

# UW MEDICINE PATHOLOGY GRADUATE PROGRAM

## PROGRAM DESCRIPTION

The Molecular Basis of Disease Graduate Program offers graduate training in biology with an emphasis on disease mechanisms. Students receive their Ph.D. degrees for research in tumor biology, developmental biology, vascular biology, virology, aging, neuropathology or genetics, all with an emphasis on applying these basic disciplines to disease processes. The diversity of our program reflects the strengths of a large faculty located at both the University of Washington and the Fred Hutchinson Cancer Research Center and a shared belief that disease problems can best be solved by basic molecular biologic research.

The program of study leading to the doctoral degree includes a core course series on the molecular and cellular mechanisms of disease, a series of three graduate seminars, a rotation through three laboratories to acquaint students with faculty research programs, and relevant courses as recommended by the student's advisory committee. Students in the program are expected to fulfill their course requirements during the first two years of the program and to take a general examination that includes, in part, the proposal of an original research hypothesis. Students spend the remainder of the program performing research to test their hypothesis. The program is tailored to accommodate students who are pursuing their first doctoral degree (Ph.D.) or a combined degree (M.D./Ph.D.) and physicians, dentists, or veterinarians who are pursuing a Ph.D.

The research interests of the faculty include vascular biology, tumor biology, environmental biology, stem cell, aging, neurobiology, the immune response, inflammation and repair, the biology of the extra cellular matrix, and the fundamental processes underlying disease, such as the regulation of gene expression and protein synthesis, the structure and function of oncogenes, viral and nonviral transformation, chromatin structure, mutagenesis, and DNA repair and genetic recombination. The department has 49 graduate faculty members and 43 postdoctoral fellows who interact with graduate students.

## PROGRAM PHILOSOPHY

Experimental pathology is the discipline that most explicitly uses modern research techniques to address important problems in human disease. The University of Washington Department of Pathology Ph.D. program is devoted to the training of practicing biomedical scientists: individuals who can use scientific methods to ask and answer testable questions about significant biomedical problems. The program emphasizes the intellectual and research skills needed to identify and critically evaluate research data and conclusions.

Graduate students in the program benefit from the opportunity to learn the theory and practice of biomedical research in a department that spans clinical and basic research divisions. In addition to their research programs, many of our faculty have internationally recognized skills in disease diagnosis. This helps keep our research focus directed toward real medical problems, and provides material for further study. Research within the Department of Pathology receives substantial financial support from the National Institutes of Health (nearly \$34 million in 2008), consistently ranking as one of the top funded Pathology departments in the country. These resources ensure that graduate student research projects are not limited by supplies or equipment. The combination of close linkage between basic research and medical insights and strong funding has created a long tradition of training researchers for careers in academia and biotechnology industry.

## ADMISSIONS REQUIREMENTS

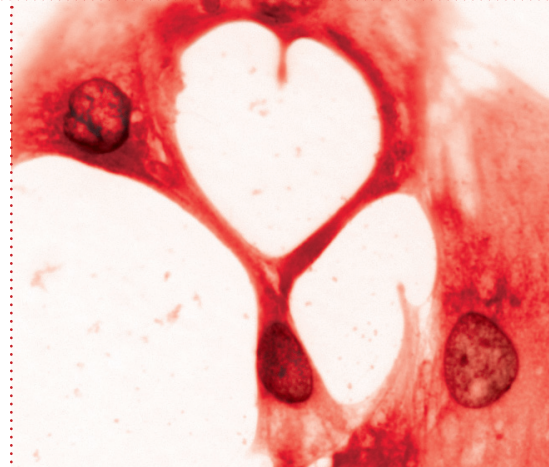
Students seeking admission to the department's doctoral degree program should have completed a baccalaureate or advanced degree by the time of matriculation; degrees in biological, chemical, or physical sciences are preferred. Satisfactory completion of courses in organic chemistry, biochemistry, genetics, cell biology, and statistics is recommended. Applicants should be fluent in English. Individuals with advanced degrees in medicine, dentistry, or veterinary medicine are encouraged to apply.

## PROGRAM REQUIREMENTS

Each student is required to rotate through three laboratories during the first year, each rotation lasting one quarter. All students must complete 18 graded credits in graduate level courses (500 level) prior to registering for the General Examination (GE). Some of these required 18 graded credits would be obtained by taking elective courses; others will be obtained through the specific course requirements of the Pathology Graduate Program.

## STUDENT SUPPORT

The Department of Pathology Graduate Program provides students with a competitive salary, health benefits, tuition and relocation assistance (non-monetary). Financial support for students in good academic standing is also provided by the department throughout their research studies in the program.



Human-embryonic stem cell cardiomyocytes  
Image provided by Dr. Charles Murry, Professor,  
UW Medicine Pathology

## RESEARCH & PATHOLOGY

- The UW Medicine Pathology Graduate Program focuses on the study of mechanisms of disease.
- During the last decade great advances have been made in the understanding of the mechanisms that cause diseases such as cancer, heart disease and diabetes.
- These advances were achieved to a great extent through the sequencing and identification of human genes, a better understanding of mechanisms that regulate gene expression, and new knowledge on the relationships between genes and the environment.
- Students in the Molecular Basis of Disease Program work with cells, tissues and animal models to determine the fundamental molecular and cellular mechanisms responsible for the production of disease.

## CONTACT INFORMATION

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