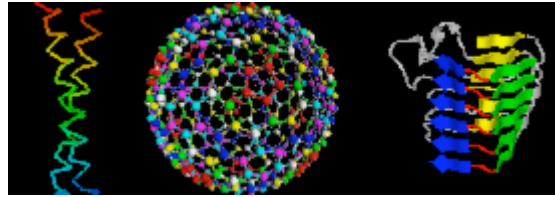


MIT
Department of Mathematics
& The Theory of
Computation Group
At CSAIL



Bioinformatics Seminar

Speaker: Jeffrey Chuang, Ph.D. Boston College

Title: Insights from Comparative Genomics: From Genome Organization to Regulatory Complexity

Date: Monday, 3 October 2005

Time & Location:

Refreshments: 11 am in the Theory of Computation Lab at MIT's Building 32, Stata Center Room G-575

Talk: 11:30 am the Theory of Computation Lab at MIT's Building 32, Stata Center, Room G-575

URL: <http://www-math.mit.edu/compbiosem/>

Abstract:

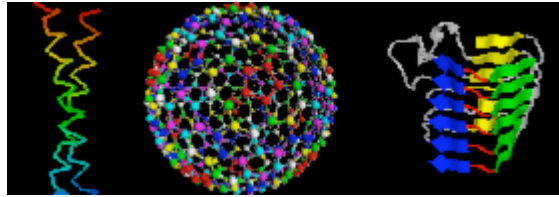
The neutral mutation rate is known to vary widely along human chromosomes, leading to mutational hot and cold regions. We provide evidence that categories of functionally related genes reside preferentially in mutationally hot or cold regions, the size of which we have measured. Our results show that genes are located nonrandomly with respect to hot and cold regions, offering the possibility that selection acts at the level of gene location in the human genome. In contrast to the heterogeneity of mammals, we find that neutral mutation rates in yeast are uniform genome-wide. We develop an approach that uses this uniform rate to estimate the amount of promoter sequence under purifying selection. This amount is ~30%, corresponding to roughly 90 bp for a typical promoter. Furthermore, using a hidden Markov model, we are able to separate each promoter into distinct high and low conservation regions. The separation of functionally conserved sequence from the neutral background allows us to estimate the complexity of yeast cis-regulation on a genomic scale.

The seminar is co-hosted by Professor Peter Clote of Boston College's Biology and Computer Science Departments and MIT Professor of Applied Math Bonnie Berger. Professor Berger is also affiliated with CSAIL & HST.

Massachusetts Institute
of Technology
77 Massachusetts Avenue
Cambridge, MA 02139

For General Questions, please contact kvdickey@mit.edu

MIT
Department of Mathematics
& The Theory of
Computation Group
At CSAIL



Bioinformatics Seminar

The seminar is co-hosted by Professor Peter Clote of Boston College's Biology and Computer Science Departments and MIT Professor of Applied Math Bonnie Berger. Professor Berger is also affiliated with CSAIL & HST.

Massachusetts Institute
of Technology
77 Massachusetts Avenue
Cambridge, MA 02139

For General Questions, please contact kvdickey@mit.edu