Welcome to the **DNA-o-gram** Extra Credit challenge. To earn up to 10 extra credit points (this equals <u>ONE EOR</u> assignment and is added to your daily work and EOR points), complete the following tasks, prepare a document with your answers, and then upload the file to the link on the WEEBLY class webpage.

<u>PART 1</u> (5 pts)   Below are 3 secret messages from Mr. Roberts coded in the DNA language. To decode each **DNA-o-gram** message, copy and paste each DNA message into the DNA decoder at the following website: http://www.thinkBiotech.com/DNA-o-gram   . Explain what each message says in ENGLISH and respond to message 3 with your own DNA-o-gram.

Message 1:
AAGGGCGGAGACGTACGTGTTTAAGCGCGTGTTGATGGCGGAGTCATGCGCGGCTAAATGCGTGTACTTATGG GAGGCTAGATGCGTATGGTCTAACTCCTCCTTGTCGTCGAATAAGCGATGAATATCAAAATGCTGCTTCTCGGCC TGCTTGTAGTG

Message 2:
CAAGCGCTTCGTGTCCTTATGCGTGGAGTCTAGCTTGTAATGGTTGAGCTTATGAATATCAAAATGGTACTTTAC GATCTTTAGATGGGTTAACTTGTCGTTGATGGCGGAATGGATGGAATGGCTCTTGTCGTCCGTGACCTTATGTGC ATGCTATCAATGCTCGTACTTCGTGTTGGAGACATGTCAGGCTAAGTAATGGGCTAGGGAATGAATATCAAAGG CGACGTACGTGCTATGCGTGGAGTCTAGCTTGTAGTG

Message 3:

CCTGAGCGTGTTATGCTAGATGGCGCGGGCGACGATGTCGTTATGTAGCGTGTCATGGAAGATGTAGTCGTTAT GGTTGGCATGCTTTATGGGGCGCGTGATGGAATGGAGGGCTAGATGGCTCGTGGATCAATGGGCGAAATGGTT GAGCTTATGGAATAAGGACTGCGTGCTCTTGGAGTTCGTGCGATGCTCGGCGGACTCCTTGGGGTTGTCATGGG CGAAATGGAGCTTGTACTTCTGGATGTTTCAATGTAGGGCGTAGCCATGCGTGGACTGATGTAGGAGCGTGTTAT GGTTTCAGGGCTTATGGGCGAAATGGGCGTAGACCGTGGAGATGTCGCTGTCATGCTGGATCTGATGGAGCTTA TGTAAGTCCTTATGGAAGGCGTAATGGAGGATGTCATGCTGGATGTCCTCGGCTACCTTGTAGATCTTGTCGTG

Part 2 **(5 pts)** Explore the effects of various types of point mutations on your DNA-o-gram **message 1.**

A) Insert a 1 letter (A, T, C, G) **<u>substitution</u>** mutation somewhere in DNA message 1 (above) and then decode. Include the decoded English message after the mutation and explain if the mutation had a small or large effect on the message

B) Insert a 1 letter (A, T, C, G) **<u>addition</u>** mutation somewhere in DNA message 1 (above) and then decode. Include the decoded English message after the mutation and explain if the mutation had a small or large effect on the message

C) <u>Remove</u> **1** letter (A, T, C, G) causing a **<u>deletion</u>** mutation somewhere in DNA message 1 (above) and then decode. Include the decoded English message after the mutation and explain if the mutation had a small or large effect on the message

D) <u>Remove</u> **3** letters (A, T, C, G) causing a **<u>deletion</u>** mutation somewhere in DNA message 1 (above) and then decode. Include the decoded English message after the mutation and explain if the mutation had a small or large effect on the message