

BYS 602 BIOINFORMATICS Sp2017 -J. Ng

Project 2

This is a group effort assignment. Write a program in python that will allow a user to take a sequence file (DNA or Protein) and convert it to musical notes (preferably in more than one octave) as well as taking musical notes and converting back to DNA or Protein sequence.

1. Group

- a. As a group, each person should contribute a significant portion of code in python that will contribute to the overall program as described above.
- b. Your input file should be any primary sequence of a segment of DNA (not more than 100 bases) or protein.
- c. Your output should be a string of musical notes represented by the musical notes in the key of C major- that is no sharps or flats and it should span for at least 2 octaves (or more). For example: **C D E F G A B C D E F G A B C (span of 2 octaves)**.
- d. Similarly, write a program that will take 8 measures of music (segments of musical notes) in the key of C major (no sharps or flats) and convert it into a DNA or protein sequence. Your output file should be a primary sequence to a protein or DNA.

2. Individual

- a. Each person should use the program (written collectively) and input a portion of their favorite/selected DNA or protein sequence from the gene/protein bank (from NCBI). Each person should have an output of a string of musical notes as described in "b" above. I will show you how to use an open-source software to put it into musical format.
- b. Pick your favorite music (written in the key of C major). Choose 8 measures and convert it to a letter codes (you may need to do this by hand). Use the string output to convert it to a DNA or protein sequence.
- c. Run your sequence through NCBI blast and report if your sequence matches to anything.

3. Each person will report to the class the results and significance of their results.

Name your program file Group_project.py

Submit your program by email to BYS602Bioinformatics@gmail.com

With subject heading "Project 2" no later than Friday, March 7, 2017 before midnight. Each person will report their finding on April 14th in class. We may have some guests from the music department to listen to your presentations.