Bio 18: Statistics for Scientific Data Analysis

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Course Description

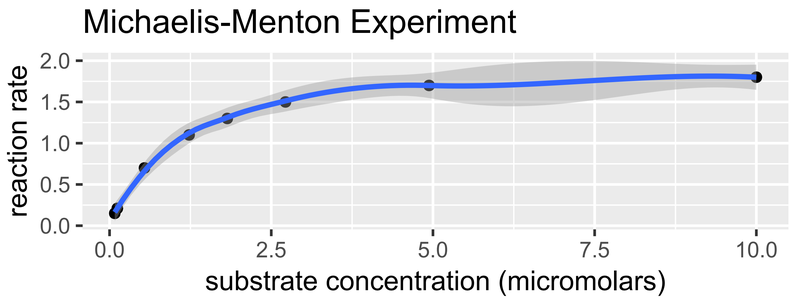
Analytical and computational methods for statistical analysis of data. Descriptive statistics, graphical representations of data, correlation, regression, causation, experiment design, introductory probability, random variables, sampling distributions, inference and significance

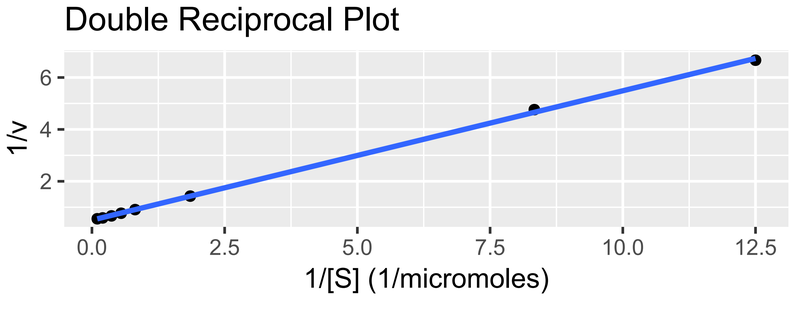
Program Learning Outcomes

1.
2. An ability to develop and critique hypotheses and to design experiments, models, and/or calculations to address these hypotheses.
3. The ability to use appropriate instrumentation and computational tools to collect, analyze, and interpret data.
4. The ability to read, evaluate, interpret, and apply numerical and general scientific information.
5.

Statistical Analyses

The reaction rates of the reaction S to P catalyzed by enzyme E were determined under conditions such that only very little product was formed.

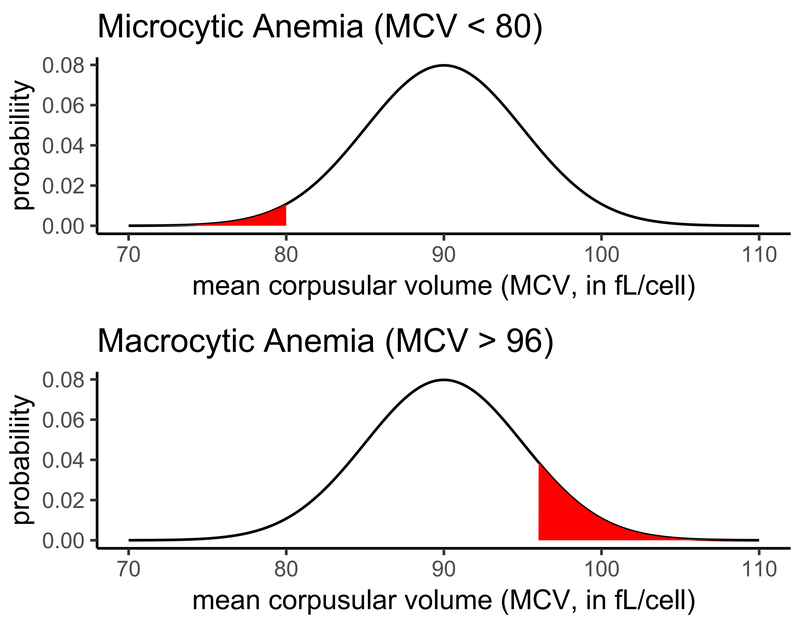




By realizing the linear relationship between the reciprocal variables, we can compute the maximum reaction velocity asymptote V_max and the Michaelis-Menton constant K_m.

