Genome and Systems Biology Degree Program
GSB student invited speaker

National Taiwan University and Academia Sinica

Lecture abstracts

Prof. Gregory C. Gibson
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"Transcriptomics for Translational Medicine"

While exome and genome sequencing are quickly finding their way into precision medical diagnosis of the causes of congenital abnormalities and tumor progression, applications of transcriptome profiling for personalized medicine are just beginning to emerge. I will discuss some theoretical aspects of how expression quantitative trait locus (eQTL) and transcriptional risk score (TRS) analyses have the potential to improve on genome sequencing for molecular pathology, then present three case studies: longitudinal profiling of peripheral blood in autoimmune disease, ileal biopsies to define high and low risk patients for Crohns Disease progression, and targeted RNASeq for discovery and/or validation of neuromuscular disease mechanisms.

"Omic Personality and the Genomics of Wellness"

As we enter the era of personalized medicine, there are infinite prospects for the application of genomic data for the purposes of maintenance of well-being. Yet it is unclear exactly how genomic data will be most effectively used to influence behavior, promote healthy lifestyles, and guide therapeutic strategies related to chronic disease. I will discuss how the combination of transcriptomic and metabolic profiling with genetic risk profiles derived from whole genome sequencing might be used to generate personalized genomic risk radars. The concept of "omic personality" reflects the idea that each person has a unique set of predispositions that are relatively constant over time, and disease should be regarded as perturbation away from the individual norm, rather than crossing a threshold or risk. I will also argue that genomic data should be palatable, actionable, reproducible, and teachable if it is to be useful, and hope to lead a discussion of the future of personalized genomic medicine.