

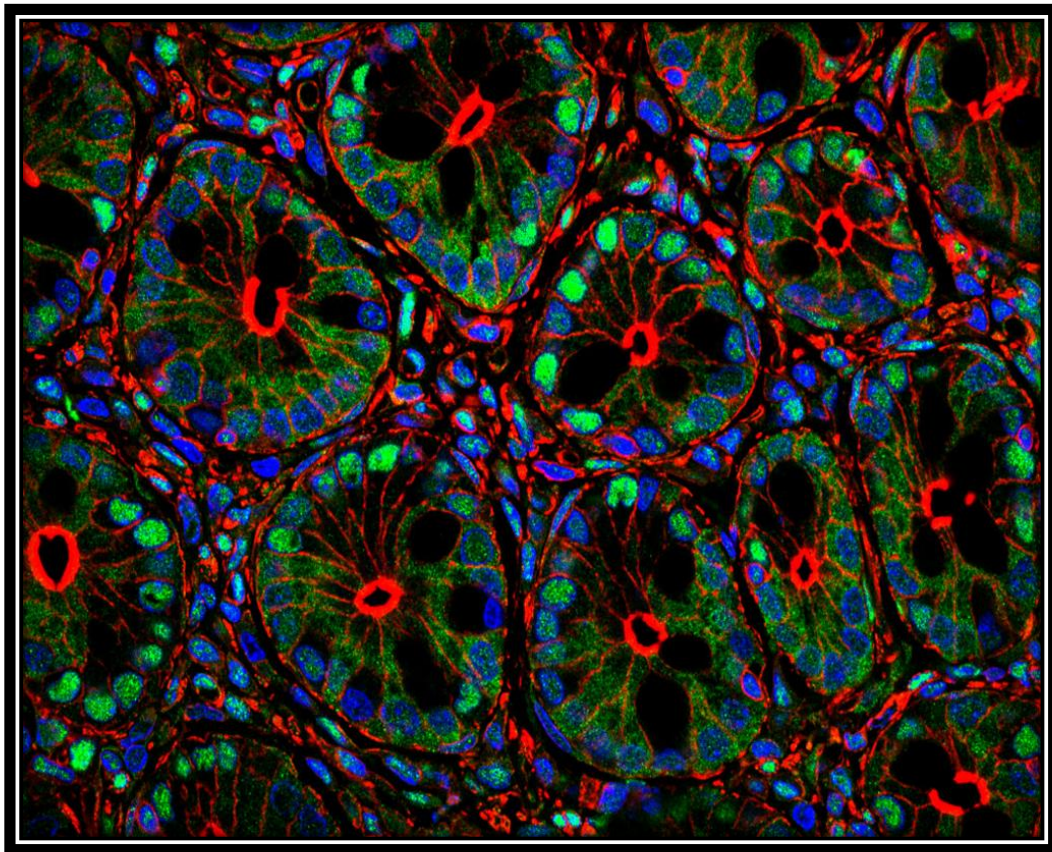
UNIVERSITY OF PITTSBURGH

SCHOOL OF MEDICINE

INTERDISCIPLINARY BIOMEDICAL

GRADUATE PROGRAM HANDBOOK

2016-2017 ACADEMIC YEAR



FORWARD

Welcome to the Interdisciplinary Biomedical Graduate Program of the University of Pittsburgh School of Medicine. This handbook provides useful information pertaining to the Interdisciplinary Program and progress toward your degree. The material contained within the handbook is as current as possible; however, many areas change and material may become outdated or inaccurate within a year. Please read any future memos and/or e-mails you might receive to remain abreast of such changes.

All questions and/or suggestions concerning your Handbook should be directed to:

Graduate Studies Office
University of Pittsburgh School of Medicine
524 Scaife Hall
412-648-8957 (phone)
412-648-1077 (fax)

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UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE

GRADUATE STUDENT HANDBOOK

2016-2017 ACADEMIC YEAR

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**School of Medicine Biomedical Sciences
Degree Granting Programs**

Cell Biology & Molecular Physiology Graduate Training Program (CBMP):

Director: Michael Butterworth, PhD	S314 Biomedical Science Tower Michael7@pitt.edu	412-383-8591
Associate Director: Donna Stolz, PhD	S221 Biomedical Science Tower	412-383-7283
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Cellular & Molecular Pathology Graduate Training Program (CMP):

Director: Wendy Mars, PhD	S411-B Biomedical Science Tower wmars@pitt.edu	412-648-9690
Associate Director: Alejandro Soto-Gutierrez, PhD	S423 Biomedical Science Tower mcd14@pitt.edu	412-648-0064
Graduate Coordinator: Shannon Hozinec	S417 Biomedical Science Tower hozinecsl@upmc.edu	412-648-9550

Immunology Graduate Training Program (IMM):

Director: Robert Binder, PhD	E1051 Biomedical Science Tower rjb42@pitt.edu	412- 648-9471
Associate Director: Binfeng Lu, PhD	E1047 Biomedical Science Tower binfeng@pitt.edu	412-648-9339
Graduate Coordinator: Ryan Moeslein	1000A Biomedical Science Tower moeslein@pitt.edu	412-648-7050

