

IU Calendar

Event Information	SOIC Master Calendar IUB
Title: Yana Bromberg, Rutgers University	
Sharing: Public	
Start Time: Monday, April 09, 2018 12:00 PM	
End Time: Monday, April 09, 2018 1:00 PM	
Location: Luddy Hall	
Contact: Matthew Hahn	
Url: https://www.sice.indiana.edu/faculty-research/research/center-bioinformatics-research.html	
Free/Busy: busy	

Precision Health Initiative Colloquium

Speaker: Yana Bromberg, Department of Biochemistry and Microbiology, Rutgers

When: Monday, April 9, 2018, 12:00 pm

Where: Luddy Hall, Rm. 1106 (Dorsey Learning Hall)

Topic: Hiding in plain sight: finding new knowledge at the intersection of big data and precision medicine

Description:

Abstract: Precision medicine efforts propose leveraging complex molecular, medical and family history, along with other types of personal data toward better life. This ambitious objective will require advanced computational solutions. First and foremost, we need to better understand all parts of the system to define medically relevant causes and effects: how do particular sequence variants affect particular proteins and pathways? How do these effects, in turn, cause the disease? How do our bacterial inhabitants contribute to make our life better or worse? Toward this end, deeper understanding will not simply diffuse from deeper machine learning, but from more explicit focus on understanding protein function and its alteration that genetic and microbiomial variation brings. Our lab's novel computational methods leverage patterns in functional effects of genome variants to predict individual disease susceptibility. We develop and test our methods using the genetic and clinical data from patients affected by a range of complex disorders, including Crohn's disease, COPD, and Tourette disorder. We have also built novel methods for the functional analysis of microbiome data, which further elaborates on health and disease phenotypes. Between describing genetic predisposition and evaluating environmental (microbiomial) factors, our work motivates new experimentally testable hypothesis regarding the biological mechanisms of disease. It also provides a means for earlier prognosis, more accurate diagnosis, and the development of better treatments.

Biography: Dr. Yana Bromberg is an associate professor at the Department of Biochemistry and Microbiology, Rutgers University. She also holds an adjunct position at the Department of Genetics at Rutgers University and is a fellow at the Institute of Advanced Studies in the Technical University of Munich. Dr. Bromberg is a member of the Board of Directors of the International Society for Computational Biology and actively participates in the organization of the ISMB/ECCB conferences. Dr. Bromberg received her Bachelor degrees in Biology and Computer Sciences from the State University of New York at Stony Brook and a Ph.D. in Biomedical Informatics from Columbia University, New York. She is known for her seminal work on a method for screening for non-acceptable polymorphisms, or SNAP for short, which evaluates the

effects of single amino acid substitutions on protein function. Currently, research in the Bromberg lab is focused on the molecular functional annotation of genes, genomes, and metagenomes in the context of specific environments and diseases. The lab also studies evolution of life's electron transfer reactions in Earth's history (and as potentially applicable to other planets). This work has been recognized by awards from various agencies including the NSF, NIH, and a number of private foundations. Dr. Bromberg is frequently invited to talk about her research in conferences all over the world and has, to-date, co-authored over fifty peer reviewed scientific articles.

Poster

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