Sophia Ize-Iyamu

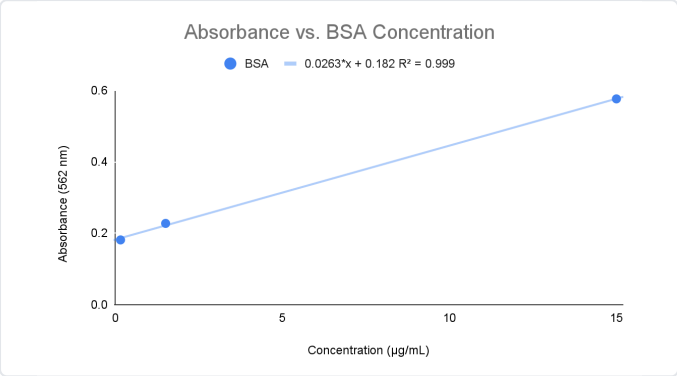
Quantifying Protein and DNA in Unknown Samples

University of Toronto, BME440 · Sep 2024 · Group lab

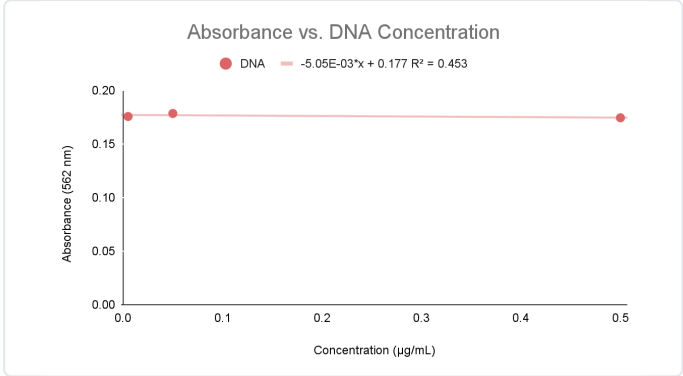
Assay and analysis

Absorbance and fluorescence assays used to back out protein and DNA concentrations from a mixed sample.

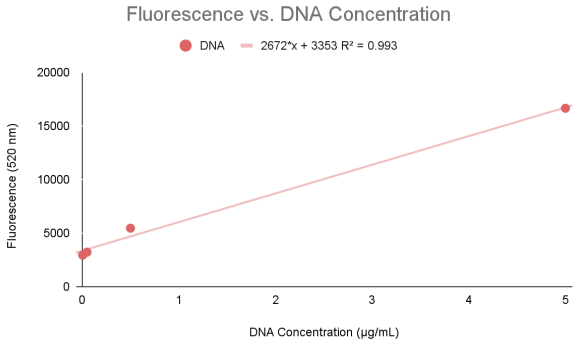
This lab measured protein and DNA concentrations in mixed unknown solutions by combining UV absorbance with the more sensitive BCA protein assay and SYBR Green DNA assay. Dilution series of the standards and the unknown were read on a plate reader, and standard curves were used to interpolate the unknown concentrations.



Protein (BSA) standard curve, R-squared near 0.999.



Assay standard curve used to interpolate the unknown.



Assay results for the unknown sample.

Method

A dilution series of DNA and protein standards plus the unknown was prepared across eighteen tubes, the BCA reaction developed in a 60 C bath, then absorbance and fluorescence read on a plate reader. The standard curves, here with an R-squared near 0.999, interpolate the unknown sample.

SELECTED REFERENCES

- "Microplate fluorescence assay for dsDNA quantification using SYBR Green I," Biotechnology Letters (Springer).
- BCA protein assay (Cu2+ to Cu1+, 562 nm), standard colorimetric method.

Engineering portfolio brief. Course and team project; contribution as noted above.