



EMORY

L A N E Y  
GRADUATE  
S C H O O L

PhD in Environmental  
Health Sciences



EHS students are trained to utilize analytical methodologies related to exposure science, biological mechanisms of susceptibility and disease, and environmental determinants of population health.

Public Health

## PhD in Environmental Health Sciences

The Environmental Health Sciences program provides students with transdisciplinary training to better understand the impact of the environment on human health and disease. The program strives to produce a unique cadre of future leaders in the field of environmental health sciences who have expertise in both laboratory – and population-based research.

Environmental Health Sciences students have a wide range of unique opportunities for research and education through the participating departments across campus and the numerous health agencies affiliated with the program. Our program is designed around three major areas of Environmental Health Sciences research: exposure science, biological mechanisms of susceptibility and disease, and environmental determinants of population health. Students will receive training in each of these areas so that they can identify and solve interdisciplinary research problems. It is likely that the topic of dissertation research will span one or more of these areas, but it is possible that a student's research will focus on a particular topic within one of the three major areas.

### Expert Faculty

Faculty members in the Environmental Health Sciences Program utilize a wide range of tools to address problems central to the field, including exposure assessment, toxicology, disease ecology, and environmental epidemiology. Faculty research interests include infectious diseases, cardiovascular and respiratory diseases, cancer, development, neurological disorders, reproductive outcomes and the impact of climate change on human health and disease. The faculty have particular strength in pesticide, air pollutant and waterborne exposures. Several departments in multiple schools participate in the program making this a truly University-wide enterprise. Departments from the Rollins School of Public Health include: Environmental Health, Epidemiology, Global Health, and Biostatistics and Bioinformatics; from the College of Arts and Sciences: Environmental Studies; and from the School of Medicine: Pharmacology, Biochemistry, Medicine, and Pediatrics. Faculty members within the Environmental

### Professional Development

Laney offers a range of programs that encourages students to develop their professional skills, engage with broader professional communities, and prepare for their careers.

Visit [gs.emory.edu](http://gs.emory.edu) to learn more.



Health Sciences Programs are leaders in the field and hold prestigious Center and Training Grants from the National Institute of Environmental Health Sciences and the Environmental Protection Agency. The wide range of faculty expertise provides a wealth of research experiences for incoming students.

### Outstanding Collaborations

Environmental Health Sciences faculty members have numerous ongoing collaborations with various public health organizations. These include:

- Centers for Disease Control, especially the National Center for Environmental Health, the Agency for Toxic Substances Disease Registry, and the National Institute of Occupational Safety and Health
- The Environmental Protection Agency
- Georgia Department of Public Health
- Georgia Environmental Protection Division
- American Cancer Society
- CARE

### Interdisciplinary Program

Each student will be expected to have a working knowledge of each of the three major areas, which will facilitate novel research projects that span multiple approaches and disciplines.

**EXPOSURE SCIENCE:** Students will be able to assess the presence and fate of chemical and microbiological contaminants in the environment and their impact on human exposures. This competency will include training in environmental chemistry, environmental microbiology, environmental exposure assessment and the use of exposure biomarkers.

Students will learn basic theory behind and practical methods for sampling and analysis of chemical and microbiological contaminants in environmental (air, water, soil, food, etc.) and biological (exhaled air, blood, urine, etc.) media. A central objective of this competency will be the thorough understanding of applied field sampling techniques for characterizing environmental contaminants across various media and human exposure pathways. Students will be trained in direct methods of assessment, including source and microenvironmental sampling, bioassays and other techniques as well as indirect methods including the use of modeling and questionnaire surveys. Students will also be trained in laboratory analysis methods of field samples and in the interpretation of the laboratory data, including analytical quality control/quality assurance procedures and evaluation of the uncertainties associated with these data. Students will be expected to be able to communicate their results to a public health audience and apply the techniques within a human health effects setting.

**BIOLOGICAL MECHANISMS OF SUSCEPTIBILITY AND DISEASE:** Students will be able to assess the impact of environmental insults on human health. This competency will be focused on mechanisms of toxic action and impacts on human physiology.

The goal of this competency is to provide the student with a basic understanding of human physiology, factors that affect vulnerability to chemical exposures and infectious agents, and pathophysiological consequences and assessment (biomarkers) of such exposures. Historically, many of these concepts have been taught under the rubric of toxicology, but are generally more focused on chemical exposures. Since environmental exposures can also include such things as infectious agents, allergens, mold toxins, noise and other stressors, it is necessary to broaden the scope for our students. This knowledge is important for understanding why certain populations, such as children and the elderly, may exhibit increased vulnerability to environmental hazards.

**ENVIRONMENTAL DETERMINANTS OF POPULATION HEALTH:** Students will be able to assess the impact and risk of various environmental exposures on human populations (from small clinical populations to large general populations).

