

Assignment 1

Python Programming for Life Science Students

Due 5:00 PM, 6 February 2025 (Thursday)

Submit your code in the form of a Jupyter notebook with all information. Late submissions will not be accepted.

Exercise: Calculating the Molecular Weight of a Protein

Proteins are composed of amino acids, each with a specific molecular weight. The molecular weight of a protein can be estimated by summing the molecular weights of its constituent amino acids.

Write a Python function that calculates the molecular weight of a protein from its sequence. You can obtain the molecular weights of individual amino acids from the table available at: Thermo Fisher - Proteins and Amino Acids.

Instructions

1. Define a Python function named `calculate_molecular_weight` that takes a protein sequence as input (a string of single-letter amino acid codes).
 2. Use a Python dictionary to store and retrieve molecular weights.
 3. Iterate through the sequence and compute the total molecular weight in kilodaltons (kDa).
 4. Return the total molecular weight.
 5. Test your function using the sequence: "MPSTYLLQ". You can verify the molecular weight of this protein using: GeneCorner - Protein Molecular Weight Calculator. If the results disagree, comment on it.
 6. Include documentation.
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