



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Guest Seminar

Room 108 ,Math & CS Building II Building  
on Thursday, Mar 22, 2018  
at 12:30

Mark Borodovsky  
Georgia Tech, Atlanta, USA

Genome Decoding: Learning and Following Sequence Patterns

Abstract:

Genome-wide forces of mutation and selection create local and global sequence patterns that carry information on functional role of genomic DNA. I will describe algorithmic approaches to genome analysis that decode sequence patterns and identify features of structural gene organization and gene expression (e.g. leaderless transcription). The algorithms make unsupervised inference of the structure of underlying graphical model and its parameters.

The subsequently developed software tools were, among other applications, used at NCBI (Bethesda, MD) to annotate and re-annotate 2,500+ fungal genomes and 130,000+ prokaryotic genomes. Yet another algorithm was employed by DOE JGI (Walnut Creek, CA) to annotate the largest collection of metagenomes.

Speaker s short Bio

Mark Borodovsky, PhD, a Regents' Professor at the Joint Georgia Tech and Emory University Department of Biomedical Engineering and the School of Computational Science and Engineering. Since 1990 when he arrived to Atlanta from Moscow, Dr Borodovsky had also joint faculty appointments at the School of Biology and the School of Mathematics. Dr. Borodovsky is a Founder of the Georgia Tech Bioinformatics graduate program.