In Fall 2015, the M2M Program welcomed its sixth cohort. Adding to the program are five new students from various PhD programs in the Laney Graduate School. The new students provided the following brief descriptions.

Rachel Cliburn
*Predictive Health and Society Track, Neuroscience Program*
Rachel studies the relationship between monoamine packaging dynamics and psychostimulants. Rachel uses neurochemical, behavioral, and population-based techniques to investigate how altering monoamine transmission could potentially treat psychostimulant abuse.

Sarah Connolly
*Population Processes and Dynamics of Infectious Diseases Track, Immunology and Molecular Pathogenesis Program*
Sarah’s research focuses on the virology of HIV transmission and early viral mutations that escape the immune response. Using epidemiologically linked serodiscordant transmission pairs she is able to examine factors affecting the earliest stages of HIV infection and identify key targets that could be applied to vaccine development.

Crystal Grant
*Public Health Genomics Track, Genetics and Molecular Biology Program*
Crystal’s research centers on characterizing the modifications made to histones and DNA that are associated with aging and how these modifications mediate disease development. She is also interested in characterizing population diversity in epigenome structure.

Nate Jacobs
*Population Processes and Dynamics of Infectious Diseases Track, Population Biology, Ecology, and Evolution Graduate Program*
Nate’s research is concerned with the contribution of immunity to the ecology of pathogens, both at the level of the individual host and across the broader host population. He is interested in how these processes influence pathogen evolution and the consequences of such evolution for medicine and public health.

Pratik Pimple
*Biomarkers and the Development of Acute and Chronic Diseases Track, Department of Epidemiology Program*
Pratik’s research is focused on assessing effects of mental and psychosocial stresses on cardiovascular disease (CVD) and understanding the mechanistic pathways behind these associations. He is also interested in identifying novel biomarkers which are associated with CVD and assessing their added predictive abilities for CVD incidence and CVD related mortality above the traditional Framingham risk factors.
We are excited to start another great academic year with the M2M program. We were fortunate to bring in five fantastic students representing diverse backgrounds and interests (see page 1) to join the existing M2M trainees. Our trainees consistently demonstrate that we have recruited the top students in their respective programs. In addition to our strong trainees, we have broadened the expertise of our engaged faculty, by having one new faculty join our program (see below).

Over the past year, our M2M students and faculty have had numerous accomplishments, including new and continued funding for research projects, successful proposal defenses, presentations throughout the world, and numerous publications (see page 3).

The launch of the Fall M2M 700 class began with an engaging discussion of a book that we read over the summer – “The Emperor of All Maladies: A Biography of Cancer” by Siddhartha Mukherje. M2M student, Alex Kotlar, led the discussion. Over the course of the semester we have a stellar line up of external speakers as well as M2M students presenting their research.

Over the next few months, several of the original cohort of M2M students – Kelsey (Alaine) Broadaway, Kathryn (Katie) Coakley, and Amanda Mummert – will be defending and moving on in their careers. It will be sad to see them leave, however, we are excited for their success and acknowledge how the M2M program has influenced their training to bridge population and laboratory sciences.
I heard about M2M during my Emory PhD recruitment weekend, before the Burroughs Wellcome Fund had agreed to fund the program. When Dr. Stephanie Sherman began describing the goals of M2M to me, I knew I had stumbled upon something really exciting, and I wanted to be a part of it. While there were several reasons Emory appealed to me, being able to join M2M was the definitive tipping point in my decision to come here.

Since then, M2M has done more to shape me as a scientist and intellectual thinker than any other program on campus. As a graduate student, it is so easy to become laser-focused on our dissertation work, and in doing so lose focus on how our work fits into the broader goal of understanding and improving human health. Thankfully, our weekly M2M seminars have introduced me to a more diverse and broad way of thinking about science. M2M routinely brings together molecular scientists, anthropologists, nutritionists, ecologists, epidemiologists, population geneticists, and medical doctors (to name just a few of the numerous disciplines associated with the program) to discuss human health. With such a diverse group, it has been impossible not to learn to see scientific problems through interdisciplinary eyes. What is more, M2M’s intimate training- and discussion-oriented seminars encouraged me to actively participate in scientific conversations. Through M2M’s seminars—and its financial support for me to attend several national conferences—I have become immeasurably more confident in public speaking, asking questions during seminars, and debating about complicated subjects.

In addition to training me as an interdisciplinary thinker, my dissertation work itself has developed into a far stronger body of work as a direct result of my participation in M2M. My work is in statistical genetics; without M2M, I would not have gotten my hands “dirty” with wet lab work and I would not have personally participated in patient recruitment of a large psychiatric genetics study. Both of these experiences have molded my dissertation; in fact, I never would have come up with the statistical method I have created for my third aim without these first-hand experiences.

As I prepare to finish my PhD, I know that M2M has developed me into a far more appealing job applicant than I would be otherwise. I have gained the confidence necessary to branch away from my advisors’ experiences and career paths, and in doing so, hope to continue applying the lessons I have learned through M2M to new research topics.
Student Book Options for Review

Following the M2M annual retreat on April 24, 2015, the faculty and students were provided the following books to poll on which one they wanted to discuss for the Fall 2015 semester. Comments are from student/faculty who nominated a book.

- Arthur Allen’s *The Fantastic Laboratory of Dr. Weigl – How Two Brave Scientists Battled Typhus and Sabotaged the Nazis* is a bit overhyped in the title, as it is in fact a serious account of the Nazi attack on typhus and the ways in which it backfired. I heard about this book on NPR last year, but have not yet read it. Described as an excellent and disturbing work, this book brings to light an extraordinary story of medical research amid horror.