Molecular Genetics and Developmental Biology Graduate Training Program (MGDB):

Director:
Michael Tsang, PhD 446 Magee Women's Research Inst. 412-641-2460
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Associate Director:
Kara Bernstein, PhD Hillman Cancer Center G-1 412-623-3227
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Graduate Coordinator:
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Molecular Pharmacology Graduate Training Program (MPHL):

Director:
Patrick Pagano, PhD E1247 Biomedical Science Tower 412-383-6505
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Molecular Virology & Microbiology Graduate Training Program (MVM):

Director:
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Graduate Coordinator:
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Summary of Interdisciplinary PhD Programs & Course Catalog

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Interdisciplinary Biomedical Graduate Program

Core Requirements (19 credits completed during year 1)

INTBP 2000 **Foundations of Biomedical Science** (Fall) 8 Credits

INTBP 2005 **Foundations Conference** (Fall) 4 Credits

INTBP 2290 **Scientific Ethics and the Responsible Conduct of Research** (Summer) 1 Credit

INTBP 2013 **D2K: From Data to Knowledge – Biomedical Experimental Design and Analysis** (Summer) 3 Credits

INTBP 2010 **Laboratory Research Rotation** (All) 1 Credit (3 Rotations Required)

After preliminary evaluation at end of year 1, students transfer into one of six specialized PhD programs

Program-specific Requirements (6 - 11 credits during years 1 and 2)

See Table below for course listings

Electives

(typically 3 – 9 credits during years 1 and 2)

INTBP 3240 (F) 2 Cr **Grant Writing for Graduate Studies**

See Table below for additional details

32 credits of course work required for PhD

Comprehensive Exam

See individual programs for details

Teaching Practicum

See individual programs for details

PhD Thesis Proposal

See individual programs for details

PhD Dissertation Research (All, 1-14 credits)

