“All truths are easy to understand once they are discovered; the point is to discover them.”

Galileo Galilei
PREPARATION FOR A PHD PROGRAM

For a successful application toward a PhD in Biomedical Sciences, you need to prepare yourself before the application deadline. Competitive applicants establish a groundwork of actions and accomplishments that make an application stand out.

A solid foundation in reading, writing, math, computer science and communication is important. Add to that biology, chemistry and physics, and you’re on your way to becoming a successful graduate student.

GOING BEYOND THE CURRICULUM

Attend scientific seminars offered by various departments at your university.

- Enroll in journal clubs where current scientific literature is discussed. Take a graduate level course. These activities will help develop the skills to think like a scientist.
- Take year-long series courses in biology, calculus, or biochemistry. Graduate Admissions committees prefer to see in-depth background in specific areas.

DIVING INTO RESEARCH

To be a competitive PhD applicant, at least one year of hands-on research experience is recommended.

Why?
Lab course experiments are designed to work correctly. Live experiments, on the other hand, don’t always work as planned. You need to learn how to problem-solve and to discover whether you enjoy doing research. Working in a research laboratory will build teamwork and good interaction skills.

How can I get in a lab?
Many research labs welcome undergraduates. Ask your instructors if they have lab openings or know of openings. Volunteer. Check Work-Study job offerings. Apply for summer research internships. Approach faculty.

READING THE LITERATURE

- Don’t limit your scientific reading to textbooks. Read scientific journals at the library, such as Nature, Science, the New England Journal of Medicine, JAMA, and Cell.

- Get to know the players. The more scientific literature you read, the more you will recognize those who are contributing the ideas and where their labs are. This is invaluable in determining the graduate schools that you may want to consider. If you really want to know more about a paper, email the author. You would be surprised how many famous scientists answer emails.

TALKING SCIENCE

- Real scientists talk about science. You need to practice discussing scientific questions with your peers and with other scientists.

- Volunteer to help with a seminar series.

- Present a paper at a journal club.

USING THIS BOOKLET

- Browse the web pages of the fifteen biomedical research graduate programs at the University of Washington (listed on the following pages).

- Carefully review those programs that interest you the most.

- Select one (or more) to which you plan to apply.
Creating a Competitive PhD Application

Start working on graduate school applications approximately 12-18 months before the graduate program begins. All PhD graduate programs have specific application requirements that need to be followed. After you have carefully reviewed the departmental web page, contact the program directly if you have questions about the application process. Give yourself plenty of time to research various graduate programs and deadlines. Most programs require the following:

- A general, informational application form;
- A curriculum vitae (CV) or resume;
- A statement of purpose or of research: usually limited to 1-2 pages. Explain your current research and focus. Tailor the statement of purpose to the specific program. Also, write about your most recent research experience. Describe your research project.
- GRE scores: take the GRE test by October. Official scores need to be sent to each institution by the testing service (ETS). In general, committees will pay attention to scores that are high (750-800).
- Transcripts: official copies must be sent by each institution. Some programs have minimum GPA requirements.
- Letters of recommendation: the letters need to be from someone who has had a scientific relationship with you (lab advisor/mentor, instructor, supervisor). A good letter would include statements on your research abilities, progress you made and your character. Make sure the person really wants to write a letter and follow up to make sure the letter has been sent in time to make the deadline.

Lastly, it's your responsibility to make sure all application materials have been received by the appropriate deadline. Also, proofread everything carefully.

Interviews

While many programs hold interviews, not all do. The most competitive applicants to biomedical graduate programs are generally invited to interview. Therefore, it is important that you do your homework before visiting each school—in order to increase your competitiveness. You should review the faculty's research interests, especially those you have requested to meet. Set aside as much free time as possible in February and early March for interviews. If you are an international student, plan on earlier deadlines.
Please follow these steps to ensure that your file is complete by the application deadline listed for the individual program(s) to which you are applying.

**Step One**
Apply online for admission to the University of Washington Graduate School [http://www.grad.washington.edu/application/](http://www.grad.washington.edu/application/) and then complete any additional requirements of the department/program you have listed. These links will appear automatically in the online application.

**Step Two**
Letters of Recommendation: The U.W. online application will provide a window to enter the name and email address for each of your recommenders. Be sure to check the accuracy of these email addresses before submitting your recommenders. The U.W. Graduate School will immediately email each recommender providing him/her with a recommendation form to be filled out and submitted electronically. You can monitor your recommenders by accessing your U.W. application with your individual password.

If the deadline is soon approaching and the recommendation is not yet recorded, be sure to contact the faculty person to encourage an immediate response.

**Step Three**
Statement of Purpose: The online application provides a window wherein you can either enter this one- to two-page document electronically or attach a separate document.

**Step Four**
Graduate Record Examination Scores: Please check the individual graduate program page to find out if a Subject Test is required together with the General Test. We strongly urge that you take the GRE tests early, remembering that your scores must be received by the program deadline. Go to [http://www.gre.org](http://www.gre.org) for information on when and where to take the exams.

**Step Five**
Transcripts: Some programs require official hard copies sent directly to the program; other programs require an uploaded unofficial transcript.

**Step Six**
Attachments: Some programs require a resume in addition to the above materials. Check the department page for this requirement. If required, there will be a link on the U.W. application to attach your resume.
Biochemistry

Department of Biochemistry

Program Description
Initially recognized for its studies of the structure and function of proteins, and the mechanisms of enzyme action, the department of Biochemistry branched out into other areas including aspects of molecular, cell and developmental biology. The faculty now explores such questions as how genes are expressed throughout development; how proteins and cells interact; how gene expression is modulated by environmental changes; how light energy is trapped in photosynthesis; how blood coagulates after injury; and how cells process information in the visual and immune responses. The techniques range from molecular structure determination by X-ray crystallography and NMR spectroscopy; genetic analysis using bacterial, yeast, fly, and mouse systems; protein structure prediction based on complete genome sequences; and picosecond laser spectroscopy.

Program Philosophy
We emphasize the value of using interdisciplinary approaches to attack important biological problems. Our department provides a friendly, interactive environment where students and faculty exchange ideas easily and get to know each other well. You will have the opportunity to become acquainted with diverse areas of biochemistry through course work and seminars, while still concentrating on areas that are especially important for thesis research. A series of three month research projects in each of three laboratories or research groups will help you choose a thesis advisor. Each thesis committee of your choice (comprised of several other faculty members as well as your advisor) will meet with you regularly, provide advice, and assure rapid progress toward your degree. Although we encourage you to apply for externally funded graduate fellowships, the department guarantees five years of support for all graduate students in good standing.

Admissions Requirements
We seek applicants who show great promise of successful careers in research. Our applicants typically have strong undergraduate records, as well as previous laboratory experience and demonstrated experimental talents. We encourage applications from students in many different undergraduate majors, because the challenges of modern biochemistry demand interdisciplinary skills. However, most applicants have completed undergraduate courses in calculus, general physics, organic chemistry, biochemistry, or an advanced quantitative science such as physical chemistry.

The Department of Biochemistry requires scores in both the GRE General test and one Subject test (Chemistry, Biology, or Biochemistry). Score reports must be sent directly by the Educational Testing Service to both the Department of Biochemistry and the University of Washington Office of Graduate Admissions. You must supply the department with a complete set of official transcripts from each undergraduate and graduate institution you attended. We require three letters of recommendation from those who can best evaluate your potential for graduate work and original research, as well as your character and special talents. You are welcome to include more than three letters if you wish. The personal statement should describe your past research experience, future research interests, and career goals, as well as your motivation and background. Also be sure to include participation and achievements in non-scientific and non-academic realms (sports, arts, social service, etc.). Our application deadline is January 1st.

