



The Public Health Genetics Interdepartmental Concentration

The mission of the Public Health Genetics Interdepartmental Concentration (PHGIC) at the University of Michigan School of Public Health (UMSPH) is to provide students with the knowledge and skills to understand and impact problems, programs, policies, and practices that are altering public health in the context of advances in genetics. While all students are invited to incorporate an analysis of public health genetics in their program of study at the UMSPH, the PHGIC offers a formalized curriculum in this area.

The PHGIC is a competitive program with limited enrollment for students pursuing a graduate degree in one of the five departments at the UMSPH. The PHGIC is not a degree-granting program. The UMSPH believes that public health genetics is an inherently cross-disciplinary field of study that requires experience in multiple public health disciplines. Therefore, the PHGIC is done in conjunction with a departmental graduate degree program at the UMSPH. Completion of the PHGIC requirements is indicated on a graduate's transcript and on a certificate of completion.

The PHGIC curriculum is designed to accommodate students *with* and *without* prior academic preparation in genetics. This is accomplished through two "tracks." Track A is for students with no, or a limited, background in genetics, while Track B is for those students with more substantial genetics preparation. A more detailed description of each track is provided at www.sph.umich.edu/genetics/.

To complete the PHGIC a student must:

- Maintain a B average or better in their coursework
- Complete the three PHGIC core classes in their appropriate track
- Select and complete a course from the list of PHGIC electives
- Complete the PHGIC seminar

Please see the back of this flyer for an introduction to the courses at UMSPH relating to the PHGIC. In addition to course requirements, students are encouraged to design and complete an optional internship that meets PHGIC criteria, and attend PHGIC-sponsored events during the school year (including speakers, presentations, receptions, dinners, etc.).

The PHGIC coursework can typically be completed as part of the usual two year program of students enrolled in a 60-credit departmental masters-degree program, without adding additional credit hours, by using their program's elective credits. Students pursuing a 42-credit departmental degree may apply to the PHGIC, but should anticipate having difficulty fitting the PHGIC requirements into 42 credits of coursework.

Students apply to the PHGIC as a supplement to their application to a graduate degree program. Applications can be obtained at www.sph.umich.edu/admissions/application_forms or by contacting the Office of Interdepartmental Concentrations at the email address or numbers below. After a student is accepted to a departmental graduate degree program at the UMSPH, their PHGIC Application Supplement is reviewed for admission by PHGIC faculty. Acceptance, waitlist, or denial to the PHGIC does not affect acceptance to a student's UMSPH departmental graduate degree program in any way.

"In this era of rapidly unfolding advances in genetics, public health professionals have a significant role in translating this new knowledge into improved health outcomes. Knowing which populations have a genetic variation that puts them at risk for various diseases will help us to develop and implement public health interventions that will improve outcomes and reduce health care costs. We must provide guidance to policymakers as they address the new issues that will require legislation to preserve confidentiality, provide protection against discrimination based on genetic information, and regulate commercialized genetics products and services. In order to achieve these goals, whether policy and management, behavior and education, epidemiology, biostatistics, or environmental health, we must all contribute our expertise to create an informed public health workforce."

Sharon Kardia, PhD, Director, Public Health Genetics Interdepartmental Concentration

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More information about the PHGIC is also available at
<http://www.sph.umich.edu/genetics/>

The UMSPH offers a wide range of courses relating to public health genetics including the following. For a comprehensive list of courses involved in the PHGIC go to www.sph.umich.edu/genetics/

BIOS 666 "Statistical Models in Human Genetics"
BIOS 830 "Advanced Topics in Biostatistics"
BIOS 866 "Advanced Topics in Genetic Modeling"
EHS 504 "Genes and the Environment"
EPID 511 "Introduction to Public Health Genetics"
EPID 513 "Applications in Public Health Genetics"
EPID 516 "Genomics in Epidemiology"
EPID 515 "Genetics in Public Health"

EPID 565 "Research in Hospital and Molecular Epidemiology"
EPID 582 "Molecular Epidemiology"
EPID 621 "Cancer Epidemiology"
EPID 659 "Applications of Epidemiology"
HMP 517 "Issues in Public Health Genetics"
HBEHED 610 "Ethical Considerations for Health Professionals"
HG 541 "Gene Structure and Regulation"
HG 542 "Molecular, Cellular and Population Genetics"

Faculty and Research

The PHGIC is directed by Sharon Kardia, PhD, with a committee of School of Public Health faculty members. In addition to providing education and training, the PHGIC faculty are nationally and internationally recognized for excellence in their fields of expertise.

