

PUBLIC HEALTH SCIENCES

Telephone

(613) 533-2901 (M.Sc. and Ph.D. Programs)

(613) 533-2234 (M.P.H. Program)

Web address

<https://phs.queensu.ca/>

Mission of the Department

The Department of Public Health Sciences was established in 1968 (originally named the Department of Community Health and Epidemiology). The mission of the Department is to advance scientific knowledge relevant to research in public health sciences and to participate in the dissemination and application of scientific knowledge to the solution of health, health care, and health system problems. The Department offers a thesis-based Master of Science M.Sc. degree in Public Health Sciences (Specialization Epidemiology), a non-thesis based M.Sc. degree in Public Health Sciences (Specialization Biostatistics, Collaborative with Department of Mathematics and Statistics), a professional Master of Public Health (M.P.H.) degree, a Doctor of Philosophy degree (Ph.D.) in Public Health Sciences, a Ph.D. degree in Public Health Sciences (Specialization Epidemiology) and a Ph.D. degree in Public Health Sciences (Specialization Biostatistics). It also contributes to education in the undergraduate medical curriculum as well as the undergraduate Life Sciences curriculum.

Purpose of the M.Sc. Program (Specialization Epidemiology)

Epidemiology is the study of the distribution and determinants of health-related events in populations and the application of this study to the control of health problems. The purpose of the M.Sc. program is to provide the common methodological foundation to conduct research across diverse health-related areas. The Department offers a 24-month research-based M.Sc. degree, with one cycle of enrollment in September of each year.

Students graduate from the program with abilities to: communicate scientifically; describe trends and patterns of disease incidence and prevalence; critically review health evidence; apply epidemiologic and analytic methods in the design of research; collect, analyze and interpret health data; conduct a study; and, write and defend a thesis.

Study satisfactorily completed by physicians may fulfill part of the requirements for Fellowship in Public Health and Preventive Medicine of the Royal College of Physicians and Surgeons of Canada.

Purpose of the M.Sc. Program (Specialization Biostatistics, Collaborative with the Department of Mathematics and Statistics)

There is a growing demand for qualified Master's level biostatisticians in academic and industry sponsored epidemiologic studies, health services research, and clinical trial analysis.

The purpose of this 12-month Collaborative M.Sc. program specializing in Biostatistics is to produce graduates who will be capable of working as biostatistical analysts within multi-disciplinary health research teams. This objective will be achieved through two-term coursework that will equip students with a sound knowledge in observational and experimental study designs, statistical theory, and statistical models for health data analysis, and statistical computing. A four-month practicum will allow students to apply basic knowledge and develop consulting expertise within a health research group in a research institution, government or industry setting.

Purpose of the M.P.H. Program

The M.P.H. is a professional, course-based degree built on the foundational disciplines of epidemiology and biostatistics. It is designed to educate, equip and inspire students to take evidence-informed action for public health.

The degree is 16 consecutive months in duration, attracting applicants from a range of disciplines.

A 12-month Accelerated MPH program is available for candidates with at least two years of full-time cumulative paid work experience in health care, public health or a related field. Work experience may include two years of accredited residency through the Royal College of Physicians and Surgeons of Canada.

By the completion of the program, graduates are able to:

- Define public health issues using a population health approach
- Search for evidence to address public health issues
- Appraise and interpret public health evidence
- Synthesize evidence to develop recommendations for public health action
- Adapt public health communication and evidence-based interventions to specific contexts and populations



- Plan to implement public health programs, services and policies
- Evaluate the process and outcomes of public health actions
- Demonstrate development of core attitudes and values of a public health professional.

Each of these eight program outcomes is critical to enable evidence-informed action for public health.

Study satisfactorily completed by physicians may fulfill part of the requirements for a specialist certification in Public Health and Preventive Medicine from the Royal College of Physicians and Surgeons of Canada.

Purpose of the Ph.D. Program

The program objective is to graduate individuals who are capable of functioning as independent investigators within academic (or equivalent) research positions, or who can occupy positions of professional leadership in public health- or health-related agencies where research is an important function.

Through coursework students demonstrate a mastery of theories, methodological concepts, and substantive knowledge integral to their research area. In the Comprehensive Exam, students demonstrate their in-depth knowledge in theoretical and applied methods; and an ability to apply that knowledge to their research area.