Program Requirements
The first year of the graduate program consists of formal lecture courses, three intensive laboratory “rotations” of three months each, and seminar courses in timely topics ranging from protein structure and function, to molecular and cellular biology. Courses emphasize critical thinking, and frequent faculty contact. Students are free to design individual course schedules that focus on macromolecular structure, biochemistry, or molecular, cellular, and developmental biology. In spring of the first year, students choose a thesis advisor and thesis project, and assemble a thesis committee of three to five faculty who will provide advice throughout the period of doctoral work. Thesis research dominates the second and third years, although students often take a few additional courses. The department considers teaching experience to be an essential aspect of graduate education, so all students also serve as teaching assistants in three different courses, each lasting one academic quarter. Thesis research is usually completed, and the thesis written, during the fifth year.

Student Support
The department of Biochemistry offers a competitive yearly stipend, a full tuition waiver, and a medical insurance plan that also includes dental and vision coverage.

Contact Information
Department of Biochemistry
Kelley Michele Pankow
Graduate Program Coordinator
1959 NE Pacific Street
Box 357350, Room J405 HSC
University of Washington
Seattle, Washington 98195-7350
Tel: 206-543-1661
Fax: 206-685-1782
E-mail: biochem@u.washington.edu
Web: http://deptb.washington.edu/biochem/
**Department of Bioengineering**

**Program Description**

The Department of Bioengineering provides a comprehensive, multidisciplinary program of research and education. The concepts and techniques of the physical sciences and engineering are applied to challenges in the life sciences and medicine. Likewise, the concepts of biology are applied to problems in engineering.

**Program Philosophy**

The objective of the PhD program is to train qualified persons for careers in bioengineering research and teaching. The training has three major components. First, students acquire a breadth of knowledge in engineering and life sciences. Second, they acquire a depth of knowledge and expertise in a particular scientific specialty. Finally, each student develops and demonstrates the potential for independent research. These objectives are met through a combination of classroom and research experiences. The program places rigorous expectations on students’ performance while maintaining sufficient flexibility regarding specific requirements to accommodate qualified students with diverse backgrounds. An MD/PhD program is available as well as certificates in Technology Entrepreneurship; Global Health; and Molecular Medicine. The option for a dual PhD degree in Bioengineering and Nanotechnology is unique to the University of Washington; details about the dual degree are online at [http://nano.washington.edu](http://nano.washington.edu). Certificates in Technology Commercialization and Technology Entrepreneurship are also available as educational supplements.

Areas of research include engineered biomaterials (thealing, biomineralization, tissue engineering, surface analysis; molecular bioengineering and nanotechnology (molecular modeling, protein engineering, self-assembly, physical function); biomedical Imaging and Image-guided therapy (development of new imaging devices, imaging hardware and software, high-intensity focused ultrasound, ultrasonically directed therapeutic delivery); distributed diagnosis and home healthcare (telemedicine, personal health information systems, biosensors, MEMS/actuators); and computational and integrative bioengineering (microcirculatory analysis and simulation, biomechanics, endocrine and metabolic kinetics, population kinetics, fractals in biology and medicine). The research program is very active and supported by more than $22 million per year from external grants.

**Admissions Requirements**

Applicants holding a B.S. degree in engineering or physical sciences are encouraged to apply if prepared to incorporate life sciences at the graduate level. Likewise, applicants holding a B.S. degree in biological sciences are encouraged to apply if prepared to incorporate engineering. A Graduate School application form and fee are required of all applicants. Scores from the General Test of the GRE are required. International applicants are required to take the TOEFL.

In addition to the Graduate School's requirements, the applicant must submit departmental application forms, a personal statement of research interest and career goals, and three letters of recommendation. Application details are provided on the departmental web site.

**Program Requirements**

Due to the interdisciplinary nature of the field, the formal course requirements are designed to cover breadth and depth. Students complete a first-year core sequence in Molecular, Cellular, and Systems Bioengineering. Additionally, students complete a Bioengineering Seminar, Biostatistics, and 4-5 courses in research-related electives. Coursework is generally completed by the middle of the second year. Students complete courses in Bioengineering Principles of Physiology, Medical Measurements, Biorthanp, Biostatistics, Biochemistry, or Cell Biology, Engineering, and in the area of their research. We recognize that students may have completed equivalent course work during their undergraduate degree and welcome course petitions.

Students complete most of their formal course requirements and any missing prerequisites during the first year. Additionally, the first year involves up to 3 lab rotations. The Department does not assign permanent labs to students, preferring to allow the student and the potential advisor and lab members to arrive at that decision together. First-year faculty advisors, assigned by research area, are provided for initial advising and guidance. Advising responsibilities are transferred from the first-year advisor to the permanent advisor when the permanent lab is chosen.

In the second year students complete remaining course work and take the Qualifying Exam. In this 5-week exam, a student chooses one of three questions provided by faculty, researches and answers one question, writes a response in grant proposal format, and finally delivers an oral presentation. The purpose of the exam is to determine the concepts or skills in which students need extra assistance before beginning serious work on their own PhD research project.

After the Qualifying Exam, the advisor and the student jointly determine the pace of the student’s program. In the third or fourth year, students complete the General Examination and are conferred official PhD Candidacy by the Graduate School. Students then focus on dissertation research and continue to meet annually with their Supervisory Committee. When the Supervisory Committee agrees that a student is ready, the Final Examination is scheduled, typically during the fifth year. Upon successful completion of this exam and acceptance of the dissertation by the Graduate School, a student is conferred the degree of Doctor of Philosophy.

**Student Support**

For most admitted applicants, the Department offers a twelve-month competitive salary in addition to a tuition waiver and health insurance that includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

---

**Contact Information**

**Department of Bioengineering**

Graduate Academic Advisor
1705 NE Pacific Street, Room N107
University of Washington
Box 355061
Seattle, Washington 98195-5061
Tel: 206-685-2000
Fax: 206-685-3300
E-mail: bioeng@u.washington.edu

---

Photo: Anna Tuszewski
Smooth muscle cells (blue) on a fibronectin (green)/alumina (red) microscratch fabricated with an elastomer stentil.
BIOLOGICAL STRUCTURE

DEPARTMENT OF BIOLOGICAL STRUCTURE

PROGRAM DESCRIPTION
The Department of Biological Structure currently recruits graduate students through four interdisciplinary PhD programs at the University of Washington. Entrance into these programs is highly competitive. The faculty of the Department of Biological Structure are affiliated with one or more of these programs, which provide high quality training in a wide range of scientific research areas.

You can browse these web sites for each Interdisciplinary PhD program to see which fits your interests:

- Biomolecular Structure and Design http://depts.washington.edu/bmsphp/
- Medical Scientist Training Program http://www.mstp.washington.edu/
- Molecular and Cellular Biology http://www.mch-seattle.edu
- Neurobiology and Behavior http://depts.washington.edu/behneuro/

PROGRAM PHILOSOPHY
The department of Biological Structure is a modern anatomy department which studies structural organization ranging from molecules to the human body, http://www.biostr.washington.edu/. The faculty's scholarly interests can be divided into four groups: cell and vertebrate developmental biology, neurobiology, vision sciences and structural informatics. The research activity in the department is funded by NIH and NSF grants, private foundation grants, Howard Hughes Medical Institute, the USDA and a contract from the National Library of Medicine. Interactions with faculty, residents and students within Biological Structure and throughout the University and WWAMI are encouraged. This creates a stimulating scientific environment which encourages innovative research with basic science and clinical implications.