40 credits of research required for PhD

72 total credits required for PhD

PhD Program	CBMP Cell Biology & Molecular Physiology	CMP Cellular & Molecular Pathology	IMM Immunology	MGDB Molecular Genetics and Developmental Biology	MPLH Molecular Pharmacology	MVM Molecular Virology & Microbiology
Program Requirements	<p>MSCBMP 2880 (Sp) 3 Cr Cell Biology of Normal and Disease States</p> <p>MSCBMP 2830 (Sp) 2 Cr Cell & Molecular Physiology <u>OR</u> MSCBMP 2840 (Su) 1 Cr Regulation of Membrane Traffic <u>OR</u> MSCBMP 2885 (Sp) 3 Cr Imaging Cell Biology in Living Systems</p> <p>MSCBMP 2851-56 (A) 1 Cr Research Seminars</p> <p>MSCBMP 2875 (A) 1 Cr Experiments and Logic In Cell Biology</p> <p>INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies</p>	<p>MSCMP 2730 (Sp) 3 Cr Molecular Mechanisms of Tissue Growth & Differentiation</p> <p>MSCMP 2750 (F&Sp) 1 Cr (5 semesters required) Research Seminar</p> <p>INTBP3240 (F) 2 Cr Grant Writing for Graduate Studies</p> <p>MSCMP 2740 (Sp) 3 Cr Molecular Pathobiology <u>OR</u> MSCMP 3710 (F) 3 Cr Cancer Biology & Therapeutics</p>	<p>MSIMM 2210 (Sp) 2 Cr Comprehensive Immunology</p> <p>MSIMM 2230 (Sp) 2 Cr Experimental Basis of Immunology</p> <p>MSIMM 2250 (Sp) 2 Cr Teaching Assistant: Medical Microbiology</p> <p>MSIMM 3220 (F&Sp) 1 Cr Contemporary Topics in Immunology</p> <p>MSIMM 3230 (Fall) 2 Cr Immunology & Human Disease</p> <p>MSIMM 2260 1 Cr Immunology Seminar</p>	<p>MSMGDB 2525 (Sp) 2 Cr Developmental Mechanisms of Human Disease</p> <p>MSMGDB 2535(Sp) 2 Cr Model Organisms</p> <p>MSMGDB 2550 (F&Sp) 1 Cr Research Seminar</p>	<p>MSMPLH 2310 (Sp) 3 Cr Principles of Pharmacology</p> <p>MSMPLH 2360 (Sp) 3 Cr Biology of Signal Transduction</p> <p>MSMPLH 3360 (F) 2 Cr Molecular Pharmacology</p> <p>MSMPLH 3310 (F) 3 Cr Cancer Biology & Therapeutics <u>OR</u> MSMPLH 3375 (Sp) 3 Cr Neuropharmacology <u>OR</u> MSMPLH 2370 (F)3 Cr Drug Discovery (only offered in even years – i.e. 2008, 2010)</p>	<p>MSMVM 2410 (Sp) 2 Cr Molecular Virology</p> <p>MSMVM 2430 (Sp) 1 Cr Microbiology Teaching Assistant</p> <p>MSMVM 2450 (F&Sp) 1 Cr Research Seminar</p> <p>MSMVM 3410 (Sp) 2 Cr Microbial Pathogenesis</p>
Electives Students may take electives from their program and from others. They should consult with their advisor and program director in designing their plan of study.	<p>MSCBMP 2860 (Su) 3 Cr Multiparametric Microscopic Imaging</p> <p>MSCBMP 2870 (Sp) 5 Cr Histology</p> <p>INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies</p>	<p>MSCMP 2760 (Sp) 3 Cr Introduction to Tissue Engineering</p> <p>MSCMP 2770 (Sp) 3 Cr Biomaterials & Biocompatibility</p> <p>MSCMP 3730 (F&Sp) 1 Cr Topics in Experimental Neuropathology</p> <p>MSCMP 3735 (F) 3 Cr Extracellular matrix in Tissue Biology and Engineering</p> <p>MSCMP 3740 (F) 3 Cr Stem Cells</p> <p>MSCMP 3750 (Sp) 3 Cr Angiogenesis</p>	<p>MSIMM 2240 (F) 2 Cr Immunobiotherapeutics</p> <p>INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies</p> <p>MSIMM 3250 (Sp) 2 Cr Transplantation Immunology</p> <p>MSIMM 3260 (F) 2 Cr Immunity and the Neuroendocrine Axis</p> <p>MSIMM 3280 (F) 1 Cr Immunology of Infectious Diseases</p> <p>MSIMM 3440 (Sp) 2 Cr Vaccines and Immunity</p>	<p>MSMGDB 3530 (Sp) 3 Cr Genome Instability and Human Disease</p> <p>INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies</p> <p>MSMGDB 3510 (Alt F) 3 Cr Advanced Topics in Gene Expression</p> <p>MSMGDB 3540 (Alt F) 3 Cr Reproductive Development from Model Organisms to Humans</p> <p>MSMGDB 3550 (F) 3 Cr Stem Cells</p>	<p>MSMPLH 3330 (Sp) 3 Cr Genome Instability and Human Disease (only offered in even years-i.e. 2016, 2018)</p> <p>MSMPLH 3375 (Sp) 3 Cr Neuropharmacology</p> <p>MSMPLH 3310 (F) 3 Cr Cancer Biology & Therapeutics</p> <p>INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies</p>	<p>MSMVM 2420 (Sp) 2 Cr Experimental Virology</p> <p>MSMVM 2480 (Alt S) 2 Cr Mechanisms of Microbial Persistence</p> <p>MSMVMV 3420 (F) 2 Cr Viral Pathogenesis</p> <p>MSMVM 3435 (Alt F) 2 Cr Tumor Virology</p> <p>MSMVM 3471 (Sp) 2 Cr Innate Immunity</p> <p>MSMVM 3475 (Alt Su) 1 Cr Imaging Host Pathogen Interactions</p> <p>MSMVM 3480 (Alt F) 2 Cr Immunology of Infectious Disease</p>

		MSCMP 3760 (F&Sp) 1 Cr Research Seminar in Regenerative Medicine				INTBP 3240 (F) 2 Cr Grant Writing for Graduate Studies
<u>Electives continued</u>		MSCMP 3770 (Su) 3 Cr Cell Therapy				
		MSCMP 3780 (F) 2 Cr Systems Approaches to Inflammation				
		MSCMP 3790 (F) 3 Cr Basics of Personalized Medicine				
<u>Teaching Practicum</u>	Optional	Optional	Required	Optional	Optional	Required
<u>Comprehensive Examination</u>	Format: Research Grant Topic: Related to, but distinct from the student's anticipated thesis topic or the mentor's grant proposals. Mentor cannot assist in writing. When: First term of third year	Format: Grant Application Topic: Student's thesis research When: Before end of second year	Format: Research Grant Topic: Student's thesis research When: Before end of second year, typically spring	Format: Research Grant Topic: Student's thesis research When: Spring of second year	Format: Research Proposal Topic: May be derived from anticipated thesis, but must be distinct from any funded or recently submitted grant proposal of the thesis advisor. When: Before end of Spring term of second year.	Format: Grant Proposal Topic: Student's thesis research When: Within one year of passing the preliminary evaluation
<u>Thesis Proposal</u>	Required	Required	Required	Required	Required	Required

INTERDISCIPLINARY BIOMEDICAL SCIENCES (INTBP)

2000 Foundations of Biomedical Science (Fall) 8 Credits

Course Directors: Daniel Altschuler, Michael Tsang, Linton Traub, Jin woo Ahn, Zoltan Oltavi, Carolyn Coyne, Larry Kane

Primary objectives of the course are to explore mechanisms controlling cell, tissue and organ function, and to develop an understanding of the experimental evidence supporting these concepts through an integrated presentation of material from biochemistry, cell biology, genetics, immunology, microbiology, neurobiology, pathology, pharmacology, and physiology. The development of critical thinking skills will be emphasized through an evaluation of experimental evidence and reading of the primary literature.

