STANFORD UNIVERSITY

DEPARTMENT OF STATISTICS

DEPARTMENTAL SEMINAR

4:15 p.m., Tuesday, June 26, 2001
Sequoia Hall Rm. 200
(Cookies at 3:45 in 1st Floor Lounge)

Bradley Efron
Department of Statistics
Stanford University
Stanford, CA 94305

Microarrays, Empirical Bayes Methods, and False Discovery Rates

In a classic two-sample problem we might for example use Wilcoxon's statistic to test for a difference between Treatment and Control subjects. The analogous microarray experiment would yield thousands of Wilcoxon statistics, one for each gene on the array, and we would be faced with a difficult simultaneous inference situation. We will discuss two inferential approaches to this problem: an empirical Bayes method that requires very little a priori Bayesian modeling, and the frequentist method of "False Discovery Rates" proposed by Benjamini and Hochberg in 1995. It turns out that the two methods are very closely related and can be used together to produce sensible simultaneous inferences.

(This is joint work with Rob Tibshirani and John Storey.)