Through the dissertation process, students demonstrate the ability to undertake research including the ability to critically appraise and synthesize appropriate literature; develop researchable questions; design practical and feasible studies; write scientific protocols that summarize research plans and demonstrate an understanding of key methodological issues; collect primary or process secondary data, where the latter are not 'research ready' at the outset; analyze and interpret data; and understand the implications of findings within the appropriate context.

Students also have opportunities to present their research in seminars and scholarly academic meetings. Students gain an ability to communicate scientifically, both in terms of publishing research findings in reputable journals, and by presenting research findings to their respective research communities. Some students also gain experience as teaching assistants.

Areas of Research

Faculty members conduct research in a wide variety of areas related to epidemiology, clinical trials, biostatistics, health services research, health policy, health economics, and other fields. Within these broad disciplines, specific

content strengths include: cancer epidemiology, biostatistics methodology, social epidemiology, environmental health, developmental disabilities, psychiatric epidemiology, mental health, home care, health reimbursement mechanisms, health care utilization, and community care. Opportunities in many of these areas are strengthened by formal affiliations with research groups such as: The Canadian Cancer Trials Group (CCTG) and the Division of Cancer Care and Epidemiology (CCE), both located in the Queen's Cancer Research Institute (QCRI), the Health Services and Policy Research Institute (HSPRI), ICES Queen's, KFL&A Public Health, and Kingston Health Sciences Centre / Kingston General Hospital Clinical Research Services (CRS).

Financial Assistance

PhD candidates who are accepted into the program will be guaranteed four year funding of \$21,000 per year minimum. This amount may be higher based upon available external and internal awards.

Funding is provided for all first and second year full-time MSc students with a current guaranteed minimum of \$12,000 per year. Qualified candidates will be automatically nominated for internal Queen's Fellowship and Graduate Awards. Students who are eligible are required to apply for Ontario Graduate Scholarships, and encouraged to apply for other major awards available through national, provincial, or private funding bodies.

There is no funding for students in the professional MPH program, although some of the practicums offered for the summer term may provide funding.

Each year there is a limited number of teaching assistantships. Positions are posted in July of each year and are awarded according to the instructor's assessment of skills for the position.

Students may also be employed by individual faculty members with research assistantships or research fellowships. Research assistantships vary according to the availability of positions and are paid as wages based on a collective agreement. Research fellowships are related to student thesis work and paid as non-taxable (T4A) income.

Departmental Facilities

Shared desk space with power and wireless hookup, as well as separate general meeting space, is available on the third floor of Carruthers Hall to MPH students during their program and to first year MSc students. Students are required to have their own computers. Upper year research students who are working on their theses typically arrange appropriate work space through their thesis supervisors. Photocopy, fax, and office supplies are provided on a cost-



recovery basis. SAS and SPSS student licenses are available for free download through Queen's Information Technology Services (ITS).

Degree Program

The graduate program is administered under the rules and regulations of the School of Graduate Studies and Postdoctoral Affairs and applicants are accepted under these general regulations.

Faculty

Head

Stoner, B.

Graduate Coordinator

Richardson, H. (ending July 2022)

King, W. (July 2022 – December 2022)

Stuart, H. (starting January 2023)

Program Directors

M.P.H.: Weir, E. (ending June 2022), Hunter, D. (July 2022 – December 2022), Buttemer, S. (starting January 2023)

M.Sc. Field of Study Epidemiology: King, W. (ending June 2022), Stuart, H. (starting July 2022)

M.Sc. Biostatistics Collaborative: Peng, P. (ending December 2022), Lu, Z. (starting January 2023)

Ph.D.: Janssen, I.

Professor

Aronson, K., Chen, B., Janssen, I., Johnson, A., Ouellette-Kuntz, H., Peng, P., Ross, N., Stoner, B., Stuart, H., Tu, D.

Associate Professor

Davison, C., Ding, K., Hunter, D., King, W., Ospina, M., Richardson, H.

Assistant Professor

Lu, Z., Saeed, S., Tu, W.

Professor Emeritus

Groome, P., Lees, R.E.M., Steele, R.

Adjunct Professor

Booth, C., Brundage, M., Moore, K., O'Callaghan, C., Pickett, W., Villeneuve, P., Zoutman, D.