In addition to basic science courses in development, cell and molecular biology, molecular structure, vision sciences and neurobiology; Biological Structure teaches gross anatomy, human development, histology and neuroanatomy to medical, dental, graduate, undergraduate and some health-care professional students.

ADMISSIONS REQUIREMENTS
Applicants must have completed a baccalaureate or advanced degree by the time of matriculation; degrees emphasizing biology, physical or natural sciences, computer science, and mathematics are preferred.

In addition to the Graduate School's application requirements, the prospective student must submit a Program application form, a personal statement of research interest and career goals, three letters of recommendation and Graduate Record Examination scores with a Subject test.

PROGRAM REQUIREMENTS
Students are subject to the admission requirements of the particular interdisciplinary program to which they are applying.

STUDENT SUPPORT
Biological Structure offers a twelve-month competitive salary, as well as paying tuition and health insurance that includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

CONTACT INFORMATION

Mavis Montgomery
Graduate Program Coordinator
1959 NE Pacific Street
Box 357420, Room 6514 HSC
University of Washington
Seattle, Washington 98195-7420
Tel: 206-543-5474
Fax: 206-543-8172
E-mail: mmontgomery@u.washington.edu
Web: http://www.biostr.washington.edu
Department of Biology

Program Description
The Department of Biology maintains an enrollment of ca. 100 graduate students. Open lab doors and an open atmosphere foster fertile exchanges of ideas and approaches. Our collective intellectual curiosity drives us to employ a wide array of modern approaches to explore and understand all levels of biological organization, including the molecular, cellular, organismal, ecosystem, landscape, and global levels. We have strong programs in cell and molecular biology, developmental biology, physiology, evolution, ecology, and conservation biology but we are intentionally dissolving traditional disciplinary boundaries to strengthen interdisciplinary study. We now have ties to the Fred Hutchinson Cancer Research Center, Molecular and Cellular Biology, Neurobiology and Behavior and other life sciences departments within the UW Medical Center. Faculty hold overlapping appointments in Genome Sciences, the Burke Museum, College of Engineering, College of Forest Resources, and College of Ocean and Fisheries Sciences.

Program Philosophy
Our mission is one of leadership in basic sciences; leadership in discovery, teaching and outreach. At the center of gravity of this mission is our graduate program. The Biology Department at the University of Washington is ideal for the student seeking a world-class graduate education in a department without boundaries between disciplines. Graduate training prepares students for careers in academia, private research institutes, government agencies, and non-governmental organizations. The more than 50 faculty and ca. 100 graduate students have research interests that span a wide taxonomic range of study organisms (plants, animals, fungi, 'protists') at all levels of organization (molecular, cellular, organismal, ecosystem), using a variety of theoretical and experimental approaches in the laboratory and in the field.

Admissions Requirements
Applicants must have completed a baccalaureate or advanced degree by the time of matriculation with at least a 3.0 GPA. Deadline for applications is January 28th for enrollment in Autumn quarter of that year. Students should apply on-line at http://depts.washington.edu/biology/.

Program Requirements
The Graduate Program Committee, consisting of faculty members and a graduate student representative, will acquaint the student with the Department and assess their background in biology and allied areas. The student and the committee will formulate a program meeting the student's individual interests and needs.

Students are given a temporary advisor their first year of study. Some students may want to rotate through different labs to gain experience in new areas or techniques during their first year. At the end of that first year students must pick their permanent advisor. This advisor will aid the student in setting up their PhD Supervisory Committee.

Besides working on their research project service as a teaching assistant (TA) is required for one academic year (i.e. 3 quarters).

Students complete most of their formal course and TA requirements (18 graded credits) during their first year. These 18 graded credits must be in hand before applying for the General Examination taken late in the second year or early in the third year.

Before the end of the third year, the student must present a written proposal for thesis research to their Supervisory Committee.

After completing the General Examination students will be granted PhD Candidacy. Students then focus heavily on their research and writing of their dissertation and continue to meet with their Supervisory Committee. In a final seminar the doctoral student will present and defend a dissertation based on original research.

Student Support
All students receive financial support for 5 years, either through teaching assistantships from the University, through fellowships or traineeships from other national, private or foreign agencies, or through research assistantships from faculty research grants. Tuition is paid except for the student fees portion. Students receive medical, dental and vision insurance. In the summer, students receive appointments either on the Seattle campus or at Friday Harbor Laboratories.

What are the Open Questions in Biology?
Rather than organizing ourselves around particular organisms or around specific levels of biological organization, we focus on integrative studies that are centered on open questions in the field:

- How are living things related to each other?
- What mechanisms underlie the evolution of form and function?
- What mechanisms underlie the development of form?
- How is information encoded in biology (from genes to neurons)?
- How do complex biological systems function (from molecules to ecosystems)?
- How stable or robust are biological systems (from molecules to ecosystems)?
- How do cellular and molecular events play out at the level of functioning creatures? How do we use science to help informs policy in conservation and environmental concerns?

We explore these problems with a host of tools from molecular probes to computational engines, from the laboratory to the field, and from observation to prediction.

Contact Information

Department of Biology

Judy Farrow
Graduate Program Coordinator
Box 351800, Room 106 Kincaid Hall
University of Washington
Seattle, Washington 98195-1800
Tel: 206-685-8240
Fax: 206-543-3041
E-MAIL: farrowj@u.washington.edu
Web: http://depts.washington.edu/biology
Biomolecular Structure & Design

Interdisciplinary Graduate Program in Biomolecular Structure & Design

Program Description

The University of Washington and the Fred Hutchinson Cancer Research Center work together to offer a program of graduate studies leading to a PhD in Biochemistry, Biological Structure, Chemistry, or Medicinal Chemistry. The participating faculty at the UW campus are located in the Departments of Biochemistry, Biological Structure, Chemistry, Medicinal Chemistry, Immunology, Biology, Pharmacology, Bioengineering, Institute for Systems Biology, and the Fred Hutchinson Cancer Research Center.

Program Philosophy

Through BMSD, we believe the University of Washington offers an excellent opportunity for interdisciplinary graduate training in the exciting and newly developing fields of structure determination and prediction, ligand and drug design, protein design and engineering, etc. In addition, our laboratory rotation course the first year will give an in-depth exposure to the research opportunities in at least two laboratories, thus providing a rational basis upon which to select an area of specialization and a thesis advisor.

The area of research encompassed by BMDS is inherently interdisciplinary in nature: techniques used in this area are derived from chemistry, biochemistry, biophysics, and molecular biology. Similarly, students in the program may come from a broad range of backgrounds, including chemistry, biochemistry, physiology, and biology. The program is designed to facilitate cross-training among disciplines with the aim of preparing young scientists to enter this exciting and growing field of research.

Admissions Requirements

BMDS is looking for highly-motivated and independent thinkers and researchers interested in expanding the knowledge base in this field and contributing to science as a whole. Applicants must have completed a baccalaureate or advanced degree by the time of matriculation; degrees emphasizing chemistry, physics, mathematics, biochemistry, or biophysics are preferred. Required materials must reach the Program office by January 1st in order to be considered for Autumn enrollment the following year. Students should apply via the on-line application accessed through the BMDS home page at http://depts.washington.edu/bmsdwp.

In addition to the Graduate School's application requirements, the prospective student must submit a BMDS application form, a personal statement of research interest and career goals, three letters of recommendation, curriculum vitae, official transcripts from all previous educational institutions and Graduate Record Examination scores with a Subject test.

Program Requirements

Due to the broad nature of the Program, the formal course requirements are kept to a minimum to accommodate the different learning objectives of the individual students. A major responsibility of the student's Doctoral Supervisory Committee is to advise students of additional courses that would provide essential background information in their chosen area of research beyond the program's requirements.

