Studying Chronic Obstructive Pulmonary Disease Using Integrative -Omics and Network Approaches

Abstract: Chronic obstructive pulmonary disease (COPD) affects millions of Americans and is characterized by airflow obstruction in the lung making it difficult for patients to breathe. Although COPD occurs predominantly in smokers, not all smokers develop the disease and there are still deficits in our understanding of the additional risk factors in smokers. In an ongoing collaboration with COPD researchers through the COPDGene cohort, I have been involved in several biomarker studies using a variety of -omics profiles (transcriptomic, proteomic, metabolomic). In this talk, I will present biomarker results, in addition to bioinformatics methods we have developed to integrate -omics profiles for identifying molecular networks associated with COPD phenotypes.

About the Speaker: Katerina Kechris is a Professor of Biostatistics and Informatics in the Colorado School of Public Health at the University of Colorado Anschutz Medical Campus in metropolitan Denver. She received her undergraduate degree in Applied Mathematics from the University of California Los Angeles, and her PhD in Statistics from University of California Berkeley. She has been in her current position since she completed a post-doctoral fellowship at the University of California San Francisco in Computational Biology. Dr. Kechris' research focuses on the development and application of statistical and computational methods for analyzing omics data sets, which pose challenges due to their high dimensional nature and complex structure. She is interested in developing new approaches to examine these data sets at multiple stages of the data cycle including processing, storage, analysis, modeling, and visualization. Dr. Kechris has several focus areas: (1) analyzing transcription factor and miRNA data to study the regulation of transcription and post-transcriptional processing, (2) examining the genetic and epigenetic factors regulating gene expression, and (3) integrating heterogeneous omics data sets. She collaborates with investigators studying Chronic Obstructive Pulmonary Disease in the COPDGene genetic epidemiology study, and substance use disorders using animal models.

Katerina Kechris, PhD
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165 DHLRI