Adjunct Associate Professor

Belanger, S., Brogly, S., Gemmill, I., Jolly, A., McIsaac, M., Thompson, J., Wobeser, W.

Adjunct Assistant Professor

Alvarado-Llano, B., Borghese, M., Buttemer, S., Carter, M., Linden, B., Majury, A., Miao, Q., Queenan, J., Sahai, V., Slipp, N., Vafaei, A., Walker, M.

Adjunct Lecturer

Candon, H., Day, A., Hopman, W., Marlin, S., Melles, B., Norman, P.

Cross-Appointed

Appireddy, R., Bartels, S., Bayoumi, I., Bougie, O., Brooks, S., Carpenter, J., Duffy, A., Flemming, J., Gill, S., Green, M., Gyawali, B., Hanna, T., Lougheed, D., McColl, M.A., Medves, J., Murray, H., Phillips, S., Purkey, E., Rosenberg, M., Roy, A., Schneider, H., Towheed, T., Tranmer, J., Velez, M., Wijeratne, D. T., Weir, E.

Programs

- Public Health Sciences - Doctor of Philosophy (<https://queensu-ca-public.courseleaf.com/graduate-studies/programs-study/public-health-sciences/public-health-sciences-phd/>)
- Public Health Sciences - Master of Public Health (<https://queensu-ca-public.courseleaf.com/graduate-studies/programs-study/public-health-sciences/public-health-sciences-mpH/>)
- Public Health Sciences - Master of Science (<https://queensu-ca-public.courseleaf.com/graduate-studies/programs-study/public-health-sciences/public-health-sciences-ms/>)

Not all courses will be offered in each academic year. Review the website of the Department of Public Health Sciences for the most current list of courses available and the term offered.

All course are 3.0 credit units, except EPID 899 and EPID 999 which are 6.0 credit units.

Mandatory M.Sc. Courses offered by the Department

EPID 801 – Introduction to Epidemiology

EPID 804 – Intermediate Epidemiology

EPID 821 – Essentials of Biostatistics

EPID 822 – Applied Regression Analysis

EPID 899 – Master's Thesis Research

Mandatory M.Sc. Collaborative Biostatistics Courses

EPID 801 – Introduction to Epidemiology

EPID 804 – Intermediate Epidemiology

MATH 896 (for students registered in Mathematics and Statistics)

STAT 853 (for students registered in Public Health Sciences)

STAT 862 or EPID 822 (for students registered in Public Health Sciences)

EPID 886 – Public Health Professional Development

EPID 823 – Advanced Methods in Biostatistics

EPID 888 – Master's Practicum

Mandatory M.P.H. Courses Offered by the Department



IMPORTANT: Please NOTE EPID 801, EPID 802, EPID 803, EPID 805, EPID 806 and EPID 821 are all core courses for the 12-month accelerated program.

EPID 801 – Introduction to Epidemiology
EPID 802 – Foundations in Public Health
EPID 803 – The Canadian Health System
EPID 805 – Leading Evidence Informed Action
EPID 806 – Applied Research Methods for Program Planning and Evaluation
EPID 821 – Essentials of Biostatistics
EPID 886 – Public Health Professional Development
EPID 887 – Practicum Placement

Elective Courses offered by the Department

EPID 807 – Economic Evaluation of Healthcare Programs
EPID 810 – Controlled Clinical Trials
EPID 815 – Independent Study
EPID 817 – Foundations of Cancer Control
EPID 819 – Clinical Epidemiology
EPID 823 – Advanced Methods in Biostatistics
EPID 824 – Applied Statistical Learning for Health Data
EPID 828 – Infectious Diseases
EPID 829 – Foundations of Global Health
EPID 831 – Chronic Disease Epidemiology
EPID 832 – Mental Health/Critical Inquiry
EPID 835 – Environmental Public Health
EPID 836 – Qualitative Health Research Methods
EPID 837 – Health Services Research
EPID 851 – Medically Relevant Microbiology in Infection Prevention and Control
EPID 852 – Fundamentals of Infection Prevention and Control and Environments of Care
EPID 853 – Healthcare Quality, Safety and Risk

Mandatory Courses offered by the Department for Ph.D. Program

IMPORTANT: Please NOTE Ph.D. students who have already completed Advanced Methods in Biostatistics [EPID 823] as part of their M.Sc. program in Epidemiology at Queen's University may be exempt from this requirement.