- Martin J. Blaser’s *Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues*. Dr. Blaser gave a PBEE seminar a couple of years ago here. Joshua Shak, a former M2M student, also worked in his lab before joining the MD/PhD program here. Tracing one scientist's journey toward understanding the crucial importance of the microbiome, this revolutionary book will take readers to the forefront of trail-blazing research while revealing the damage that overuse of antibiotics is doing to our health: contributing to the rise of obesity, asthma, diabetes, and certain forms of cancer.

- Anne Fadiman’s *The Spirit Catches You and You Fall Down: A Hmong Child, Her American Doctors, and the Collision of Two Cultures*. A compelling anthropological study. The Hmong people in America are mainly refugee families who supported the CIA militaristic efforts in Laos. They are a clannish group with a firmly established culture that combines issues of health care with a deep spirituality that may be deemed primitive by Western standards.

- Dan Fagin’s Pulitzer prize winning *Toms River* is the true story of a small town ravaged by industrial pollution. There is not any Hollywood happy ending, which is all too often the reality of such investigations, but The New York Times has called it “a new classic of science reporting.” Overall, the narrative, history, epidemiology, and explanation of chemistry combine to make it a masterful work of journalism.

- Atul Gawande’s *Being Mortal* is beautifully written, compassionate, personal and critical about a major failing of our health care system. Admittedly, mortality is just a statistical issue, but the probability is sufficiently high to be relevant to all of us.

- Daniel E. Lieberman’s *The Story of the Human Body* gives us a lucid and engaging account of how the human body evolved over millions of years. He illuminates the major transformations that contributed to key adaptations to the body: the rise of bipedalism; the shift to a non-fruit-based diet; the advent of hunting and gathering; and how cultural changes like the Agricultural and Industrial Revolutions have impacted us physically. He shows how the increasing disparity between the jumble of adaptations in our Stone Age bodies and our environment and pursuit better lifestyles.

- Sandra Steingraber’s *Living Downstream - A Scientist’s Personal Investigation of Cancer and the Environment* has an interesting premise that may interest M2Mers. The author is a biologist afflicted by cancer as a young woman and her book is an interplay between a personal quest to establish the cause of her cancer and thorough scientific research. Alan Lightman, author of Einstein’s Dreams, called Sandra’s work “At once intimate and public, inspirational and frightening, essential reading for our time.”

Alex Kotlar led the book discussion at the first M2M seminar on August 31, 2015.

M2M Class Features Faculty Discussion Leaders in Spring & Fall Semesters 2015

- Dana Barr, PhD, Research Faculty, Environmental Health Sciences Department, Rollins School of Public Health
  - Prenatal exposure to pesticides and early indicators of neurodevelopment and

- Lyndsey Darrow, PhD, Assistant Professor, Department of Epidemiology, Rollins School of Public Health
  - Children’s Environmental Health

- Amy Kirby, PhD, Assistant Professor, Hubert Department of Global Health, Rollins School of Public Health
  - Exploring norovirus biology using human challenge models

- Jennifer Mullé, MHS, PhD, Assistant Professor, Epidemiology Department, Rollins School of Public Health
  - Chromosome, interrupted: 3q29 deletion and risk for neuropsychiatric phenotypes

- Gretchen Neigh, PhD, Assistant Professor, Department of Physiology, Emory School of Medicine
  - The Glucocorticoid Receptor: Nexus Among Systems in Health and Disease

- Sarah Peterson, PhD, Student Development, Laney Graduate School
  - Cancer Development

- Cassandra Quave, PhD, Assistant Professor of Dermatology and Human Health, Emory School of Medicine
  - Anti-infectives from nature

- Arshed Quyyumi, MD, FACC, Professor, Division of Cardiology, Emory School of Medicine
  - Stem Cells and Advanced Biomarkers for CVD Risks

- Eric J. Sorscher, MD, Georgia Research Alliance (GRA) Eminent Scholar and Hertz Professor in Cystic Fibrosis Research
  - Cystic Fibrosis Molecular Pathogenesis and Drug Discovery

- Malu G. Tansey, PhD, Associate Professor of Physiology, Emory University School of Medicine
  - Cystic Fibrosis Biomarkers and the Development of Acute and Chronic Diseases

- Viola Vaccarino, MD, PhD, Professor and Chair, Department of Epidemiology, Wilton Looney Chair of Research, Rollins School of Public Health; Professor, Department of Medicine, School of Medicine
  - Stress and Heart Disease

- Jorge Vidal, PhD, Msc, Assistant Research Professor; Hubert Department of Global Health, Rollins School of Public Health
  - Nasopharyngeal carriage of the pneumococcus: epidemiology and molecular mechanism(s) of persistence

Siddhartha Mukherjee’s *Emperor of All Maladies* was the book selected for summer reading. It is a magnificent, profoundly humane “biography” of cancer—from its first documented appearances thousands of years ago through the epic battles in the twentieth century to cure, control, and conquer it to a radical new understanding of its essence. It is so much more than an epic history of cancer, although it is that as well. The author, an oncologist, frames it as a biography, “an attempt to enter the mind of this immortal illness, to understand its personality, to demystify its behavior.” This book weaves together history, medicine, and laboratory research while maintaining a personal element as well. It is impressive in a literary sense as well. Also, there is a 3 part PBS documentary available based on the book.

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