

**Abell Endowment Distinguished
Lecture in Computer Engineering**
in conjunction with the
**Electrical and Computer Engineering Department
& Computer Science Department Seminar Series**



Dr. Thomas L. Casavant

University of Iowa

Professor, Departments of Electrical and Computer
Engineering, and Biomedical Engineering;

Roy J. Carver, Jr. Chair in Bioinformatics and
Computational Biology;

Director,

IU Center for Bioinformatics and Computational Biology

**“Highly Collaborative Bioinformatics in
Partnership with
Post-Genome Medicine”**

Monday, April 15, 2013

Reception: 10:30 a.m.

Lecture: 11:00 – 12:00 noon

Location: Computer Science Building Room 130

ABSTRACT

Since 1995, large-scale gene discovery and mapping focused on disease gene mutation discovery and understanding, have been at the heart of research efforts in the CLCG and CBCB at the University of Iowa. Together with faculty in the UI Carver College of Medicine, advanced computational, mathematical and high-performance networking techniques have been developed and deployed to help isolate genes that carry normal and diseased functions of interest in humans and model organisms. To date, these methods have been used to identify hundreds of disease-causing gene mutations, as well as disease-associated genetic loci and predictive and/or diagnostic genomic markers of human disease.

After presenting a broad overview of bioinformatics and computational genomics work at Iowa, some specific software solutions will be presented, including a recent phenotype-driven analysis of next-generation clinical sequencing data. Then, I will present a practical solution to the computationally demanding problem of identifying a class of genes known as Xenologs – genes found in a species, which arose from horizontal gene transfer. A multi-granularity parallel solution is presented which reduces the computation time of a comprehensive Xenolog search from years to hours of computational time. The talk will conclude with a discussion of unique challenges involved in bioinformatics training programs, and efforts at Iowa aimed at addressing this growing need.

SPEAKER BIOGRAPHY

Dr. Casavant has a B.S. in Computer Science (1982), and M.S. (1983) and Ph.D. (1986) in Electrical and Computer Engineering and has conducted extensive research and development in the design and analysis of parallel/distributed computing systems, algorithms, and tools. He is Professor of Electrical and Computer Engineering, Biomedical Engineering, Ophthalmology, and Genetics. He holds the Roy J. Carver, Jr. Chair in Bioinformatics and Computational Biology and has been Director of the UI Center for Bioinformatics and Computational Biology (CBCB) since its founding in 2002. Since 1994, he has been involved in research in computational methods and tools for Gene Discovery, Mapping, Transcriptome Analysis and Disease Gene Identification/Isolation. His research interests span the areas of computational aspects of genomics, molecular biology, and human genetics, as well as software engineering, high performance computing systems and networks.

To meet with the speaker, please contact Prof. H.J. Siegel at HJ@ColoState.edu.