Sharon Kardia, PhD

Associate Professor, Epidemiology

Director, Public Health Genetics Program

Dr. Kardia's research focuses on the genetic epidemiology of cardiovascular disease and its risk factors, particularly in gene-environment and gene-gene interactions, and in developing novel analytical strategies to understand the complex relationship between genetic variation, environmental variation, and risk of common chronic diseases

Michael Boehnke, PhD

Professor, Biostatistics

Pharmacia Research Professor of Biostatistics

Dr. Boehnke's research emphasizes the development and application of statistical methods for human gene mapping, in which attempts are made to determine the chromosomal location of genes that predispose for genetic diseases such as diabetes, glaucoma, and schizophrenia

Toby Citrin, JD

Adjunct Professor, Health Management and Policy

Director, Office of Community-Based Public Health

Professor Citrin has played a significant role in developing and coordinating school-wide community-based public health programs to broaden and deepen the interchange between SPH faculty and students and leaders and workers in community-based public health and social service organizations. He is also Principal Investigator on a National Institutes of Health grant to develop policies dealing with the influence of genetic technology on reproductive decision making

Stephen B. Gruber, MD, MPH

Assistant Professor, Internal Medicine, Medical Genetics

Assistant Professor, Epidemiology

Dr. Gruber's research focuses on genetic epidemiology, cancer genetics, low-penetrance susceptibility alleles, environmental modification of genetic susceptibility, colorectal cancer, melanoma, and molecular epidemiology

Peter Mancuso, PhD

Assistant Professor, Environmental Health Sciences

Dr. Mancuso's research focuses on factors that influence alveolar macrophage phagocytosis and killing of *Klebsiella pneumoniae*, a common cause of pneumonia, employing animal models of bacterial pneumonia, transgenic mice, and human and animal primary cell culture to explore the role of inflammatory mediators in innate host defense mechanisms to determine the impact of nutritional deficiencies on host defense mechanisms in bacterial pneumonia

Carl F. Marrs, PhD

Associate Professor, Epidemiology

Dr. Marrs' research focuses on two different research areas:

The role of virulence characteristics of bacterial agents (especially *Escherichia coli*) in human urinary tract infections (UTIs), and the genetics and regulation of *Haemophilus influenzae pili*.

Dawn Misra, MHS, PhD

Associate Professor, Health Behavior and Health Education

Director, Interdepartmental Concentration in Reproductive and Women's Health

Dr. Misra's research focuses on the social and biomedical factors that influence perinatal outcomes and that may explain the increased risks of infants born to poor and minority women.

Elizabeth Petty, MD

Associate Professor, Human Genetics

Associate Professor, Internal Medicine

Dr. Petty's research focuses on molecular genetic mechanisms underlying tumorigenesis with a focus on identifying and characterizing the roles of novel cancer genes. Also clinical genetics research projects related to the cost-effect and ethical application of molecular genetic tests in medicine.

Patricia Peyser, PhD

Professor, Epidemiology

Dr. Peyser's research focuses on genetics and epidemiology, the contribution of inherited differences among individuals to the prediction of diseases, and studies of diseases and traits that aggregate in families

Julia Richards, PhD

Associate Professor, Ophthalmology

Associate Professor, Epidemiology

Dr. Richards research focus is the mapping, cloning and characterizing genes involved in inherited eye diseases, including prevalent complex diseases such as glaucoma as well as some simple Mendelian disorders that affect the eye