

Weekly Colloquium, Spring 2017

Problems in the Biology of Complex Diseases

(CMM, MCB, GENE, IMB, PCOL 595H)

Friday, 9-11, Keating/Bio5 103

Human complex diseases (CD) such as asthma, cancer, cardiovascular and neurodegenerative diseases, are major biomedical challenges, because they are common but difficult to decipher. The complexity of these diseases is reflected by their phenotypic heterogeneity and likely results from intricate interactions among genetic, environmental and developmental factors that modify disease susceptibility and severity.

Understanding complex diseases is urgent, because these conditions impose a burden on our society. Yet, this goal cannot be achieved by isolated research disciplines. Rather, it requires a novel paradigm that successfully integrates basic and clinical research across multiple fields and translates mechanisms into phenotypes and phenotypes into treatments. This novel paradigm provides the underpinning for this Colloquium.

The Colloquium features speakers who are nationally and internationally renowned for their work on environmental biology, immunological and clinical phenotyping, microbiota, developmental biology, epigenetics, genetic epidemiology, population genetics, functional genomics of human and animal models. The theme and vision of the Colloquium are unique in that *the discussion focuses particularly on the biological components shared by ostensibly distinct complex diseases (for instance, asthma, neurodegenerative and cardiovascular diseases)*. The underlying assumption, supported by much emerging evidence, is that these shared components are features that define the mechanistic architecture of complex diseases as a group. The goal of the Colloquium is to provide a platform that will catalyze broad, expert discussions on these foundational topics, thereby fostering the emergence of a new experimental and conceptual paradigm in complex disease biology.

| WHEN | WHERE | WHO | WHAT |
|-------------|-------------------|---|--|
| Jan 13 | BIO5 103, 9-11 am | Donata Vercelli (UA) | Introduction and Overview |
| Jan 20 | BIO5 103, 9-11 am | Xingnan Li (UA) | Introduction to complex disease biology |
| Jan 27 | BIO5 103, 9-11 am | Eugene Bleecker (UA) | Pharmacogenetics |
| Feb 3 | BIO5 103, 9-11 am | Debbie Meyers (UA) | Life after GWAS |
| Feb 10 | BIO5 103, 9-11 am | Jeff Fredberg (Harvard SPH) | Cell jamming & shape shifting in asthma, cancer and development |
| Feb 17 | BIO5 103, 9-11 am | Carole Ober (U. Chicago) | –Omics Integration in Complex Diseases |
| Feb 24 | BIO5 103, 9-11 am | Raina Maier (UA) | The environmental microbiome |
| Mar 3 | Kiewit, 9-11 am | Erika von Mutius (LMU/UA) | Human Farming Studies and the Microbiome |
| Mar 10 | BIO5 103, 9-11 am | Donata Vercelli | Epigenetics and childhood asthma |
| Mar 17 | | <i>Spring Break</i> | <i>no class</i> |
| Mar 24 | BIO5 103, 9-11 am | Susan Lynch (UCSF) | The Microbiome in Complex Lung Diseases |
| Mar 31 | BIO5 103, 9-11 am | Jill Tardiff (UA) | Impact of genetic variants on heart muscle biophysics |
| Apr 7 | BIO5 103, 9-11 am | Linda Restifo (UA) | Spectrum of neurogenetic disorders |
| Apr 14 | BIO5 103, 9-11 am | Sergej Berdnikovs (Northwestern U) | Integrated biology of allergic disease: at the crossroads of the endocrine, developmental and immune systems |
| Apr 21 | BIO5 103, 9-11 am | Casey Romanoski (UA) | Genomics of gene regulation |
| Apr 28 | BIO5 103, 9-11 am | Donata Vercelli (UA) | Wrap-up |

For further information, please contact Donata Vercelli, MD, Colloquium Organizer (donata@email.arizona.edu)