**PYSEQUENCER**

This game is created for you to understand such biological concepts as DNA complementarity and to practice in being a sequencer (machine that helps to reveal the DNA sequence for scientific, biomedical, or criminal purposes). Using a DNA sequence, scientists can predict some genetic diseases in humans, find out to whom you are related, identify the breed of your dog or cat etc.

DNA, or deoxyribonucleic acid, is the hereditary material in humans and almost all other organisms. It consists of nucleotides ’A’, ’C’, ’G’ and ’T’. DNA complementarity is connections between these nucleotides as key-lock. A – adenine in one strand is opposite ’T’ thymine in the other strand and ’C’ cytosine in one strand is opposite ’G’ guanine in the other.

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Sequencing machines work in a way that they receive one strand of DNA and then add different nucleotides to find the complementary ones to the DNA. This is exactly what you need to do. On top of the screen, you will see a nucleotide that belongs to the DNA sequence that you will analyze and find a complementary nucleotide to it (‘A’). In the bottom you will have nucleotides from which you need to find one that is complementary to the top one (in this case it is ‘T’). To avoid collecting of non-complementary nucleotides you need to jump over them using the space bar.

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Unfortunately, sequencing machine sometimes cannot say what nucleotide is the next in DNA and therefore in sequencing result you can see ‘N’ – not known nucleotide.

Counting of points:

For every correctly chosen nucleotide you will get +1 point, for ‘N’ nucleotide 0.5, while for wrong nucleotide you won’t get any points. In the end, the game will count the percent of correctly chosen complementary nucleotides and if you did well – you will find out DNA of what organism you sequenced.

**Hope that you will like our game and good luck!**

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