Students complete most of their formal course requirements (21 graded credits: 9 credits of core curriculum and 12 credits of electives), select a permanent advisor, and establish a Supervisory Committee within their first two years. A typical first-year class schedule includes 3 laboratory rotations, 3 quarters of literature review, quarterly research talks and one or more elective classes. Following the third rotation, the students choose a permanent advisor. Throughout their studies, students complete the Biomedical Research Integrity Lecture Series.

In the second year, students define their doctoral projects, take additional elective courses, and participate as teaching assistants for two quarters. By the end of Autumn Quarter the Supervisory Committee is formed. An initial Committee meeting is held by the last day of Winter Quarter.

By the end of Spring Quarter or the end of Autumn Quarter of their second year, students must complete the General Examination and are conferred official PhD candidacy by the Graduate School. They then focus on their dissertation research and continue to meet with their Committee each year to report on their research progress and plans for the coming year. When the Supervisory Committee agrees that the student is ready, the Final Examination is scheduled. Upon successful completion of this exam and acceptance of the completed dissertation by the Graduate School, a student is conferred the degree of Doctor of Philosophy in Biochemistry, Biological Structure, Chemistry, or Medicinal Chemistry.

Student Support

The BMDS Program offers a nine-month competitive salary, as well as paying tuition and health insurance that includes medical, dental and vision benefits. Full support is guaranteed during the first year of the program. We have every expectation that continuous stipend and research support will be available throughout the student's entire tenure in the program. There are numerous traineeships and fellowships for which students are eligible to compete, in addition to support provided through individual faculty research grants.

Contact Information

Interdisciplinary Graduate Program in Biomolecular Structure & Design

Kelley Michele Pankow
Student Services Counselor
1705 NE Pacific Street, Box 357350
University of Washington
Seattle, Washington 98195-7350
Tel: 206-543-1661
Fax: 206-685-1792
E-mail: kellesp@u.washington.edu
Web: http://depts.washington.edu/bmsdwp
Epidemiology

School of Public Health and Community Medicine

Program Description
The Department of Epidemiology at the University of Washington is one of the most highly regarded epidemiology programs in the United States. Our 63 regular faculty members and 160 graduate students have a wide range of research and public health interests, including clinical, nutritional, genetic, metabolic, environmental, medical and socioeconomic factors associated with cancer, cardiovascular disease, diabetes, diseases of aging, global and maternal/child health, mental health, injury, and sexually-transmitted diseases. We have active affiliations with cooperating teaching hospitals, the Fred Hutchinson Cancer Research Center, Group Health, local health departments, and with other departments at the University of Washington. The wide range of faculty research areas and affiliations leads to a diverse and dynamic teaching program and numerous research opportunities for students.

The Department offers the Master of Public Health, Master of Science, and Doctor of Philosophy degrees. The MPH prepares public health practitioners to work in local/state and other public health agencies. The MS trains students to pursue research careers as project coordinators or research associates. The PhD program produces future academicians and independent researchers, all rigorously trained in the practice of epidemiology.

Program Philosophy
The goals of the Department of Epidemiology are (1) to advance knowledge about the causes of disease in human populations; (2) to educate the next generation of epidemiology professionals to assume leadership roles in academia, government, health agencies, non-governmental health organizations, and private industry; and (3) to provide professional service to the community by working with health agencies and other organizations to conduct collaborative epidemiologic research or to provide technical assistance.

Admissions Requirements
The Department welcomes Bachelor- or Master-level applicants from a variety of health science and related disciplines, including the quantitative social sciences and mathematics. The Admissions Committee looks for interest in epidemiology, and a range of indicators of high aptitude and academic achievement including grades, GRE scores, and letters of recommendation. While work experience in the health sciences is also preferred, applicants with little or no work experience may sometimes be admitted based on outstanding other factors, along with relevant undergraduate research experience. A health sciences major's degree is required to apply directly to the PhD program. Application deadlines are November 1st for international students and December 1st for domestic applicants. Applicants must apply to both the Graduate School and the Department of Epidemiology. Application instructions and forms are available at http://depts.washington.edu/epidemiadm.htm.

Program Requirements
Master's Degrees: both the MPH and MS require training in epidemiology, biostatistics, public health, and a research-based thesis. The MPH degree also requires a practice-based experience at a public health agency. The first year is focused on course work. Students take electives and work on their theses during the second year.

Doctor of Philosophy: the PhD program requires more extensive training in epidemiology, biostatistics, and public health than either of the master's programs. In addition to required course work, the doctoral program involves: (1) the Doctoral Preliminary Examination; (2) an original dissertation proposal; (3) the General Examination based on the dissertation topic; (4) data collection; (5) preparation of a dissertation of publishable quality; and (6) a public seminar.

Interdisciplinary Programs
The department also has five specialized programs: Global Health, Institute for Public Health Genetics, Maternal and Child Health, Clinical Research and Biostatistics, which offer additional opportunities for students.

Global Health: The Global Health curriculum includes sociopolitical, economic and geographic factors that impact health in developing countries.

Institute for Public Health Genetics: The institute integrates genomics, public health, ethics, law, social sciences, and public policy to promote disease prevention. It offers MPH and PhD degrees in Public Health Genetics and an MS degree in Genetic Epidemiology.

Maternal and Child Health (MCH): This MPH program introduces students to major issues in the health and welfare of U.S. women and children and emphasizes research skills for analyzing the causes of MCH problems.

Clinical Research (CR): The CR Track is chiefly intended for healthcare professionals who have already completed clinical training and who plan to conduct research in patient care settings as a significant part of their future careers.

Nutritional Sciences: the Nutritional Sciences Program offers MPH, MS and PhD degrees. Principal areas of study include public health, experimental and clinical nutrition.

Student Support
The Department offers a variety of funding including research assistantships and fellowships. We currently are associated with pre- and postdoctoral fellowship programs in cancer, cardiovascular disease, interdisciplinary biomedical sciences, maternal and child health, oral and reproductive health, including sexually transmitted diseases. Although funding is not automatic with admission to Epidemiology, historically, most students who accept an admission offer are able to obtain funding by their first Autumn Quarter.

Although funding is not automatic with admission to Epidemiology, historically, almost all students who accept an admission offer are able to obtain funding by their first Autumn Quarter.
Genome Sciences

Department of Genome Sciences

Program Description
Our faculty and students study a broad range of topics, including the genetics of E. coli, yeast, C. elegans, Drosophila and mouse; human and medical genetics; mathematical, statistical and computer methods for analyzing genomes and theoretical and evolutionary genetics; and genome-wide studies by such approaches as sequencing, transcriptional and translational analysis, polymorphism detection and identification of protein interactions. Successful completion of the graduate program, generally over a period of 5 years, leads to the PhD in Genome Sciences.

Program Philosophy
Our goal is to address leading edge questions in biology and medicine by developing and applying genetic, genomic and computational approaches that take advantage of genomic information now available for humans, model organisms and a host of other species.

Admissions Requirements
Applicants must have completed a baccalaureate or advanced degree at the time of matriculation. Degrees should be in either a science such as Biology, Biochemistry, or related field; or in a computational area such as Computer Science or Mathematics. An ideal candidate will have experience in both areas. The most competitive applicants will have excellent GRE scores as well as extensive laboratory research experience.

Our students are chosen from a very competitive pool and come from a wide variety of backgrounds; admission depends less on specific course work taken than on general academic excellence.

Further details and an online application are available at http://www.gs.washington.edu.

