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Department of Medicine
Channing Division of Network Medicine

Channing Network Science Seminar

October 10, 2014, 11:00am @ 5th-floor Conference Room

Speaker: **John Platig, PhD**

Postdoctoral Fellow - Harvard University, Dana Farber Cancer Institute



Title: **Understanding Complex Traits with Complex Networks**

Abstract: Although we have amassed a wealth of genome sequencing on large populations, and we have identified a tremendous number of disease-associated genetic variants, identifying the functional impact of these variants remains a challenge. Here we present a complex networks method to identify groups of genetic variants (single nucleotide polymorphisms, SNPs) and place them into a relevant biological context. Using genotyping and gene expression data from lung tissue in 163 patients in a lower respiratory disease study, we cast statistically significant associations between SNPs and genes as links in a bipartite network. By identifying dense clusters within this network, we find certain clusters that are enriched for biological function, as well as disease-associated SNPs that drive the formation of these clusters. We believe this method may be generally useful for assigning function to SNPs based on the topology of SNP-gene association networks.

Bio: John Platig received his PhD in Physics from the University of Maryland. His thesis focused on the applications of complex network methods to biological data sets, with an emphasis on understanding how errors in edge identification affect network properties. In conjunction with his physics training, he worked with Louis Staudt at the NCI to identify potential therapeutic targets from a reconstructed gene regulatory network in Diffuse Large B Cell Lymphoma. In 2013 John started as postdoctoral fellow with John Quackenbush at Dana-Farber. He is currently working on network inference and clustering methods to better understand genetic and other factors that drive phenotypes.

hosted by: Peter Castaldi