2005 Foundations Conference (Fall) 4 Credits

Course Directors: Wendy Mars, Daniel Altschuler, Christine Milcarek, Michael Tsang, Linton Traub

Contemporary approaches to problem-solving in biology, as well as principles underlying modern methods of biomedical research will be integrated with the lecture component of the course through an analysis of mechanisms underlying biological phenomena. Students will present papers, critically analyze data and devise experimental approaches to biomedical problems considered in lecture.

2010 Laboratory Research Rotation (All) 1 Credit

Course Director: John Horn

This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.

2011 Lab Research Rotation Supplement (All) 2 to 4 Credits

Course Director: John Horn

Course supplement to INTBP 2010 for those students initiating their first rotation in summer.

2013 D2K: From Data to Knowledge-Biomedical Experimental Design & Analysis (Summer) 3 Credits

Course Director: John Horn & Richard Bilonick

Experimental biologists formulate hypothesis and models, design experiments, collect data and conduct analysis to draw conclusions. Deep understanding of biological principles requires D2K-The translation of DATA INTO KNOWLEDGE that transcends first-order conclusions. This course for first year PhD Students in the biomedical sciences will examine basic principles of experimental design, together with measurement and sources of experimental error. The course will provide a practical 'hands on' introduction to the quantitative tools required for experimental research using cellular, molecular and systems based methods. Topics will include: goals of experimental design, making measurements, principles of parametric and non-parametric statistical inference, use of MS Excel, GraphPad PRISM and R, design of publication graphics and a brief introduction to big data approaches. Students will work in small groups to construct capstone projects by making 'youtube' style videos to illustrate key principles of experimental design and analysis.

2090 Directed Study (All) 1 to 9 Credits

Course Director: John Horn

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in degree-granting programs under the Interdisciplinary Biomedical Graduate Program.

2290 Scientific Ethics and the Responsible Conduct of Research (Summer) 1 Credit

Course Director: John Horn

The course is an introduction to the basic ethical issues that arise in the course of conducting scientific research. It is intended for graduate students and fellows in the biomedical sciences who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by discussion of issues in small groups.

3240 Graduate Student Writing Seminar (Fall) 2 Credits

Course Director: Daniel Devor

This course will give students hands-on grant writing experience as they will prepare an F31 pre-doctoral NRSA grant application. NIH-produced videos will explain the process of grant approval and provide practical tips for successful applications. Students will learn to present their scientific ideas and data in a clear, concise, and objective manner for the reader through faculty and student feedback. Three small-group presentations are required and include a specific aims proposal, the approach portion of the grant application, and changes made following feedback.

CELL BIOLOGY AND MOLECULAR PHYSIOLOGY (MSCBMP)

2800 MS Thesis Research (All) 1 to 14 Credits

Course Director: Michael Butterworth

A directed research project, which results in a thesis for a master's degree.

2830 Cell and Molecular Physiology (Spring) 2 Credits

Course Director: Raymond Frizzell

This course consists of lectures, problem-solving sessions, and examination of original papers. A main focus will be on the application of modern biophysical and molecular-genetic approaches in the analysis of cellular function. Topics include: 1. Membrane transport: pumps, channels, and bioelectrical potentials; 2. Excitable Membranes; 3. Regulation of Ion Channels; 4. Absorptive and secretory functions of epithelia; 5. Signal transduction; 6. Molecular motors, cell motility, and muscle contraction. **Note: CBMP Students are required to take either Cell & Molecular Physiology OR Regulation of Membrane Traffic.

2840 Regulation of Membrane Traffic

(Summer) 2 Credits

Course Directors: Gerard Apodaca and Ora Weisz

Course analyzes membrane/protein traffic along both the biosynthetic & endocytic pathways. Emphasis placed on how this traffic is regulated. Topics include the role of g-proteins (both heterotrimeric & small), coat proteins (coatamer 1 & 2 & adaptations), signal transduction cascades (PKC, PKA, IP3, etc.), & snare complexes in protein trafficking. Also, we will discuss the role of the cytoskeleton in transporting cargo & signal transduction. Membrane traffic in several specialized cell types will be covered including polarized epithelial cells, cells of the immune system, & neurons. **Note: CBMP Students are required to take either Cell & Molecular Physiology OR Regulation of Membrane Traffic.

2851 Research Seminar/Cellular Physiology (Fall & Spring) 1 Credit

Course Director: Dan Devor

Advanced research seminar with journal club format specializing in current aspects of cellular physiology.

2852 Research Seminar/Membrane Trafficking (Fall & Spring) 1 Credit

Course Director: Gerard Apodaca

Advanced research seminar with journal club format specializing in current aspects of membrane trafficking.

2853 Research Seminar/Reproductive Physiology (Fall & Spring) 1 Credit

Course Director: William Walker

Advanced research seminar with journal club format specializing in current aspects of reproductive physiology.