Program Requirements
Students complete a core course series during their first year in the program covering such topics as Gene Regulation Technologies for Genome Analysis, Genetic Analysis, Proteomics, Population Genetics, and Statistical Genetics. Elective courses in Human Genetics, Computational Biology, and other topics are available. Students also rotate through a minimum of three laboratories before selecting a thesis lab at the end of the first year.

The course of study is flexible. In addition to the core course series, students choose electives focused on their specific areas of interest, offered by a variety of UW departments. Thesis advisors are selected from over 45 training faculty members both from within the Department of Genome Sciences and among adjunct faculty members based in several UW departments and the Fred Hutchinson Cancer Research Center.

A student's second year in the program is spent on thesis research while continuing to take any elective course of interest. At the end of the second year, the student takes the General Exam for PhD Candidacy. During the third year, students serve as teaching assistants for two undergraduate courses. Most students complete their research and defend their dissertations during year five.

Student Support
Genome Sciences provides full funding for the duration of studies, subject to satisfactory academic progress, including a competitive salary, tuition waiver, and health insurance.

Contact Information
U.W. Genome Sciences
Graduate Program Manager
1705 NE Pacific Street
Fege Building, S340
University of Washington
Seattle, Washington 98195-5065
Tel: 206-616-7287
Fax: 206-685-7301
E-mail: bgiebel@uwashington.edu
Web: http://www.gs.washington.edu
IMMUNOLOGY

DEPARTMENT OF IMMUNOLOGY

PROGRAM DESCRIPTION
The Department of Immunology includes 38 faculty members who supervise research programs, and actively participate in graduate training of approximately 40 graduate students. Members of the faculty are world authorities in diverse aspects of immunology. They are part of an extraordinarily strong and diverse environment for the training of biomedical scientists at the University of Washington, which consistently ranks in the top 2-3 institutions nationally in support from the National Institutes of Health. Neighboring and affiliated institutions, including the Fred Hutchinson Cancer Research Center (FHCRC) and the Benaroya Research Institute at the Virginia Mason Research Center (BRI/VMRC), augment the research environment provided by the University of Washington. The FHCRC is one of the foremost cancer research centers in the nation, and the BRI/VMRC has in the past decade grown to become a robust center for the study of human immunology and genetics.

PROGRAM PHILOSOPHY
The Immunology PhD training program is designed to provide graduate students with the opportunity to pursue an understanding of immune responses in molecular detail and to do so in an environment in which the relevance for the understanding and management of human biology and disease is emphasized. This foundation enables our students to make fundamental discoveries and serves as a starting point for careers in academic, biotechnology and pharmaceutical research programs. The need for talented scientists in these areas, both in the academic realm and in industry, is clearly established.

ADMISSIONS REQUIREMENTS
Admission to the program is quite competitive. We believe that the course of study, while challenging, will be rewarding and provide students with a rigorous approach to scientific inquiry that will serve them well regardless of their ultimate area of interest and career path. Since a variety of different background experiences may contribute to a successful research career, the requirements for admission to the Department of Immunology are flexible. However, most successful applicants will have completed survey courses in biology, chemistry, and physics, one year of organic chemistry, and mathematics through integral calculus. Prior exposure to immunology through formal coursework, or especially through laboratory research, is desirable. Evidence of superior scholarship is required as is above average performance on the GRE General Test.

PROGRAM REQUIREMENTS
Each student is required to rotate through three laboratories during the first year, each rotation lasting one quarter. These rotations are the primary means for each student to become acquainted with the range of techniques, scientific interests, administrative styles, and personalities our department has to offer. Students usually identify their choice of advisor in May or June of their first year. Ten credits per quarter is considered full time enrollment. Curriculum consists of a mixture of graded courses and courses taken for credit/no credit. To fulfill Graduate School requirements, a total of 18 graded credits of curriculum must be included and passed within the first 3 years. The Graduate School specifies that all students must maintain a cumulative grade point average of at least 3.0 to graduate. In addition, the Department of Immunology requires a grade of at least 3.2 in Immunology courses. During Autumn quarter of their 2nd year, students are the Teaching Assistants for the undergraduate survey course, Immunology 441, Introduction to Immunology. Each graduate student is required to take the Qualifying Exam during their second quarter immediately following his or her second year of classes. The Qualifying Examination is first and foremost an important educational exercise. It is meant to help the student acquire the ability to review the literature critically and to formulate skills necessary to develop research proposals, which provide an important foundation for a career in immunological investigation. Students who have passed the Qualifying Exam may begin preparing for the General Exam, which must be taken within 15 months of the Qualifying Exam. Graduate students will take the General Exam at the end of their third year of graduate study. The focus of the General Exam is on research and is in the form of a comprehensive examination. It is designed to assess the student's ability to evaluate and to critically analyze scientific literature. It is expected that students will publish or accept for publication one or more first-author peer-reviewed manuscripts describing original research before graduating from the doctoral program. The dissertation is written and defended approximately 5.5 years after entering the program.

STUDENT SUPPORT
Immunology Graduate Students are supported by the department with a competitive living expenses stipend, health care benefits and paid tuition for the time they remain in good standing in the program.

IMMUNOLOGY - ITS HISTORY, ITS FUTURE
The science of immunology arose from attempts by physicians in earlier centuries to explain the observation that individuals who have recovered from an infection are commonly resistant to that infection on subsequent exposure. This, and the observation that milkmaids who became infected with cowpox were protected during outbreaks of smallpox, led Edward Jenner in the late 1700's to perform the first successful trial of vaccination, which gave birth to the field of immunology and ultimately led to the worldwide eradication of smallpox nearly 300 years ago. Through two centuries of exploration, immunology has remained at the leading edge of scientific discovery that now encompasses basic molecular and cellular biology, the biology of complex systems and the translation of basic research into medically useful agents and strategies to combat or prevent infection, allergy, autoimmunity and cancer. The faculty, students and postdoctoral researchers in the Department of Immunology invite you to learn more about the excitement of working in this field and to join us in the process of discovery.

CONTACT INFORMATION
DEPARTMENT OF IMMUNOLOGY
Training Program Manager
1959 NE Pacific Street
Box 357650, Room H564 HSC
University of Washington
Seattle, Washington 98195-7650
Tel: 206-685-3655
Fax: 206-543-1013
E-mail: immgrd@u.washington.edu
Web: http://depts.washington.edu/immunweb/
**Department of Microbiology**

**Program Description**

The department offers a graduate program leading to a PhD in Microbiology. We also participate in the School of Medicine's MD/PhD Program, the interdisciplinary Molecular and Cell Biology Program, an inter-college PhD program in Astrobiology, and an interdepartmental graduate program in Computation Molecular Biology.

The department has a national reputation for high quality teaching and an international reputation for excellence in research. The members of our department are largely concerned with understanding the mechanisms by which organisms interact with one another and with their environment at the cellular and molecular levels. Our faculty span a broad range of interests including microbial ecology, physiology, virology, and microbial pathogenesis in both animal and plant systems. Because of the strong interdisciplinary nature of these interests, numerous collaborative efforts between our faculty and those in other science and medicine departments have developed.

**Program Philosophy**

The Department of Microbiology is strongly committed to its primary role in training researchers for careers in academia and industry. Students are given the opportunity to develop research and teaching skills in a supportive environment. We normally have about 30 students in our graduate program.

**Admissions Requirements**

Students can be admitted to the PhD program with a background in any biological science discipline. Selection is based on the evaluation of a student's undergraduate record for indications of the ability to excel in independent, creative research. The department strongly recommends that undergraduate preparation include courses in biochemistry, physics, general and organic chemistry, microbiology, molecular biology and cell biology. Prospective students are also strongly advised to seek opportunities to carry out undergraduate research. Applications are due by December 15th for admission to the graduate program in the following academic year. For more information about our program and how to apply, please visit our web site: [http://depts.washington.edu/micro](http://depts.washington.edu/micro).