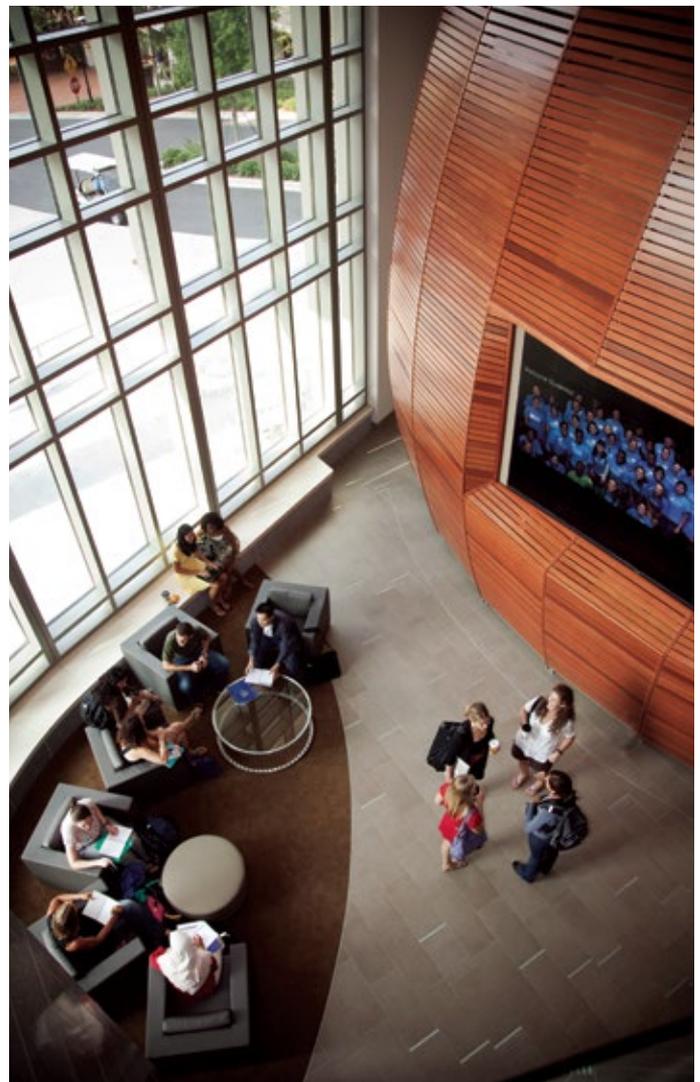
This component will be focused on how environmental exposures impact human health on a population level, including proximal exposures to environmental toxicants and infectious agents, as well as distal environmental determinants like climate change, the built environment and environmental reservoirs of infectious disease. Epidemiologic studies of environmental exposures will be considered, including an understanding of the quality of exposure assessment required to convincingly demonstrate exposure-disease relationships. Risk assessment, which integrates data on external exposure, internal dose, and disease will be stressed, including the potential policy implications and cost-benefit issues. Advanced and emerging risk assessment tools will be emphasized, including air and water dispersion models, statistical competency in geospatial and mathematical modeling, remote sensing and environmental forecasting.

### Environmental Health Sciences Curriculum

Courses in research design and management, laboratory and field methods in exposure science, environmental epidemiology, molecular toxicology, public health ecology, and risk assessment are required. Students also participate in problem-based learning courses on key topics in environmental health sciences and the Teaching Assistant Training and Teaching Opportunity program (TATTO) administered by the Laney Graduate School. Students are required to complete written and oral comprehensive exams near the end of their second year. It is expected that all coursework will be completed at that time allowing the students to focus exclusively on their dissertation research. Students are required to complete and defend a dissertation under the direction of their research advisor and dissertation committee.

### Prospective Students

Students are expected to have a strong background in science and/or environmental health. While an MPH or other master's degree is preferred for admission it is not required. All admitted students receive a scholarship to cover the cost of tuition and a stipend to cover living expenses.





## Contact Information

Environmental Health Sciences Ph.D. Program

Emory University  
1518 Clifton Road  
Atlanta, GA 30322  
ehsphd@emory.edu

## Laney Graduate School Degree Programs

Anthropology  
Art History  
Behavioral Sciences and Health Education  
Bioethics  
Biological and Biomedical Sciences  
    Biochemistry, Cell and Developmental Biology  
    Cancer Biology  
    Genetics and Molecular Biology  
    Immunology and Molecular Pathogenesis  
    Microbiology and Molecular Genetics  
    Molecular and Systems Pharmacology  
    Neuroscience  
    Population Biology, Ecology, and Evolution  
Biomedical Engineering  
Biostatistics  
Business  
Chemistry  
Clinical Psychology  
Cognition and Development (Psychology)  
Comparative Literature  
Computer Science and Informatics  
Development Practice  
Economics  
English  
Environmental Health Sciences  
Environmental Sciences  
Epidemiology  
Film and Media Studies  
French  
History  
Health Services Research and Health Policy  
Islamic Civilizations Studies  
Mathematics  
MD/PhD  
Music  
Neuroscience and Animal Behavior (Psychology)  
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Nutrition and Health Sciences  
Philosophy  
Physics  
Political Science  
Religion  
Sociology  
Women's, Gender, and Sexuality Studies



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Requests for Additional Information:

RECRUITMENT AND ADMISSIONS  
James T. Laney School of Graduate Studies  
209 Administration Building  
201 Dowman Drive  
Atlanta, GA 30322

(404) 727-7905  
Fax: (404) 727-8744

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degree-programs/phd/index.html](http://sph.emory.edu/departments/eh/degree-programs/phd/index.html)

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