

DNA Molecular Weight Calculation

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[Abstract] This method is to roughly estimate DNA molecular weight. One of its applications is to calculate the ratio of vector to insert in a ligation reaction (please see Standard DNA Cloning protocol).

Procedure

Anhydrous molecular weight of each nucleotide is (see reference 1):

A= 313.21

T= 304.2

C= 289.18

G=329.21

For rough estimation, typically average the molecular weights of all four, average weight of a DNA nucleotide (in salt solution) = 325 Daltons (see Reference 1)

MW of a single-strand DNA molecule= (#of bp) x (325 Daltons/per base)

Moles of a ssDNA molecule = (grams of DNA)/ (MW in Daltons)

For accurate estimation of MW of ssDNA, an online calculator (see Reference 2) is available.

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References

1. New England Biolabs catalog book.
2. <http://www.basic.northwestern.edu/biotools/oligocalc.html>.