



Stony Brook University

## Biomedical Informatics Department

*presents*



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## Health Research Opportunity Index Measures the Misalignment of Biomedical Needs and Resources

Friday, June 3rd, 2016 11:00 am- 12:00 pm

Pharmacology Seminar Room / Basic Science Tower / BST 8-180

#### Summary:

Even as population health improves and longevity increases around the globe, there will always be more biomedical problems than solutions. Strategically allocating limited resources to develop cost-effective treatments for diseases with the biggest socio-economic outcomes motivates many governmental and private funding agencies, pharmaceutical and biotech companies, clinicians and scientists. Unfortunately, due to the complexity of the biomedical research ecosystem, no systematic studies have been done to comprehensively survey the past allocation of resources (i.e., funding, attention from the scientific community, clinical development), or to guide future redistribution of resources for maximal societal benefit. In this talk, we introduce a disease-specific Research Opportunity Index (ROI) to gauge the imbalance between the burden of a particular disease and the associated resource allocation over time. By integrating high-dimensional data from multiple sources, we calculate the ROI for about 1,400 medical conditions over a 12-year period. We identify a few relatively low-prevalence conditions, such as breast cancer, attract most resources at the expense of dozens of more prevalent comparatively neglected diseases. But the overall research resources show improved alignment with various health needs over time. This work illustrates the power of using big data to optimize the biomedical research ecosystem and paves the way for a series of future work in this direction.

Dr. Lixia Yao received her Ph.D. degree in Biomedical Informatics from Columbia University in 2010. She then worked as a Principal Investigator at GlaxoSmithKline Pharmaceuticals prior to joining UNC Charlotte in 2013. She now leads a team of data scientists and healthcare professionals at the Health Informatics Lab, and collaborates with world-class scholars and clinicians. Dr. Yao's research focuses on mining, integrating, and transforming unstructured, incomplete, and noisy data (i.e., electronic health records and claims databases, literature, patents, and social media) into meaningful biomedical knowledge and healthcare IT applications.

**Questions? Please call the Biomedical Informatics Department at 631-638-2590.**