

COLLOQUIUM SERIES

TITLE:

Regulatory Region Analysis: Reverse Engineering Regulatory Circuits from the Bottom Up

Dr. Pavel Sumazin

Assistant Professor
Department of Computer Science
Portland State University

ABSTRACT:

Reverse engineering transcriptional regulatory circuits is one of the greatest challenges in genome science. We are working on a bottom-up approach: using transcription factors that bind DNA with sequence specificity together with their corresponding genomic sites to identify verifiable regulatory interactions. Regulatory interactions and their genomic witnesses in promoters and distal regulatory regions are the atomic components of any transcriptional regulatory circuit and they form a solid foundation for identifying higher-order interactions. While reverse engineering a complete vertebrate circuit remains a goal that is not likely to be reached during this decade, vertebrate circuit components that are responsible for regulating expression under particular conditions can be identified. In this talk we will describe computational methods to discover significant putative low-level interactions that regulate transcription under specific conditions, and results achieved by such methods. We will focus on the system biology problems and the biological questions that motivate them, formulate partial and complete solutions, and describe open problems whose solution is likely to leave a mark on the field.

BIO:

Pavel Sumazin graduated with a PhD in computer science from Stony Brook University in 2002, and did his post doctoral work in genetics at the Zhang lab at Cold Spring Harbor Laboratory from 2003 to 2005. He's been with the department of computer science at Portland State University since 2002. Pavel is interested in decoding chromatin information to reverse engineer transcriptional and post-transcriptional control circuits.

1:30 - 2:30pm, Friday, November 3, 2006
Dunn Hall 233, The University of Memphis
****RECEPTION @ 2:35PM IN DH COMMONS ROOM #336****

Colloquium funded with Academic Enrichment funds