

Final Exam Study Guide

General Concepts

- What was the relationship between absorbance and membrane damage from the beetroot lab?
- Describe the four levels of protein structure.
- Why did we keep enzymes (e.g. succinate dehydrogenase, β -galactosidase, etc.) on ice?
- How did we measure activity of SDH? β -galactosidase?
- Differentiate between oxidation and reduction
- Describe several ways to measure cell concentration.
- Describe how you would measure viable cell concentration.
- How do you read the volume that will be drawn up by a micropipetter?
- Why do we use a 'blank' in spectrophotometric assays?
- What is the significance of the linear portion of a standard curve?
- Interpret bar graphs and scatter plots
- What is the purpose of loading a standard during gel electrophoresis?

Definitions

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|-----------------------|---|------------------------------|
| • Mean | • Total Activity vs. Relative Activity | • Standard Error of the Mean |
| • Variance | • Differential Centrifugation | • Hemocytometer |
| • Standard Deviation | • Gel Electrophoresis | • Dimensional Analysis |
| • Dilution Factor | • Chemotaxis | • PubMed |
| • Serial Dilution | • Phagocytosis | • Best Fit Line |
| • Absorption Spectrum | • T-test | • Turbidity |
| • Net absorbance | • Standard Error of the Difference of the Means | • Chemoattractant |
| • Calibration Factor | | • Chemorepellent |
| • Conversion Factor | | • SDS-PAGE |

Calculations

- Calculate the mean
- Convert units (m, mm, μ m, nm)
- Prepare a solution of a specific molarity if given the mw of the solute
- Prepare a solution of a specific percent concentration (either w/w or w/v)
- Determine a dilution factor
- Use an objective lens calibration factor to determine size (in μ m) of cells/organelles
- Calculate total magnification
- Plot and interpret an absorption spectrum
- Calculate net absorbance
- Plot data as a bar graph or scatter plot (by hand)
- Draw a best fit line by hand
- Plot (by hand) a standard curve and use it to determine a conversion factor
- Determine the slope from a graph and know what the slope means (i.e. does it represent enzyme activity, relate concentration to absorbance, etc.?; what are the units of that slope?)
- Determine protein concentration from a graph or if given a conversion factor
- Calculate total enzyme activity and relative enzyme activity
- Determine the percent of enzyme activity recovered in a differential centrifugation experiment
- Calculate a chemotactic response
- Determine the size of molecules using gel electrophoresis (this includes plotting – by hand – the standards on semi-log graph paper)