**Program Requirements**

Study towards the PhD begins in September. During their first and second years, students take a number of graduate courses in the Department of Microbiology as well as other basic science departments. While all students are required to take several core courses, the program leaves substantial flexibility for a number of elective courses best suited for individual interests. In addition to formal courses, students participate in a departmental journal club and attend the weekly microbiology seminar series. Students are also encouraged to attend seminars offered throughout the academic year by other basic science departments.

During the first year, students participate in 10-week research rotations in three laboratories. These rotations allow students to familiarize themselves with the research directions of individual laboratories, assess a broad research experience, and aid in selection of a research advisor and a dissertation project.

The teaching requirement for the PhD degree is satisfied by assisting in the teaching of undergraduate laboratories during the first and second year, and by giving two or more formal lectures in undergraduate courses in the third or fourth years of training.

In addition to meeting formal requirements, students take part in various scholarly activities on a voluntary basis. This includes a student journal club and an annual graduate student retreat combining science and recreation. Furthermore, students participate in various departmental activities through their representatives on search committees, the graduate admissions committee, and the seminar committee.

**Student Support**

The Microbiology Program offers a twelve-month competitive salary, as well as complete tuition support and health benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

---

**Contact Information**

Sarah Mears  
Academic Counselor  
1959 NE Pacific Street  
Box 357242, Room K335A, HSC  
University of Washington  
Seattle, Washington 98195-7242  
Tel: 206-543-2572  
Fax: 206-543-8237  
E-mail: advmicro@u.washington.edu  
Web: [http://depts.washington.edu/micro](http://depts.washington.edu/micro)
Molecular & Cellular Biology Graduate Program

Program Description
The University of Washington, the Fred Hutchinson Cancer Research Center, and the Institute for Systems Biology collaborate to offer a program of graduate studies leading to a PhD in Molecular and Cellular Biology. The program uses the extensive research facilities of individual departments on the UW campus and the UW Medical Center, the nearby Lake Union campus of the FHCRC and the ISB campus. The participating faculty at the UW campus is located in the Departments of Biochemistry, Bioengineering, Biological Structure, Biology, Environmental Health, Genome Sciences, Immunology, Microbiology, Pathobiology, Pathology, Pharmacology, and Physiology and Biophysics.

Program Philosophy
The goal of the MCB program is to facilitate the development of independent and highly motivated students into creative molecular and cellular biologists. The guiding philosophy of the program directs us to actively involve students in designing a program of graduate studies that meets their individual needs. This philosophy is coupled with the notion that ongoing and challenging dialogue between students and faculty is an integral part of higher education.

The goals of training students broadly in modern biology and fostering their ability to design and critique scientific ventures, are pursued through the basic elements of the program. These include three quarters of general courses in the first year, a three-quarter literature review course, advanced elective courses, and informal and formal seminars. In addition, students engage in laboratory rotations in each of their first three quarters to broaden their training and to decide on a laboratory in which to pursue their thesis research.

Admissions Requirements
Students who excel in the Program tend to be self-motivated, creative, and interested in being actively involved in the design of their graduate education, en route to careers in all areas of molecular and cellular biology. Applicants must have completed a baccalaureate or advanced degree by the time of matriculation; degrees emphasizing biology, physical or natural sciences, and mathematics are preferred. Required materials must reach the Program office by December 15th in order to be considered for Autumn enrollment the following year. Students should apply via the on-line application accessed through the MCB web site at http://www.mcb-seattle.edu.

In addition to the Graduate School's application requirements, the prospective student must submit an on-line an MCB Program application form, a personal statement of research interest and career goals, three letters of recommendation, transcripts from each institution attended, a resume, and Graduate Record Examination scores.

Program Requirements
Due to the broad nature of the program, the formal course requirements are kept to a minimum to accommodate the different learning objectives of the individual students. A major responsibility of the student's Doctoral Supervisory Committee is to advise students of additional courses that would provide essential background information in their chosen area of research beyond the program's requirements.

Students complete most of their formal course requirements (21 graded credits with 9 credits of CONJ and 12 credits of electives), and select a permanent advisor. A typical first-year class schedule includes 6, five-week modules of the MCB Conjoint series, 3 lab rotations, 3 quarters of literature review and one or more graded elective classes. Following the third rotation, students generally choose a permanent advisor. During summer students complete the Biomedical Research Integrity Lecture Series.

In the second year students define their doctoral projects, take additional elective courses, and participate as teaching assistants for two quarters. By Winter Quarter the Supervisory Committee is formed. An initial Committee meeting is held by the last day of Spring Quarter.

By the end of Spring Quarter of the third year, students complete the General Examination and are conferred official PhD Candidacy by the Graduate School. They then focus on their dissertation research and continue to meet with their Supervisory Committee each Spring Quarter to report on their research progress and plans for the coming year. When the Supervisory Committee agrees that a student is ready, the Final Examination is scheduled. Upon successful completion of this exam and acceptance of the completed dissertation by the Graduate School, a student is conferred the degree of Doctor of Philosophy.

Student Support
The MCB Program offers a twelve-month competitive salary, as well as paying tuition and health insurance, that includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.
NEUROBIOLOGY & Behavior

Graduate Program in Neurobiology & Behavior

Program Description
The University of Washington offers an interdisciplinary degree in the Graduate Program in Neurobiology and Behavior which encompasses more than 20 departments from the Schools of Medicine, Engineering, Public Health, Pharmacy, and Arts & Sciences. The academic program leading to the PhD degree provides a broad background in neuroscience and extensive training in the application of modern experimental methods to fundamental problems in neurosciences. The overall goal is to have an integrated program in the neurosciences that provides students with training and education over the breadth of neuroscience, including molecular, developmental, cellular, systems, computational, and behavioral neuroscience – from the molecule to the mind.

Program Philosophy
Understanding the brain represents both a major scientific challenge and a wonderful research opportunity. Investigations into the mechanisms of neural function require an interdisciplinary approach using the knowledge base and techniques of anatomy, biochemistry and molecular biology, physiology, pharmacology, computer science, and the behavioral sciences. Neuroscientists and their students must use these different approaches in their research and training if they are to make inroads into solving the major questions in neuroscience.

The challenges and opportunities for neuroscience research require investigators to be trained thoroughly across the wide range of neuroscience, from molecular to behavioral. To meet these challenges, the University of Washington has established a single interdisciplinary doctoral degree-granting neuroscience program called the Graduate Program in Neurobiology and Behavior. This is an integrated program that provides students with training in the breadth of neuroscience.

Admissions Requirements
Students who wish to submit a competitive application to the Program should have a solid background in biological and/or physical sciences, and should have more than six months of hands-on laboratory experience. They must submit a copy of their academic records (transcripts), recent GRE scores, a curriculum vitae, and a statement of purpose. They must also have three letters of recommendation from people who can best evaluate their potential for graduate study. All of these items are submitted in an online application via the UW Graduate School web site: http://www.grad.washington.edu/application. Required materials must be submitted by the deadline (visit http://depts.washington.edu/behneuro/ for the current deadline) in order to be considered for Autumn enrollment the following year.

Program Requirements
The Graduate Program in Neurobiology & Behavior is designed to allow students to obtain both broad training in the neurosciences as well as more intensive course work in their specific areas of interest. The Program emphasizes flexibility and responsibility of the students in the design of their curricula, and encourages students to begin intensive research on their dissertation research projects.