EPID 823 – Advanced Methods in Biostatistics
EPID 901 – Advanced Epidemiology
EPID 902 – Advanced Public Health Research
EPID 999 – Ph.D. Thesis Research

Courses Offered outside the Department for M.Sc. and M.P.H. programs

Selected graduate courses from other Departments can be taken as electives upon permission of the Instructor, Program Director, Department and School of Graduate Studies and Postdoctoral Affairs.

EPID 801 Introduction to Epidemiology

This course provides foundational knowledge on how human evidence relevant to public health is created, assessed, and used, with a focus on epidemiologic methods. Topics include measures of health status; risk factors and associations with health outcomes; study design including descriptive, analytical, and intervention approaches; validity issues; critical appraisal; assessment of causation; ethics; and application of epidemiologic evidence in public health decisions. Three term-hours. Fall. M. Ospina.

EPID 802 Foundations in Public Health

This course provides an overview of theoretical and conceptual foundations of public health. It examines the social determinants of health and population health approaches to promote and protect health. It instills in students an understanding of the historical achievements, core values and ethical frameworks that guide public health action. Three term-hours. Fall. D. Hunter.

EPID 803 The Canadian Health System

The aim of this introductory course is to describe how health services are organized and delivered in Canada. Students who take the course will: 1) understand the inputs, delivery and outputs of the Canadian health system; 2) recognize and explain the factors that influence change in this system; and 3) consider current health policy issues in Canada. Three term-hours. Winter. S. Buttemer

EPID 804 Intermediate Epidemiology

This course deals with advanced methods and issues in the design, conduct, analysis and interpretation of epidemiologic studies. The content focuses on observational study design and analysis and builds on epidemiologic principles presented in EPID 801. Data analysis will emphasize the application and interpretation of statistical concepts in epidemiologic research. Three term-hours, Winter. W. King.
PREREQUISITE: EPID 801.

EPID 805 Leading Evidence Informed Action

This course applies health promotion theories to the analysis and development of evidence based public health actions. Approaches to leading change are applied at the levels of individuals, organizations, community, society. Examples are drawn from programmatic and functional areas of public health practice to exemplify development of a multilevel and "health in all policies" approach to complex problems. Three term hours. Fall. B. Stoner

EPID 806 Applied Research Methods for Program Planning and Evaluation

This course provides an overview of social research methods and tools to assist students to complete the "evidence to action" program planning and evaluation cycle. Topics covered include defining the issue, using surveillance data,

engaging the community, conducting a stakeholder analysis, survey methods, handling qualitative data, building logic models, choosing indicators, communicating the results, taking action. Three term hours. Winter. A. Johnson

EPID 807 Economic Evaluation of Healthcare Programs

This course is designed to allow students to become familiar with different types of economic evaluations in healthcare and when to employ particular types of economic evaluation. Topics covered will include; cost-effectiveness, cost-utility, cost-benefit, budget impact analyses, and policy decision-making. No prior economics background is required. Three term hours. Fall. Not offered 2022-23.

EPID 810 Controlled Clinical Trials

This course will cover material relevant to the design and conduct of controlled clinical trials. Design topics will include methods used to achieve unbiased results with improved precision, such as adequate sample size, randomization, blinding, pre- and post-stratification, cross-over designs, placebos and the counting of relevant events. Attention will be given to the problems of conducting multi-centre clinical trials. Topics covered will include drafting of protocols, design of data forms, logistics of data flow, methods of follow-up, data management and quality control, periodic reporting, final data analysis and the production of final reports. Ethical issues and the role of randomized trials in clinical investigation will be discussed. Three term hours. Fall. TBD

EPID 815 Independent Study

EPID 817 Foundations of Cancer Control

This course is intended for graduate students, clinical fellows and postdoctoral fellows who are engaged or interested in cancer research. The course will focus on concepts and methodological issues central to the conduct of epidemiologic studies of cancer etiology and control. Topics will include: an introduction to basic epidemiologic concepts; biologic and clinical concepts central to the investigation of cancer; study design; clinical epidemiology; molecular epidemiology; and cancer control and prevention. Three term hours. Not offered 2022-23.

