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Dear Epidemiology trainee,

Welcome to the Department of Epidemiology!

We have assembled this Student Handbook to ensure that you enter fully into the rich life of the Epidemiology community as quickly as possible and that your education and development proceed smoothly from start to finish.

In these pages you will find information about our intellectual structure and our public health vision, and hear from recent graduates who share their training experiences to demonstrate the full range of possibilities open to you. You will get a snapshot of our array of communications and social media outlets, and an invitation to play an active role in them. You will learn about the EPIC Fund, to which you can apply for funding to cover ancillary research and training opportunities. You will hear from the Offices of Student Affairs and Career Services about what they offer and how to take advantage of their services. Perhaps most critical, you will find both the Master’s and Doctoral Guidelines, which provide comprehensive information about degree requirements, course offerings, school and university polices, the master’s practicum and thesis, and the doctoral dissertation. A directory of our faculty, complete with research area and contact information is included for quick reference, as well as a brief guide to what the campus and the city have to offer.

There is always a lot happening in the department — seminars, grand rounds, symposia, poster sessions, social events, and more — and you will get the most out of it if you participate as much as possible. To keep tabs on news and events, follow the department on Facebook (facebook.com/cuepidemiology) and Twitter (@cuepidemiology) and check our events calendar at epi-events.org.

I hope that the information in the Handbook will help you to optimize your educational experience in the department. I look forward to seeing and speaking with all of you over the course of your time with us.

Once again, a warm welcome to our community.

Neil W. Schluger, MD
Interim Chair
Department of Epidemiology
Strategic Vision for Epidemiology

The Columbia University Mailman School department of epidemiology is one of the oldest and most distinguished departments of epidemiology in the world. Building on a core of excellence in scholarship and teaching, the department seeks to continue innovating and evolving to better meet emerging challenges in a changing world.

With that in mind this document aims to clearly articulate a strategic direction for the department, serving as the intellectual scaffolding on which department activities, from research, through education, and translation of our scholarship, can build. This is not intended to be a ‘final document’, but rather a ‘living document’, to be updated, and improved with the passage of time. ¹

Scholarship

We are committed to understanding the cells-to-society determinants of global population health. In keeping with the goals of an epidemiology of consequence we explicitly intend our work to inform prevention efforts that improve the health of populations. We are interested in putting our science to work in the public arena, translating findings to policy and implementation scale-up.

We are dedicated to developing new and novel methods, and will adopt methods from other disciplines that can fruitfully inform our quantitative population health science. We are willing to embrace a broad range of approaches and to build partnerships with complementary disciplines to achieve these ends.

We aspire to explore and allow new ways of thinking to flourish, to catalyze cross and inter-disciplinary work, and to articulate frameworks that comprehensively explain the production of health and can galvanize effective population health practice.

Education

We aim to innovate in education and to foster an environment of educational excellence. We aim to engage in the teaching of epidemiologic science to a diverse body of students, to use multiple educational modalities, and to create the spaces for the continuing exchange of ideas that promote the field and its reach. We are committed to training students who will be leaders in quantitative population health science and in public health practice. We aim for our students to learn practical skills and to be prepared for a lifelong engagement in knowledge discovery, translation, and implementation.

We aspire to an inter-disciplinary education for our students, grounded in the basic skills of epidemiologic science but encouraging the embrace of complementary quantitative methods that can help answer key population health questions. Our education is embedded within a model of experiential learning and active mentorship that flexibly encourages students to function at their maximum capacity.

¹ This document builds on a vision first articulated through faculty-wide discussions in 2010. This evolving vision emerged from a department leadership retreat in December 2013 with subsequent iterations through broad faculty-wide consultation through the first half of 2014.
Translation

We aim to identify the causes of population health so that we may improve population health. To that end the department aspires to translate scholarship to implementation in an effort to contribute to the creation of conditions that make people healthier. We aim to make our scholarship accessible so that it may inform and influence the health sciences, the public health conversation, and the production of population health.

We are committed to translating our science to the broadest audience possible, including public health stakeholders and non-traditional actors who have the capacity to influence the health of populations. To this end we aim to solicit input from thinkers from diverse spheres of influence, to form strategic partnerships, and to catalyze advances in policy and practice that improve public health.
The Cluster Structure in Epidemiology

The department is organized into six clusters. The clusters serve as catalysts for scientific discussion among faculty and trainees through a structured program of formal interaction that encourages the development of innovative projects and programs. All doctoral students are assigned to a cluster, and all master’s students are encouraged to join a cluster and attend cluster events.

