

Experimental Design and Statistical Analysis for Microarray Experiments

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Olsen 311

Refreshments at 2:30, Talk from 3:00-4:00

Microarray data contains treatment and/or phenotype effects embedded in a sea of technical and biological noise. This seminar will demonstrate how to use proven statistical methods of experiment design and analysis of variance (ANOVA) to reliably identify biological effects of interest while controlling and removing noise due to biological and technical nuisance effects. Attendees will learn what ANOVA means, what it does, and how it can be used to isolate and remove unwanted technical and biological noise, clearly revealing the signals from the biological factors of interest. In addition, estimates of ratios and fold-changes will be examined from a statistical perspective. The impact of the assumptions of normality, equal variance, and independence will also be addressed for small sample sizes and for large studies as well. Finally, a variety of statistical visualizations will be used to interpret the results of the analysis.