EPID 819 Introduction to Clinical Epidemiology

This course will demonstrate the way in which epidemiological principles guide the practice of medicine and the design of clinical research. Topics include how to select and apply the correct design for a study addressing a clinical question, how to evaluate the quality of clinical publications and research proposals, how to prepare a clinical research proposal and how to synthesize clinical evidence. Three term hours. Not offered 2022-23.

PREREQUISITE: EPID 801 and EPID 821 or permission of instructor

EPID 821 Essentials of Biostatistics

This course provides an overview of basic statistical concepts, principles, and techniques essential for public health and epidemiologic research. This course covers both descriptive and inferential statistics. Topics covered include measures of association, t-tests, regression, chi-square tests, analysis of variance, and some nonparametric methods. Emphasis is on understanding and interpreting fundamental statistical analyses from health research. Three term hours. Fall. Z. Lu (SAS Lab: A. Day/P. Norman).

EPID 822 Applied Regression Analysis

This course deals with the commonly used regression methods proven useful in health services research and the epidemiologic analysis of the relationship between traits, exposures or treatments, and diseases or other medical outcomes. The course emphasizes the statistical modeling approach with topics including multiple regression, analysis of variance and covariance, reliability of measurements, analysis of categorical data, logistic regression, Poisson regression and survival analysis. This course includes a compulsory SAS Programming component. Three term hours. Winter. B. Chen, Z. Lu, W. Tu (SAS Lab: A. Day/P. Norman) PREREQUISITE: EPID 821 (or permission of instructor for Biostatistics students).

EPID 823 Advanced Methods in Biostatistics

An advanced course in the theoretical issues and analytical practices in epidemiology, and biostatistics. Topics may vary but major topics include analysis of longitudinal and survival data using various regression models; Techniques and strategies for regression modeling; Novel analytic approaches in epidemiology; multivariate analysis methods including discriminant analysis, principal components and factor analysis. Three term hours. Winter. D. Tu, K. Ding. PREREQUISITE: EPID 821 + knowledge of basic statistical modeling techniques deemed adequate by the Instructors.

EPID 824 Applied Statistical Learning for Health Data

This course is for students who are interested in learning about applied statistical learning methods and obtaining practical experience in the application of these methods to real-world data. This course does not intend to discuss in-depth theoretical and mathematical materials. (3.0 credit units) PREREQUISITE: EPID 821 and EPID 822 or equivalent with permission of the instructors.

EPID 828 Infectious Disease Epidemiology

This course provides a foundation in infectious disease epidemiology. Principles and methods related to infectious



disease biology, outbreak detection and investigation, and the methodological, analytical, and diagnostic tools are covered. Specific infectious diseases that pose contemporary challenges in public health and/or have national or global public health impact are discussed. Three term hours. Winter. S. Brogly
PREREQUISITE: EPID 801 or permission of the instructor.

EPID 829 Foundations of Global Health

Students will be exposed to various global health concepts and be trained to work through potential solutions in a public health context. The course will be taught through formal lecture, seminar and small group learning, and online modules. Topics may include health, public health, and development; Indigenous health; health systems and policies; Canada's role in global health and social justice; and special populations. Three term hours. Fall. C. Davison

EPID 831 Chronic Disease Epidemiology

This course will provide an overview of the epidemiology of some of the leading non-infectious causes of morbidity and mortality in Canada and will highlight the key methodological considerations for the study of each disease or health problem. Three term hours. Winter. K. Aronson
PREREQUISITES: EPID 801 & EPID 821 or equivalents with permission of course coordinator

EPID 832 Mental Health/Critical Inquiry

This course will provide students with in-depth substantive knowledge about the evolution of health issues that have shaped policy and mental health services. Three term hours. Fall. H. Stuart
PREREQUISITES: EPID 801 or permission of course instructor

EPID 835 Environmental Public Health

This course provides students with a foundation for understanding, assessing and mediating environmental exposures. Methods for assessing and communicating about exposures, risks and standards in air, water, soil and food are introduced. Case studies of managing hazardous exposures are reviewed. Environmental health policy implications of global climate, energy use and disaster planning are explored. Three term hours. Fall. Not offered 2022-23.
PREREQUISITE: EPID 801, EPID 821 or equivalent, or permission of instructor.