2855 Research Seminar/Molecular Physiology (Fall & Spring) 1 Credit

Course Directors: Raymond Frizzell & Tom Kleyman

Advanced research seminar with journal club format specializing in current aspects of molecular and cellular physiology.

2860 Multiparametric Microscopic Imaging (Summer) 3 Credits

Course Director: Donna Beer Stolz and Claudette St. Croix

A lecture/hands-on lab survey course which immerses students in the theory and practical aspects of modern microscopic imaging. The fields will cover the theory and implementation of all types of light and electron microscopy and computer aided imaging and analysis. Students will be expected to reach a functional capability in a selected technology and write a paper using one of more imaging technologies to answer a research question.

2870 Histology (Spring) 5 Credits

Course Director: Georgia Duker

The objective of this lecture/lab course is student comprehension of the relationship between cell structure and organ function, and the application of the knowledge to the identification of light and electronmicroscopic images of cells and organs. All the major organ systems of the body are included.

2875 Experiments and Logic in Cell Biology (Fall & Spring) 1 Credit

Course Director: Peter Drain and Donna Beer Stolz

In this course students will review and critique data presented by their colleagues using an internet chat room and physical meetings to be held monthly. Students will independently critically evaluate and provide constructive suggestions on the experimental data and design, in terms of alternative rationales, interpretations, and next experiments.

2880 Cell Biology of Normal & Disease States (Spring) 4 Credits

Course Director: Daniel Devor

The semester-long course in cell biology and physiology of normal and disease states will explore three exciting topics in current day cell biology and physiology. The course, which meets twice a week (1.5 h each session), will be taught through both lectures and in class discussions of primary literature and will cover basic biology, the cellular basis of disease processes, and recent advances in translational research that may lead to cures for common disease processes. The section on stem cell biology, diabetes, and translational research will focus on understanding how cells divide and how all of the body's different tissues stem from a master cell with the potential to generate all of the different cell types present in the body. In addition to

understanding normal stem cell biology, the potential for use of stem cells to regenerate organs and to cure ailments such as diabetes will be explored.

The section on cellular polarity will explore early events in polarity establishment including endocytic signaling and establishment of specialized membrane domains in epithelia and neurons. Further discussion will focus on disease processes such as autosomal dominant kidney disease, an ailment characterized by altered and dysfunctional polarity. The third section will examine ion channels and disease: CFTR and cystic fibrosis. This section will explore the role of RAD in protein quality control, the traffic and transport of CFTR, the functional role of CFTR and the epithelial sodium channel in the lung, and promising new therapies to alleviate the morbidity and mortality associated with CFTR mutations.

2885 Imaging Cell Biology in Living Systems (Spring) 3 Credits

Course Director: Simon Watkins

The focus of this course will be to study relevant problems in Cell Biology, Immunology, Developmental Biology and Neurobiology and how they have been solved using imaging approaches. The use of techniques such as TIRF and high speed confocal microscopy to address basic problems in endocytosis will be discussed at the organism level. Multiphoton, confocal, FRET, and other approaches will be discussed to understand aspects of cell biology in cell polarity, respiration and organ development in c. elegans, drosophila, zebra fish and mice. In each case the application will focus on how imaging tools are used to study defined problems in living systems. The course will follow Lecture/Demo/Journal Club format. Lectures will be two part, the first 1/3 will be a description of the technology, how it was developed and how it works (10-15 minutes) followed by description of the scientific problem and how it was solved. This will be followed by lab demonstrations showing the approach in action. Lectures will be interspersed with a journal club discussion of a relevant paper on each technology. Students will prepare the Journal Club presentations in an alternating fashion. Examination will be a combination of class participation, journal club and written exam.

2890 Directed Study (All) 1 to 9 Credits

Course Director: Michael Butterworth

This course provides the students an opportunity to carry out a specific laboratory project in any area of interest in cell biology and physiology.

3800 PhD Dissertation Research (All) 1 to 14 Credits

Course Director: Michael Butterworth

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the PhD degree in the School of Medicine.

CELLULAR AND MOLECULAR PATHOLOGY (MSCMP)

2700 MS Thesis Research (All) 1 to 14 Credits

Course Director: Wendy Mars

A directed research project, which results in a thesis for a master's degree.

2730 Molecular Mechanisms Tissue Growth & Differentiation (Spring) 3 Credits

Course Directors: Aaron Bell & Eric Lagasse

The course covers the anatomy, embryology, histology, function, and growth regulation (growth factors, receptors, and signaling pathways) of various differentiated tissues (central nervous system, lung, liver, pancreas, urinary and reproductive systems, breast, endocrine system, skin, bone, skeletal muscle, bone marrow). Multidisciplinary lectures are given by the members of the various departments including pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas. The course is designed to offer detailed information on specific tissues, tissue-tissue interactions, and overlapping cellular and molecular pathways that exist in multiple tissues.

