

Group members (1 to 3): _____

- (1) For the DNA scoring matrix which has $S_{ii} = 3$ and $S_{ij} = -5$ for $i \neq j$, if you assume a uniform background distribution of nucleotides $P_A = P_C = P_G = P_T = \frac{1}{4}$, calculate the implied transition matrix Q_{ij} .

- (2) What is the (relative) entropy $\sum_{i,j} Q_{ij} \log_2\left(\frac{Q_{ij}}{P_i P_j}\right)$ of the scoring matrix?