**Chronic Disease Epidemiology**

**Cluster leader:** Mary Beth Terry, PhD

Research in the chronic disease epidemiology cluster addresses the etiology, prevention, distribution, natural history, and treatment outcomes of chronic health disorders, including cancer (particularly breast, colon, lung, prostate, ovary and pancreas), cardiovascular disease, diabetes, gastrointestinal and pulmonary disease, and obesity.

Research within this cluster extends from our local Northern Manhattan community to US and international cohorts. Our faculty have expertise across a range of epidemiologic study designs including follow-up, family-based, and population-based studies. Our studies integrate approaches across many different disciplines and specialties including molecular epidemiology, lifecourse epidemiology, social epidemiology, and health outcomes.

Our cluster maintains and continues to expand innovative collaborative research and training programs. Primary Columbia collaborators include the Herbert Irving Comprehensive Cancer Center; the departments of Environmental Health Sciences, Sociomedical Sciences, Biostatistics, Medicine, Neurology, Urology, and Psychology; and the School of Dental Medicine. We benefit greatly by drawing on expertise from many of our faculty in the cluster who share appointments in other departments across Columbia University Medical Center.

The cluster holds a monthly seminar, sponsors a highly popular certificate in chronic disease epidemiology for MPH students, and teaches several courses open to the department.

**Infectious Disease Epidemiology**

**Cluster leader:** Wafaa El-Sadr, MD, MPH, MPA

Infectious diseases continue to have a substantial impact on the health of communities around the world. From the global HIV and tuberculosis (TB) epidemics, to the threat of resistant bacteria, to the challenge of emerging and newly identified pathogens. All compel the need for new methods to detect such pathogens, to understand their pathogenesis, and to devise effective interventions for their prevention and control.

Emerging molecular methods are critical for future efforts. Traditional case control and cohort studies will be necessary to define the role of such pathogens in disease causality. In addition, a deepening of the understanding of the complexity of factors that determine risk and susceptibility to various infectious diseases is necessary for the design of appropriate interventions. Moreover, exciting opportunities exist at the interface of communicable and non-communicable diseases, offering new and expanding research agendas.
The infectious disease epidemiology cluster encompasses domestic and global work on the epidemiology of emerging and re-emerging infections, global infectious disease threats, disease surveillance, disease detection, development of vaccines and other prevention methods, clinical trials, and the role of infectious pathogens in the pathogenesis of chronic non-communicable diseases (such as cancer and cardiovascular disease). The focus is broad, ranging from the search for novel pathogens using advanced molecular techniques to longitudinal population based studies to define transmission dynamics and spectrum of disease and survival. Approaches are employed in an interdisciplinary fashion to define etiology, pathogenesis, transmission, and prevention/treatment potentials.

The infectious disease epidemiology cluster is home to the faculty of several centers and includes several large-scale projects. Affiliated faculty members play a substantial role in the intellectual life of the cluster, conducting collaborative research, organizing interdisciplinary seminars, and providing mentorship to students and junior faculty.

The cluster holds a monthly seminar, sponsors a highly popular certificate in infectious disease epidemiology, and teaches several courses open to the department.

**Injury Epidemiology**

*Cluster leader:* Guohua Li, MD, DrPH

The Injury Epidemiology Cluster aims to improve population health by reducing the morbidity and mortality from unintentional and intentional injuries.

The newest of the six administrative and intellectual core organizing units in the Department of Epidemiology, the injury cluster was catalyzed by the launch of the Center for Injury Epidemiology and Prevention at Columbia, one of 11 injury control research centers funded by the Centers for Disease Control and Prevention (CDC). The cluster brings together a group of faculty with diverse expertise in epidemiology, biostatistics, health policy, engineering, emergency medicine, pediatrics, surgery, rehabilitation, and geriatrics to address unintentional and intentional injuries across the life span.

The objectives of the injury cluster are to integrate expertise and other resources across academic divisions, facilitate interdisciplinary collaboration, forge diverse partnerships, and accelerate the advancement of science and the translation of scientific discoveries to reduce the incidence and severity of injury at the community, regional, state and national levels.