**Note: This is a required course for CMP students.

2740 Molecular Pathobiology (Spring) 3 Credits

Course Directors: Tim Oury & Grant Bullock

This course is structured to introduce students to the integration between basic and clinical research on the molecular pathogenesis of relevant human diseases. The course will provide students with an overview of the natural history of selected diseases, their diagnosis and clinical management. This will be followed by in-depth discussions concerning the pathologic substrate of the disease, with particular attention focused on the molecular mechanisms of disease progression. In addition to current basic science research, students

will be exposed to the clinical impact of basic science discoveries upon the development of new therapeutic interventions. Discussions of current research trends and factors that enhance fundability of research projects will ensue. Each disease module will contain lectures from the faculty followed by presentations of current research papers by the students. These research presentations/discussions will be peer reviewed by fellow students and the faculty, and form the basis of the final grade.

2750 Research Seminar (Fall & Spring) 1 Credit

Course Directors: Marie DeFrances & Wendy Mars

Students present their research (allowed one time) or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty. **Note: CMP students are required to take this a minimum of 5 semesters.

2760 Introduction to Tissue Engineering (Spring) 3 Credits

Course Director: Kacey Marra

The purpose of this course is to introduce students to tissue engineering. Tissue engineering is defined as the development and manipulation of laboratory-grown molecular, cells, tissues, or organs to replace and/or support the function of injured body parts. Tissue engineering is highly interdisciplinary and therefore crosses numerous engineering and medical specialties. Upon completing this course, the graduate and undergraduate students should: understand the basic principles behind human cell and tissue biology; be familiar with the general types of biomaterials used in tissue engineering; understand techniques utilized to design, fabricate, and functionally assess tissue engineering systems; be able to apply the combined knowledge of tissue organization and tissue engineering strategies to design a unique, reasonable tissue engineering solution. This five-part course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.

2770 Biomaterials & Biocompatibility (Spring) 3 Credits

Course Director: William Wagner

This course serves as an introduction to biomaterials and biocompatibility and assumes some background in organic chemistry and biology. The first half of the course connects biomaterial applications. The second part of the course introduces biocompatibility issues as they follow from protein adsorption, thrombosis, inflammation and infections. Throughout the course ties are made between the topics of students and clinically relevant materials and device performance.

2780 Special Topics (Fall & Spring) 3 Credits

Course Director: Wendy Mars

One or more student(s) will focus on a selected topic (usually defined by the students) in cellular and molecular pathology and discuss the primary literature pertaining to the topic. Students will be evaluated on their discussions and presentations, and write a paper under the direction of a faculty advisor.

2790 Directed Study (All) 1 to 9 Credits

Course Director: Wendy Mars

This course provides the students an opportunity to carry out a specific laboratory project in any area of interest in cellular and molecular pathology.

3700 PhD Dissertation Research (All) 1 to 14 Credits

Course Director: Wendy Mars

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the PhD degree in CMP from the School of Medicine.

3710 Cancer Biology and Therapeutics (Fall) 3 Credits

Course Directors: Reza Zarnegar & Thomas Kensler

This course presents biochemical and clinical aspects of cancer biology and therapy, and is designed for graduate students training in the basic sciences or medicine. The lectures cover: the biology of normal and neoplastic cells; mechanisms of neoplastic transformation; chemical and environmental carcinogenesis; viral oncogenesis; breast and prostate cancer; chemotherapy; radiotherapy; gene therapy; tumor immunology; and nutrition and cancer.

**Note: CMP students are required to take Molecular Pathobiology OR Cancer Biology and Therapeutics.

3730 Topics in Experimental Neuropathology (Fall & Spring) 1 Credit

Course Director: Clayton Wiley

This course critically evaluates the latest scientific literature concerning diseases of the central nervous system. Emphasis will be placed on methodologies as they are applied to the study of human neurologic diseases. Participants will present scientific papers and lead the classroom discussions. This course is open to students of all levels and will include both basic scientists and clinicians (residents, faculty).

3740 Stem Cells (Fall) 3 Credits

Course Director: Paul Monga

The course entitled "Stem Cells" will provide a comprehensive overview on this intriguing and highly debated topic. The course will focus on the biology of stem cells and their role in health and disease with emphasis on development, carcinogenesis and tissue engineering. Lectures on various aspects of stem cells from renowned experts will cover both embryonic and adult stem cells. Specific lectures will include stems cells in the blood, liver, brain, muscle, kidney, pancreas, prostate, lung, gut, skin and eye. Students will also be educated on therapeutic cloning as well as bio-ethical issues and existing laws governing stem cell research. Letter grades will be based on midterm and final exams as well as on the attendance in the lectures.

3735 ECM in Tissue Biology and Bioengineering (Fall) 3 Credits

Course Directors: Bryan Brown and George Michalopoulos

This course presents a comprehensive overview of the biochemical composition of tissue matrix, the receptors that bind and signal through the matrix, and how these matrix interactions are important for basic biology and tissue engineering. Topics include gene expression, mechanistic interactions and cellular interaction/communication.