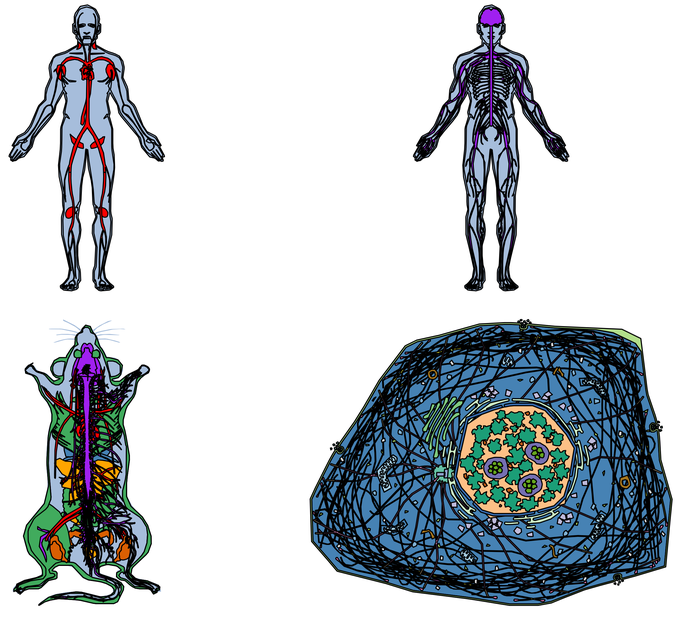
Probability Distributions

When we understand underlying distributions, we can seek proportions.



Anatomy

New to the Spring 2019 semester, we can now explore anatomy diagrams using the `gganatogram` package.

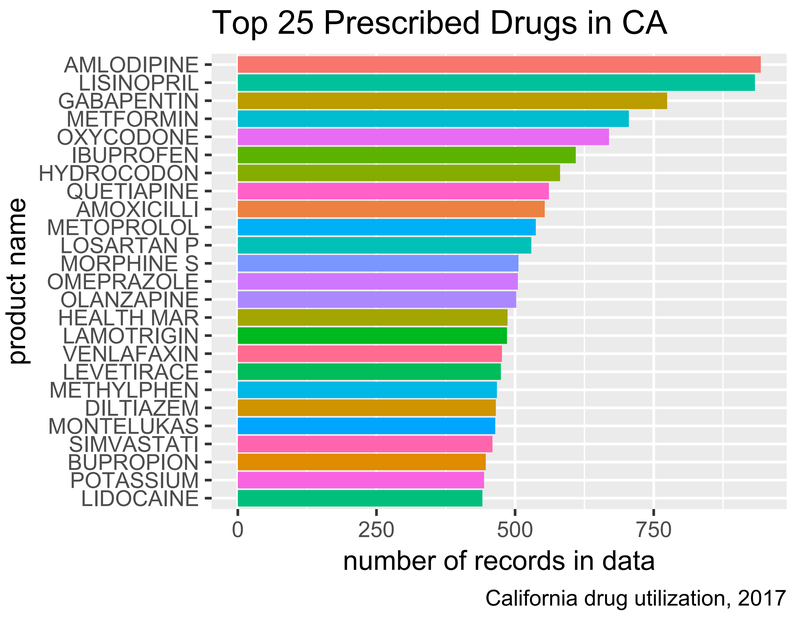


Exploratory Data Analysis Projects

Each semester, groups of students in Bio 18 compose a month-long project that builds skills in

1. finding and wrangling data
2. reporting exploratory data analysis
3. presenting work in a networking setting

Reports in past semesters included student-selected topics such as food deserts, cats and dogs, video game sales, fish and mercury, mental health, and more!



California drug utilization, 2017