicated.
Further Reference
He M, Petoukhov S and Ricci PE (2004) Genetic code, Hamming distance, and stochastic matrices. Bulletin of Mathematical Biology, 66, 965-973.
Please, send your comments, suggestions to: bdubioserver@gmail.com
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STEP 2:


GenNBPSeq
Generate Never Born Protein Sequences
INPUT
Choose PTM Matrix Type and Give 3 x 3 Toeplitz Matrix Values
PTM1 PTM2 PTM3 PTM4
25 26 27 28
35 36 37 38
15 16 17 18
PTM1 PTM2 PTM3 PTM4
45 46 47 48
25 26 27 28
35 36 37 38
PTM1 PTM2 PTM3 PTM4
15 16 17 18
45 46 47 48
25 26 27 28
Click Here to Generate NBP Sequence
Genetate NBP Sequence
Reset

STEP 3:



Generate Never Born Protein Sequences

RESULT

INPUT

```
Toeplitz Matrix Order : 3 x 3

Partitioned Toeplitz Matrix type for First Row  : M4

Partitioned Toeplitz Matrix type for Second Row : M3

Partitioned Toeplitz Matrix type for Third Row  : M1

Toeplitz Matrix : 27  37  17

                  47  27  37

                  17  47  27
```

OUTPUT

```
Never Born Protein (NBP) and DNA Sequences

>NB_DNA_SEQ   1728 bp
gccgctactaccattatcgtcgttggcagcaacgacaatgatggtagtcgctgctaccac
tatcatcgttgtgcagcgacgacaatgatagtagtgtgccgccactaccattattgtcgt
agcggcgacaacgataatagtggttcatcgccgccactgctattattgttcctcccctcc
ccttcttttcttatcgtcgccaccgctactattgtttcctctcctccccttctcttcttt
gtcatcaccgccactgctgttattctcttctccccctctcctcttttttaatagcagcaa
cggcgatgatggttactaccatcaccgtcgttgctgatagtagcaacagcgacgatggtg
tactatcatcaccgtcgctgctgtgtaataacagcaacggcggtgatgctattatcacca
tcgccgctgttggacgataataacagtagcggcggtggaagaaaagaaaaggagggggagg
cgatgataacaatagcagcggtgggaagagaagaaaaggagaggagggtgacgacaataa
cagtagtggcggagaggagaaaaagagaagagggggggggggaagaagggaggaaaaaaag
gccgctactaccgtcgttattatcggcagcaacgacggtagtaatgatggtggcagcagt
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ggcggtagtagcggaagaaaagaagggaggaaggaggttgtcatcattgctgccaccact
gaagagaagaaaggagggaggagatgacgacaataatggcggcagtagtttttcctcctt
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ttgttactactgtcgtcaccaccgtactatcatcactgctgtcgtcgcgtaataacagca
gtgatgacggcgcccttcctttctccttccctctttccgttgtcactatcgttaccactg
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gagggaaaaaggcatcgctactgttatcgtcactgccaatgacggtagcagtaacgatgg
actgttgccatcgctgtcaccattactatcgccgttgctattaccgtcacagtaatggcg
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ccattactgtcgccgtcactattgacggtggcaatagcggtaacaatgacgatagcagtg
gcgatgacagtaaccgtcattgctactgccatcgttaatggtgacagcgatggcaacagt
cagcgataatggtagcggcaatgacactgccgttatcattaccgctgtccttttccctc
tctttcccccttcctctctccttttctcttcccttcaaaggaagggagaaggaaagaggg
cagtggtaacgatagtgacaacggaatagcgacggtgatagtaacggc

>NBP_SEQ   549 aa
AATTIIVVGSNDNDGSRCYHYHRCAATTMIVVCRHYHYCRSGDNDNSGSSPPLLLLFLPS
PSFLIVATATIVSSPPLLFFVITATAVILFSPSPLFQQRRWLLPSPSLLIVATATMVYYH
HRRCCVITATAVMLLSPSPLLDDNNSSGGGRKEKEGRRQQRWEEKKRRGGRQQWRRGEKE
KRGGGRREEKKAATTVVIIGSNDGSNDGGSSDDNNAATTVVMICRHYCRHYCCRRYYHHS
SPPLLLLFLPSFLPSWRRQQSSPPFFLLVITAVITAVVIMAATTDDNNGGSSGRKEGRKE
VVIIAATTEEKKGGRRRQWRQFFLLSSPPQQWRRLLPSLLPSLLLLSSPPYYHHCCRRVI
TAVMTAPFLSPSLFPLSLSLPLPLSLSLPLNGSDNDSGKGEREGKRHRYCYRHCQRQRWT
VAIAVTITIAVAITVTVMATAIVHCYRYCHRKREGERKGPLLSPSLLTVAIAVTMTIAVA
MTVTVIATAIVNGDSDGNSQRWRQHCRYHYRCPFSLSFPLPLSFSLPFKGREKERGQWRQ
RNSDGDSNG
(Protein sequence after removing stop codons)
```