3750 Angiogenesis (Spring) 3 Credits

Course Director: Shanmugam Nagarajan and Donna Beer Stolz

This course will provide extensive basic knowledge of developmental, cellular, molecular biology of angiogenesis and most recent advancements in its clinical applications. Topics include: 1. Angiogenesis in physiological and pathological processes; 2. Molecular and cellular regulation of angiogenesis; 3. Current advance in angiogenic therapies. Recent outstanding research publications will also be discussed.

3760 Research Seminar: Regenerative Medicine (Fall & Spring) 1 Credit

Course Director: Paul Monga and Andy Duncan

Research seminar in regenerative medicine is geared towards providing updated information on topics in the field of regenerative medicine, tissue engineering and stem cell applications. Through biweekly seminars, the students will be acquainted to the recent advances in the ever-growing field of regenerative medicine. Experienced faculty will deliver lectures in this seminar series.

3770 Cell Therapy (Summer) 3 Credits

Course Director: Alexander Soto-Gutierrez

This course is meant to be unlike any other in the graduate curricula, showcasing cell therapy from theory to practice, from the bench to the bedside. For each area of cell transplantation the lectures will be given by faculty who have implemented cell transplantation techniques and moved them into clinical therapy. Most of the lectures in the course and all clinical application lectures will be given by those who actually do the patient transplants. Immunology and pharmacology will be addressed as it directly relates to cellular therapy. Gene therapy and stem cell biology will not be addressed individually, but will be raised in the context of specific applications. Course meetings will consist of approximately 2 lectures per discussion session. The first lecture will present the basic research leading into a particular area of cell therapy area such as animal models used for preclinical studies, and the second will focus on the clinical application of that particular cell therapy for specific disease(s). The grade for the course results from attendance at lectures and the submission of a paper in an area relevant to Cell Transplantation / Cell Therapy. At the conclusion of this course students should: be able to critically read and review the literature in the field of cellular therapy; know the mechanisms of rejection of cellular transplants

from both allotypic and xenotypic sources and be familiar with strategies to avoid transplant rejection; be familiar with the application of cellular therapy techniques to a variety of disease states; have a perspective and be conversant on relevant ethical issues associated with the field of cellular therapy.

3780 Systems Approach to Inflammation (Fall) 2 Credits

Course Director: Yoram Vodovotz

This course is focused on particular topics of great biologic complexity in critical illness, where modeling has the potential to translate in improved patient care. Lectures are provided by basic (biological and mathematical sciences) and clinical faculty, in conjunction with members of industry and speakers from outside institutions. This information will be communicated within the framework of defined themes that describe the complexity of inflammation in acute and chronic illnesses. Grading is based on participation in discussions students who are more facile with mathematics and/or simulation. This project therefore requires the students to work with others from outside of their main discipline, to learn about and from interdisciplinary exchange, and gain practical experience in team-based modeling of biological processes.

3790 Basics of Personalized Medicine (Fall) 3 Credits

Course Directors: Wendy Mars & Marie DeFrances

Rapid and ongoing discoveries in basic biomedical research are leading to a world where there is a demand for personalized medicine. Never the less, on a practical level, it is complicated to translate the findings from the basic scientific arena into clinical practice. This course will show students how findings from basic research can be translated into clinically relevant tests for the diagnosis and treatment of patients. The course will provide an overview of the past, present, and future of basic biomedical research as it relates to this subject.

IMMUNOLOGY (MSIMM)

2200 MS Thesis Research (All) 1 to 14 Credits

Course Director: Robert Binder

A directed research project which results in a thesis for a master's degree.

2210 Comprehensive Immunology (Spring) 2 Credits

Course Director: Robert Binder

This is a lecture course that will introduce the students to the fundamental concepts of modern immunology. The course will cover cells, tissues and organs of the immune system. Furthermore in depth analysis of the development, activation, effector functions and regulation of immune response will be presented in this course.

2230 Experimental Basis of Immunology (Spring) 2 Credits

Course Directors: Binfeng Lu and Kelly Cole

This course will expose the students to classical and contemporary literature in modern immunology. Emphasis will be on paper analysis and critical evaluation of primary data. This course will parallel the topics presented in comprehensive immunology lecture course which must be taken before or simultaneously with experimental basis of immunology.

2240 Introduction to Immunobiotherapeutics (Fall) 2 Credits

Course Director: Nick Giannoukakis

This course will provide a comprehensive overview of the principles and the technology upon which immunobiotherapeutics are based. The course will focus on the overall aims of using small molecules, antibodies, genes and cells as immunotherapeutic agents. It will cover the use of viral and non-viral agents as gene delivery vehicles, cells as therapeutic agents and small molecules as delivery and therapeutic vehicles. The course will also cover diseases and disorders in which immunobiotherapy has proven safety and demonstrated successful outcomes like cancer, mendelian disorders and autoimmunity. Lectures and student presentations will cover: Genes and cells as drugs, peptides, antibodies and small molecules as therapeutics and delivery vehicles, viral and non-viral vectors, stem cells, and specific diseases where immunotherapy has shown safety and efficacy. Students may also be

educated on bioethical issues and existing laws governing biotechnology and molecular medicine approaches.