The cluster sponsors an annual conference on translating injury research into effective prevention, a new peer-reviewed open access journal, Injury Epidemiology, in partnership with Springer Science and Business Media, and a certificate in injury prevention and control for MPH students. The cluster also hosts two seminar series: a university-level seminar that provides a forum for cross-pollination of ideas and programs between local professionals and academicians, and a monthly cluster seminar to advance the scientific discourse on contemporary topics related to injury research and prevention.
Lifecourse Epidemiology

Cluster leader: Ezra Susser, MD, DrPH

Lifecourse epidemiology is the study of antecedent exposures and later health outcomes, taking into account the pathways between the two and the evolution of health and disorders over time. Our faculty members examine biologic, genetic, social, and environmental determinants of health across the lifecourse, carrying out studies in numerous large birth cohorts around the globe. Virtually all of the work in the cluster involves interdisciplinary collaborations with faculty across the Department of Epidemiology, the Mailman School of Public Health, and the Columbia University Medical Center.

Primary collaborators include the Imprints Center for Genetic and Environmental Lifecourse Studies, the Institute of Human Nutrition (College of Physicians and Surgeons at Columbia), and the Division of Developmental Neuroscience (New York State Psychiatric Institute).

Training the next generation of lifecourse epidemiologists is critical to the success of our mission. We see our long-term research goals in two broad categories: first, the further integration of biologic, genetic, epigenetic, and social contextual measures into lifecourse studies, and second, the development of innovative analytic approaches to studying exposure trajectories and outcomes measured over the lifecourse. We also aim to build capacity and support lifecourse studies in low and middle income countries.

The cluster holds a monthly seminar and teaches several courses open to the department.

Psychiatric/Neurological Epidemiology

Cluster leader: Ruth Ottman, PhD

The psychiatric and neurological epidemiology cluster is an intellectual community of faculty and students in the Department of Epidemiology who share an interest in understanding the causes, origins, progression, and consequences of psychiatric and neurological disorders.

Our research and training program is committed to a population-based perspective that takes a ‘cells to society’ approach to investigate how environmental factors ‘get under the skin’ and shape psychiatric and neurological disorders over the lifecourse. We aspire to reduce the global public health burden of psychiatric and neurological disorders through making our findings accessible to the public and in using our findings to develop effective population-wide and clinical interventions.

Students in this cluster benefit from working with faculty who are leading scholars in neurodevelopmental science and developmental psychopathology; stress and adversity, trauma, and stigma; genetic epidemiology; substance use and abuse; systems science; global mental health; mental health services research; and the etiology, treatment, and prevention of neurological disorders. Students also benefit from our long collaborative history with the New York State Psychiatric Institute, the Department of Psychiatry, the Neurological Institute, the Gertrude H. Sergievsky Center, and the School of Social Work and have the opportunity to work with faculty across all department clusters.

The cluster holds a monthly seminar and teaches several courses open to the department.
Social Epidemiology

Cluster leader: Andrew Rundle, DrPH

The social epidemiology cluster seeks to understand the ways in which social, psychological, political, cultural, and economic circumstances influence our chances for a healthy life. We combine theory from the social sciences with rigorous epidemiological methods so that we can illuminate the connections between social factors and health and use what we find to improve health. Within this broad frame we have a special interest in the connections between social inequalities and health inequalities.

The cluster has three aims. First, we aim to produce knowledge about the influence of social circumstances on health with a special emphasis on social inequalities in health. Second, we aim to train and mentor a new generation of scholars and practitioners who have the capacity to conduct rigorous research on the role of social factors in health. Third, we aim to leverage what we learn to improve population health and reduce health inequalities locally, nationally, and across international borders.

Anchored upstream from the more proximal determinants of disease, research in the social epidemiology cluster engages collaboratively with the other epidemiology clusters in the department, so that the full cascade of influences on health from social conditions to biology can be understood. The social epidemiology cluster builds on its connections with the Robert Wood Johnson (RWJ) Health and Society Scholars Program and the Center for the Study of Social Inequalities and Health. The RWJ program facilitates interdisciplinary collaborations between the biological and social sciences and has dramatically increased contacts between researchers at the Mailman School of Public Health and those elsewhere across multiple disciplines. Students benefit from close ties to the Departments of Sociology and Psychology and the School of Social Work. The Center for Social Inequalities and Health provides a rigorous intellectual basis for the study of health inequalities and support for junior faculty interested in this area, sponsors speakers, seminars, and events that highlight the importance of social inequalities for on the production of health inequalities, and keeps members current on critical issues through a lively journal club.

The social epidemiology cluster sponsors a monthly cluster seminar, a certificate in social determinants of health for MPH students (in collaboration with the Department of Sociomedical Sciences), and offers several courses open to the department.