The key aspects of the PhD Program that are common to all students are: (1) a year-long course providing students with a core of knowledge over the breadth of neuroscience; (2) the quarterly first year laboratory rotations, with rotation talks attended by all students in the Program; (3) a bi-weekly Program-wide journal; (4) a bi-weekly seminar series featuring both outside and UW speakers; and (5) a Program-wide retreat, combined with or in addition to a campus-wide poster session where students and postdocs can present their Society for Neuroscience Annual Meeting posters. Thus, the Program will provide students with training and exposure to the most exciting and current research and concepts covering all areas of neuroscience throughout their graduate careers.

In order to fulfill the requirements of the PhD in Neurobiology & Behavior, students are also required to take ten (10) credits of elective credits, take a total of 18 graded credits (which can be fulfilled through their electives), and participate in two (2) quarters of teaching assignments. Students must choose their Supervisory Committee and take their General Examination by the end of their second year or beginning of their third year. After the exam, the student must meet annually with his or her Supervisory Committee to review progress. The student must also submit an annual progress report to the Graduate Training Committee.

When the Supervisory Committee agrees that a student is ready, the Final Examination is scheduled. Upon successful completion of this exam and acceptance of the completed dissertation by the Graduate School, a student is conferred the degree of Doctor of Philosophy.

Student Support
The N&B Program offers a twelve-month competitive salary, as well as paying tuition and health insurance, which includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

Faculty & Their Research
The Graduate Program in Neurobiology & Behavior currently has over 110 participating faculty from over 20 affiliated departments and programs.

Areas of research interest include, but are not limited to:
- Behavioral Neuroscience
- Cell and Molecular Biology of the Nervous System
- Computational Neuroscience
- Developmental Neurobiology
- Disorders of the Nervous System
- Excitable Membranes and Synaptic Transmission
- Invertebrate Neurobiology
- Motor Systems and Sensorimotor Integration
- Neuroendocrinology
- Neurotransmitters, Modulators, Transporters, and Receptors
- Sensory Systems

Contact Information
Graduate Program in Neurobiology & Behavior
1959 NE Pacific Street
Box 357270, Room T471 HSC
University of Washington
Seattle, Washington 98195-7270
Tel: 206-685-1647
Fax: 206-616-6280
E-mail: neu beh@uwashington.edu
Web: http://depts.washington.edu/behneuro/
PATHOBIOLOGY

PATHOBIOLOGY

PROGRAM DESCRIPTION

The Interdisciplinary Program in Pathobiology is administered by the Department of Global Health and provides opportunities for students to work with faculty across campus and the world who conduct research on the biomedical nature of disease. The Doctoral program (4-5 years) is designed for students to become capable of conducting independent research leading to the expansion of knowledge by developing skills to approach unfamiliar experimental systems and identify and explore important questions concerning pathogenesis and infection. Students develop familiarity with the paradigms for control, prevention, and treatment; develop an understanding of epidemiology and disease processes; learn how biomedical research can approach diseases of national and international public health importance; learn basic methodologies used in this research including relevant areas of molecular biology, bacteriology, cell biology, virology, epidemiology, and biostatistics; and develop familiarity with the major classes of pathogens.

In the first year, students rotate through three laboratories to become acquainted with faculty research programs and complete the preliminary examination. Subsequently, each student selects a track based on research interests (Eukaryotic, Bacterial, Viral) and identifies a mentor to precept their research. During the first two years, students are expected to fulfill core course requirements and take the general examination. Students then complete their research project, dissertation and defense of their dissertation.

PROGRAM PHILOSOPHY

The Pathobiology graduate program offers graduate training in the application of basic biomedical research to diseases of public health interest. The program of study involves core courses to develop a fundamental understanding of basic cellular and molecular processes and techniques important in the application of basic biomedical research to diseases; laboratory experience to learn how to collect, analyze, interpret, and use data for solving problems; and opportunities to develop skills in communicating research findings through oral and written presentations.

ADMISSIONS REQUIREMENTS

All applicants must submit to the Graduate School the Graduate School application, fee and an official transcript from all colleges attended.

All applicants must submit to the Pathobiology Department the Pathobiology application, personal statement, curriculum vitae, 3 letters of recommendation, an official transcript from all colleges attended and official Graduate Record Examination (GRE) scores.

International applicants must also submit official Test of English as a Foreign Language (TOEFL).

For more information about our program, application deadlines and how to apply, please visit our web site http://depts.washington.edu/pathbio/.

STUDENT SUPPORT

The Department offers a twelve month competitive salary, as well as paying tuition and health insurance, which includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

FACULTY & THEIR RESEARCH

The Pathobiology Graduate Program currently has over 52 participating faculty from over 15 affiliated departments and programs.

Areas of research interest include, but are not limited to:
- Bacterial Pathogens
- Parasites and fungi
- Viruses
- Host and host response
- Host/pathogen interactions

Please see our web site for individual faculty research and descriptions:
http://depts.washington.edu/pathbio/.

A School of Public Health Basic Science Department unique in its focus on host-pathogen interactions and human disease.

CONTACT INFORMATION

PATHOBIOLOGY

Manager of Student Services

1599 NE Pacific Street

Box 357238, Room F167 HSC

University of Washington

Seattle, Washington 98195-7238

Tel: 206-543-4338

Fax: 206-543-3873

E-mail: ghpsorg@u.washington.edu

Web: http://depts.washington.edu/deptph/programs/phd/index.html
PATHOLOGY

DEPARTMENT OF PATHOLOGY

PROGRAM DESCRIPTION

The Molecular Basis of Disease Graduate Program offers graduate training in biology with an emphasis on disease. Students receive their PhD degree for research in tumor biology, developmental biology, vascular biology, virology, 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 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 involves participation in a core course in molecular and cell biology and 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 (PhD) or a combined degree (MD/PhD) and physicians, dentists, or veterinarians who are pursuing a PhD.

The research interests of the faculty include vascular biology, tumor biology, environmental biology, aging, neurobiology, the immune response, inflammation and repair, and 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 approximately 40 graduate faculty members and about 50 postdoctoral fellows who interact with graduate students.

PROGRAM PHILOSOPHY

Pathology is the study of the mechanisms, causes and consequences of disease. The Graduate Program in the Department of Pathology focuses on the study of the pathogenesis of disease, that is, the alterations in the biomedical processes that lead to disease. The Department of Pathology offers a unique environment to pursue mentored research that applies basic science knowledge to the understanding of disease processes. The Program emphasizes the research and intellectual skills needed for the development of new biomedical knowledge applicable to human diseases.

Graduate students in the program benefit from the opportunity to learn the theory and practice of biomedical research in a department that includes basic research and clinical divisions. In addition to their research programs, many of our faculty are internationally recognized for their skills in diagnostic pathology. Research within the Department of Pathology receives more support from the National Institutes of Health than does any other Pathology department in the country, a good indicator of the highly productive work performed in our research laboratories. The combination of basic research and medical knowledge, and the strong funding available in the Department of Pathology provides an excellent environment to prepare researchers for successful careers in academic institutions and the 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). This is a University of Washington Graduate School requirement. 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 Pathology Program offers a twelve-month competitive salary, as well as paying tuition and health insurance, that includes medical, dental and vision benefits. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

RESEARCH AND PATHOLOGY

• The Graduate Program in the Department of Pathology 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

DEPARTMENT OF PATHOLOGY

Graduate Training Program Manager
1959 NE Pacific Street
Box 357470, Room C516 HSC
University of Washington
Seattle, Washington 98195-7470
Tel: 206-616-7551
Fax: 206-543-3644
E-mail: kahn@uwashington.edu
Web: http://www.pathology.washington.edu
PHARMACOLOGY

DEPARTMENT OF PHARMACOLOGY

PROGRAM DESCRIPTION

The Department of Pharmacology at the University of Washington is consistently ranked among the best in the nation. We pride ourselves on our dynamic graduate and postdoctoral research training programs, and on the great success of our trainees.