EPID 836 Qualitative Health Research Methods

This course provides foundational instruction in qualitative research methodology for students in the public health sciences, including theoretical basis, study design, research ethics, sampling and recruitment, data collection, data analysis, and disseminating research findings. Topical areas may include ethnography, grounded theory, phenomenology,

participatory research, and other areas. Three term hours. Winter. C. Davison, B. Stoner

EPID 837 Health Services Research

This course introduces health services research methods as they are applied to routinely collected health data. It covers methodologic approaches for assessing healthcare effectiveness, quality, and access. The course also provides an introduction to the Ontario ICES data holdings and the conduct of health services research using those data. Three term hours. Fall. S. Saeed.

EPID 851 Medically Relevant Microbiology in Infection Prevention and Control

This course provides foundational and applied information to support learners' development of infection prevention and control (IPAC) practices within various healthcare and public health settings. Students will gain an understanding of the basics of medical microbiology and how they relate to core competencies for IPAC. Three term hours. Winter. TBD

EPID 852 Fundamentals of Infection Prevention and Control and Environments of Care

This course provides foundational and applied information to support learners' development of infection prevention and control (IPAC) practices within various healthcare and public health settings. Students will gain an understanding of the core competencies for IPAC. Diverse principles and practices associated with routine practices, additional precautions, program evaluation, surveillance and outbreak management, occupational health, emergency management, disinfection concepts, preprocessing, construction/renovation and principles of adult learning will be explored as the foundational concepts of an IPAC program. Students will be able to apply these IPAC skills and concepts to a broad environment of care and its overall impact on public health. Three term hours. Winter. TBD

EPID 853 Healthcare Quality, Safety and Risk

This course provides foundational and applied information and activities to support learners' development of quality, risk and safety principles and practices within Public Health settings. Learners will gain an understanding of the integration of improvement science within the public health setting with a particular focus on the area of infection prevention and control (IPAC). Principles and practices associated with policy, change management, leadership, communication, collaboration, and safety culture will be examined to explore ways to provide optimal health outcomes for individuals and communities while adhering to the principals of IPAC. Three term hours. Summer (on-line). TBD

EPID 886 Public Health Professional Development

This course assists students to lay the foundation for continuing professional development in public health practice. Students are introduced to the personal learning portfolio and coached to chart their progress in developing skills and competencies through a combination of workshops, seminars, and online learning modules. 1.5 term hours per week. Fall and Winter terms. B. Melles

EPID 887 Practicum Placement

The 400 – hour practicum placement provides MPH students with an opportunity to work in the public health field and contribute to evidence-informed public health practice.

Through the practicum students demonstrate and enhance the knowledge, skills and attitudes they have learned from course work as well as reflect on and advance their career development. Placement activities and roles will vary according to the needs and interests of both host organization and the student. This course is graded on a PASS/FALL basis. Spring /Summer term. Coordinator: L. Brancaccio

PREREQUISITES: EPID 801, EPID 802, EPID 803, EPID 806, EPID 821, and EPID 886 (16-month students only), or approval from the Practicum Coordinator

EPID 888 Master's Practicum

Under the guidance of the supervisor, students will carry out a practicum project in a health research group/site and practice bio statistical methods and data analysis or conduct methodology research in a bio statistical project. Students will summarize the results of the project in a written report that will be reviewed and orally defended.

EPID 899 Master's Thesis Research

EPID 901 Advanced Epidemiology

This course provides in-depth integration of advanced concepts in epidemiology, with theory and examples, including causation and causal inference, study design and conduct, alternate designs, confounding, effect modification, internal and external validity, misclassification, source populations, statistical power and sample size, epidemiologic data analysis and interpretation, meta-analysis and selected specific research areas. This is an advanced course intended primarily for Ph.D. students. Sessions consist of lectures, seminars, student presentations and discussions. Three term hours. Fall. W. King

PREREQUISITES: EPID 801, EPID 804, EPID 821 and EPID 822 or equivalent from other institutions.

EPID 902 Advanced Public Health Research

This course provides a conceptual and historic view of the Public Health Sciences, as well as a look at contemporary issues in Public Health research ethics, research methodology and knowledge translation. Guided each year by student

interests and advanced training needs, the course delves into specific substantive public health research areas including for example: chronic disease, environmental health, infectious disease, injury and disability, maternal and child health, occupational health, humanitarian contexts, Indigenous health and/or health services research. This is an advanced course intended primarily for Ph.D. students. Three term hours. Fall. H. Ouellette-Kuntz

EPID 999 Ph.D. Thesis Research