

Homework 1 Part II

1. The longest ORF is on the positive strand and runs from position 266 to position 13483
2. The most frequent amino acids (with counts) encoded on the ORF are Leucine (435), Valine (371), and Threonine (345)
3. Codon bias plots:

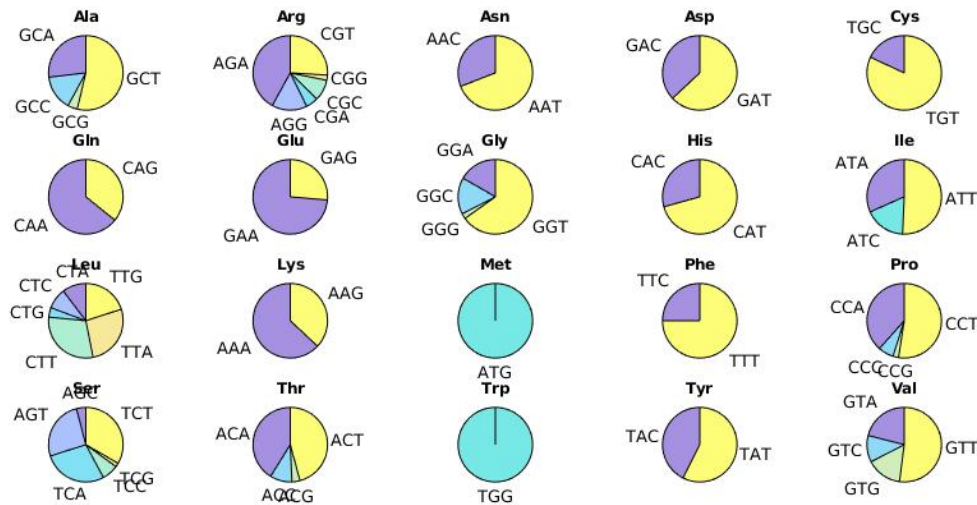


Figure 1: Codon bias plot for the longest ORF

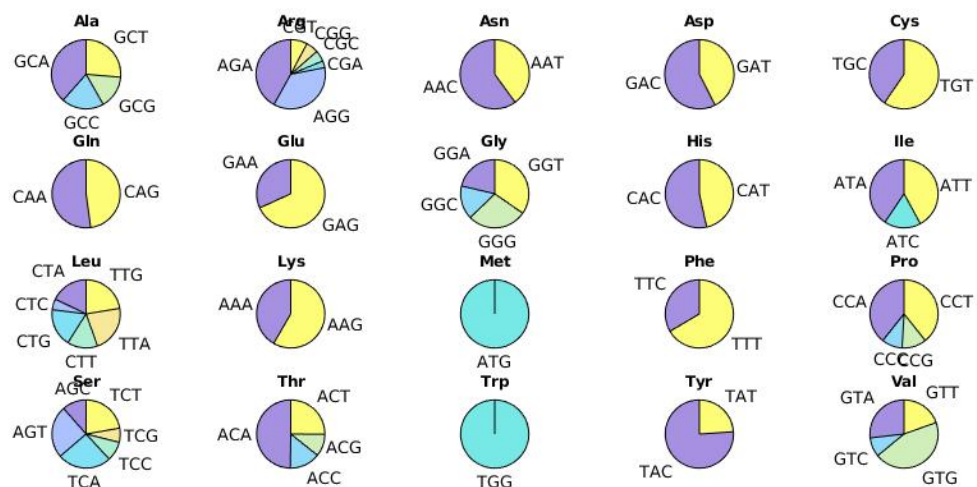


Figure 2: Codon bias plot for the longest ORF shifted to the right by one base

4. (a) For Alanine, GCT is the most commonly used codon with slightly more than 50%

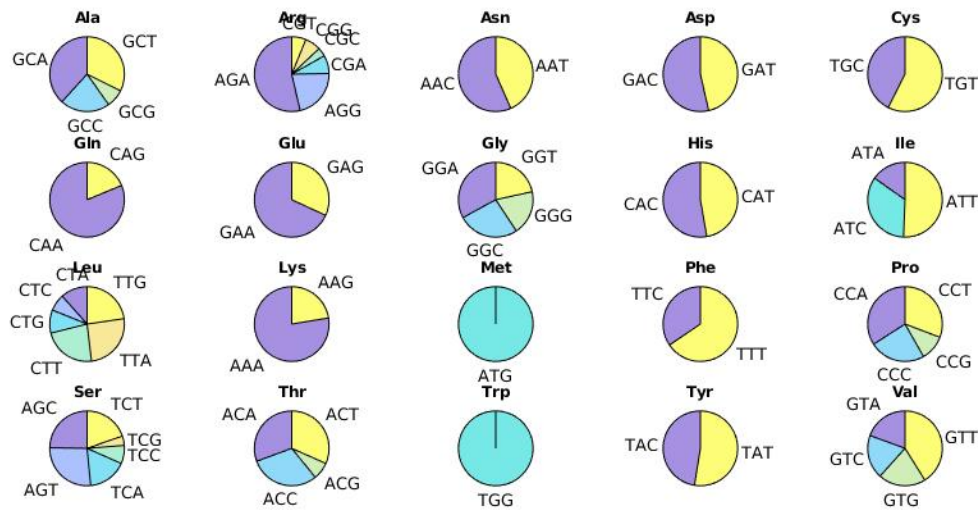


Figure 3: Codon bias plot for the longest ORF shifted to the left by one base

(b) For Valine, GTT is the most commonly used codon, also with slightly more than 50%

5. For Figure 2:

- (a) For Alanine, GCA is the most commonly used codon with around 40%
- (b) For Valine, GTG is the most commonly used codon, with slightly under 50%

For figure 3:

- (a) For Alanine, GCA is the most commonly used codon with around 40%
- (b) For Valine, GTT is the most commonly used codon, also with around 40%