The program of study includes training in molecular, cellular, and other basic aspects of pharmacology. There are opportunities for research in a wide variety of areas. The department maintains an active program of research meetings and seminars in which current developments in pharmacology are discussed by the faculty, students, and invited lecturers. This program exposes students to new ideas in pharmacology by providing contact with internationally recognized scientists.

PROGRAM PHILOSOPHY

The graduate training program is characterized by close collegial relationships between faculty members and students, diverse research opportunities, and individually tailored programs of course work and research. Creative and hands-on research experience are emphasized in preparation for a career of independent research. Recent graduates have been successful in obtaining excellent positions in academic, industrial, and governmental positions involving teaching, research and administration.

ADMISSIONS REQUIREMENTS

There are no specific course requirements for admission to the graduate program in Pharmacology. Applicants generally have strong course work in the chemical and biological sciences. Most applicants have a Bachelors degree in chemistry, biology, or pharmacy.

A number of factors influence admissions decisions. Among these are an evaluation of the student’s academic records, scores on the Graduate Record Examination, letters of recommendation, previous research experience, and the ability of the faculty to give personal direction to the prospective candidate’s program and work.

Students who have emphasized either biological or physical sciences in their undergraduate careers are invited to apply online to the Program at http://depts.washington.edu/phcol/. The deadline for receipt of completed applications is December 15th to be considered for Autumn enrollment the following year.

PROGRAM REQUIREMENTS

All new students will meet with the Graduate Program Advisor before the start of classes in the autumn quarter. During this meeting, the student’s course work will be considered. The selection of courses depends on the student’s background, research goals, and other objectives. For the most part, first-year classes include introductory pharmacology courses and courses in physiology and biochemistry.

All students take General Pharmacology for graduate students (Pharmacology 510, 511, 512, 513). In addition, students take four advanced courses in pharmacology (two or three credit hours each). Students also take 9 credit hours of graded graduate courses in other areas (i.e. biochemistry, molecular biology, physiology, immunology and cell biology) that are relevant to their dissertation studies. These requirements are flexible, allowing selection of courses to be tailored to the needs and interests of individual students. The courses are to be selected by the student with the advice of the Graduate Program Advisor and Preceptor.

STUDENT SUPPORT

Financial support is offered to students who maintain satisfactory academic progress. This also includes medical, dental, and vision benefits. Tuition and stipends are provided by National Institutes of Health training grants, UW teaching assistantships, individual research grants, and fellowships from private sources.

FACULTY & THEIR RESEARCH

The Department of Pharmacology currently has over 20 participating faculty from over 11 affiliated departments and programs.

Pharmacology is the study of the interaction of living cells and organisms with the molecules they encounter in their environment. Areas of active research range from evaluation of the effects of drugs and environmental chemicals on humans and animals, to study of the actions of hormones, neurotransmitters, and other physiological regulators on individual cells and examination of the detailed molecular structure of cellular constituents which play critical roles in cellular regulation and drug interactions. Modern research in pharmacology applies experimental methods derived from a range of disciplines from clinical medicine to biophysics, biochemistry, and molecular biology to provide a detailed understanding of drug action and cellular regulation at many different levels of inquiry: the human patient, the experimental animal, the individual cell, the proteins that are the cellular mediators of drug and hormone actions, and the genes that specify their structure.

Pharmacology faculty members are involved in research and teaching programs in all the diverse areas of pharmacology with special emphasis on molecular pharmacology and cellular regulation, neuropharmacology, and environmental toxicology.

CONTACT INFORMATION

DEPARTMENT OF PHARMACOLOGY

Graduate Admission Coordinator
1959 NE Pacific Street
Box 357280
University of Washington
Seattle, Washington 98195-7280
Tel: 206-685-9252
Fax: 206-685-3822
E-mail: phcolladm@u.washington.edu
Web: http://depts.washington.edu/phcol/
DEPARTMENT OF PHYSIOLOGY & BIOPHYSICS

PROGRAM DESCRIPTION
The graduate program in Physiology & Biophysics is designed to expose students to a broad range of experimental and analytical skills required for a successful career in research and/or teaching. The research opportunities in the department are very broad, ranging from identification of key molecules in cell division to how decisions are formed and executed in the brain. Students, post-docs and faculty in the department share a common aim of bringing work in these diverse areas together to advance our understanding of how the body works.

PROGRAM PHILOSOPHY
Physiology & Biophysics (PBio) students enter the program from a variety of backgrounds (physics, biology, biochemistry, mathematics and zoology among others). This diversity is reflected in the backgrounds of the faculty. The combination of research approaches and techniques represented by these different fields is critical to success in modern biological sciences. Through formal and informal instruction we aim to help each individual student make the best use of his or her background while also establishing a core set of knowledge.

The PBio graduate curriculum is tailored to reflect the continuing interdisciplinary nature of biological sciences. During the first year students take a series of general courses that establish a core knowledge base. First-year students also complete three lab rotations, which assist in choosing a lab to complete their thesis research. During the second year students begin their thesis research, act as teaching assistants for two quarters, and take elective courses. Electives are chosen from a list of mini-courses whose topics reflect the current interests of faculty and students. Students are required to take at least 6 mini courses; 15 mini courses are currently offered with additional courses being added each quarter.

ADMISSIONS REQUIREMENTS
Since PBio students enter the program from many undergraduate backgrounds we do not have any formal prerequisites or admissions requirements outside of an undergraduate degree. The most important requirement is a strong motivation and excitement about doing science. The application deadline is January 2nd; to ensure consideration please make sure your application is complete by this date. Students are only admitted for Autumn Quarter. For more information about the program and application instructions and requirements please go to: http://depts.washington.edu/pbiopage.

PROGRAM REQUIREMENTS
Due to the broad nature of the research interests in the department and the diversity of backgrounds of our graduate students, formal course requirements are kept to a minimum. Students are encouraged to shape their own graduate education, as they choose the majority of their course work and the scientific direction for their research. The courses available include those offered by other departments in the Medical School and elsewhere on campus.

Students form a Supervisory Committee after they choose a lab to conduct their thesis research. This committee is generally formed during the second year of graduate studies and assists the student in identifying possible thesis topics and additional course work if needed. Students hold annual meetings to discuss their progress and get feedback from their committee.

During the third year students take their general examination. The general exam consists of an oral presentation of the thesis proposal to members of the Supervisory Committee, followed by an oral examination. Success in this examination marks the beginning of the candidacy for the doctoral degree. Thereafter, students focus on their thesis research and take courses based on interest and relevance. The culmination of the program is the submission of a written doctoral thesis and the presentation of this work in a public lecture attended by members of the department and the University.

STUDENT SUPPORT
The PBio Department offers a twelve-month competitive salary, as well as paying tuition and health insurance, which includes medical, dental and vision benefits for all of our graduate students, provided that ongoing progress in the program is made.

CONTACT INFORMATION
DEPARTMENT OF PHYSIOLOGY & BIOPHYSICS

Jon Cimochowski
Graduate Program Manager
1959 NE Pacific Street
Box 357290, Room 6424 HSC
University of Washington
Seattle, Washington 98195-7290
Tel: 206-685-0619
Fax: 206-685-0619
E-mail: jnc@u.washington.edu
Web: http://depts.washington.edu/pbiopage/