

STATISTICS DAY APRIL 20, 2006

Distinguished Speaker Professor Peter Bickel



Professor of Statistics, University of California, Berkeley. He is past President of the Bernoulli Society and of the Institute of Mathematical Statistics, a MacArthur Fellow, a COPSS prize winner, and a member of the American Academy of Arts and Sciences and of the National Academy of Sciences

Discussant Steven Salzberg

Director, Center for Bioinformatics and Computational Biology, and Professor, Department of Computer Science, University of Maryland

Using Comparative Genomics to Assess the Function of Noncoding Sequences

We have studied 2094 NCS of length 150-200bp from Edward Rubin's laboratory. These sequences are conserved at high homology between human, mouse, and fugu. Given the degree of homology with fugu, it seems plausible that all or part of most of

these sequences is functional and, in fact, there is already some experimental validation of this conjecture. Our goal is to construct predictors of regulation (or potential irrelevance) by the NCS of nearby genes and further using binding sites and the transcription factors that bind to them to deduce some pathway information. One approach is to collect covariates such as features of nearest genes, physical clustering indices, etc, and use statistical methods to identify covariates, select among these for importance, relate these to each other and use them to create stochastic descriptions of the NCS which can be used for NCS clustering and NCS and gene function prediction singly and jointly. Of particular importance so far has been GO term annotation and tissue expression of downstream genes as well as the presence of blocks of binding sites known from TRANSFAC data base in some of the NCS. Our results so far are consistent with those of recent papers engaged in related explorations such as Woolfe et al (2004), Bejerano et al (2005) and others but also suggest new conclusions of biological interest.

**Lecture: 4:15 PM – 6:00 PM:
Physics Building, Room 1410**

**Reception: 6:00 PM – 6:45 PM:
Math Building, Rotunda**

Refreshments will be served

Lectures by Professors Bickel and Salzberg and the reception are open to the public without registration

Please visit UMCP Statistics Consortium web site at <http://www.statconsortium.umd.edu>
Please RSVP to rjeapen@survey.umd.edu