2250 TA: Immunology (Spring) 1 Credit

Course Director: Robert Binder

The course will provide Immunology graduate students with the opportunity to serve as a teaching assistant in the undergraduate Immunology course BIOSC 1760 or Medical Microbiology MED 5116. The curriculum is designed to provide valuable teaching skills to the professional scientist.

****NOTE:** Immunology students are required to take this course two semesters.

2260 Immunology Seminar 1 Credit

Course Director: Robert Binder

Graduate Students and Faculty present their current research in a seminar format.

2290 Directed Study (All) 1 to 9 Credits

Course Director: Robert Binder

This course provides the students an opportunity to carry out a specific laboratory project in any area of interest in immunology.

3200 PhD Dissertation Research (All) 1 to 14 Credits

Course Director: Robert Binder

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which

3220 Contemporary Topics – Immunology (Fall & Spring) 1 Credit

Course Director: Robert Binder

This is an advanced level course in which students will read, present and evaluate the primary literature in immunology. Each semester will feature an integrated set of papers addressing a current issue of interest to modern immunologists. The course may be taken more than once by each student, since the topic addresses will change each semester.

****NOTE:** Immunology students are required to take this course four semesters.

3230 Immunology and Human Disease (Fall) 2 Credits

Course Director: Robert Binder

This course surveys basic immunological principles as they impact our understanding of the causes or treatments of human disease. The course consists of a series of lecture blocks. Background reading is required and the course relies heavily on the reading of original articles. Classes are regularly devoted to paper discussions, and each student will be responsible for introducing one paper.

3250 Transplantation Immunology (Spring) 2 Credits

Course Director: Angus Thomson

Transplantation is a rapidly-expanding area of basic and applied immunology, with great potential for the cure of many human diseases. This course will focus on contemporary issues in transplantation immunobiology, including immunogenetics, aspects of ischemia-reperfusion injury, the role of innate and adaptive immunity, antigen-presenting and T cell biology, including T cell memory, tolerance, acute and chronic rejection, humoral rejection the biology of transplant infectious disease, cell transplantation (including pancreatic islet cell transplantation), xenotransplantation, and novel immunosuppressive/tolerogenic regimens.

3270 Innate Immunity

(Spring) 2 Credits

Course Director: Saumendra Sarkar

This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Molecular Virology and Comprehensive Immunology are highly recommended but are not prerequisites for the course.

3280 Immunology of Infectious Diseases

(Fall) 1 Credit

Course Directors: Joanne Flynn and Karen Norris

This course examines the immune responses to pathogens, as well as on immune evasions of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation,

pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology.

3440 Vaccines and Immunity (Spring) 2 Credits

Course Director: Kelly Cole

Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious disease; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccines use and development.

MOLECULAR GENETICS AND DEVELOPMENTAL BIOLOGY (MSMGDB)

2500 MS Thesis Research (All) 1 to 14 Credits

Course Director: Michael Tsang

A directed research project, which results in a thesis for a master's degree.

2525 Developmental Mechanisms of Human Disease

(Spring) 2 Credits

Course Director: Mei Zhang & Staff

This course covers principles of developmental biology and how embryonic developmental pathways impinge on human disease. Topics include congenital organ related disease, stem cell based reproductive events relating to disease. Prerequisites: Foundations of Biomedical Science or permission of the course director.

2535 Model Organisms (Spring) 2 Credits

Course Director: Donghun Shin & Michael Tsang

This course covers the use of vertebrate and invertebrate model organisms in biomedical research. Topics include the use of several models including: mouse, rat, zebrafish, xenopus, C. elegans, and Drosophila. Special emphasis will be placed on the strengths that specialized techniques of each organism provide to the research community in understanding the etiology of disease.

2550 Research Seminar (Fall & Spring) 1 Credit

Course Director: Judy Yanowitz

A weekly Research In Progress Seminar presented by students and post-doctoral fellows. Weekly attendance and participation by all MGDB students is required.

2590 Directed Study (All) 1 to 9 Credits

Course Director: Tsang

This course provides the students an opportunity to carry out a specific laboratory project in any area of interest in biochemistry and molecular genetics.

3500 PhD Dissertation Study (All) 1 to 14 Credits

Course Director: Michael Tsang

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the PhD degree in the School of Medicine.

3510 Advanced Topics in Gene Expression (Every other Fall) 3 Credits

Course Directors: Xiangyun Wei & Staff

This course consists of lectures and class presentations on recent advances in molecular genetics. The emphasis of the course is on the regulation of gene expression at the DNA, RNA and protein levels. Regulation in eukaryotes is emphasized, including yeast, protozoan, and mammalian systems.

3530 Genome Instability and Human Disease (Spring) 3 Credits

Course Directors: Patricia Opresko, Ben Van Houten, Christopher Bakkenist

This course will emphasize the molecular biology and biochemistry of DNA repair (Nobel Prize in Chemistry in 2015), placing these mechanisms into the context of other cellular processes as they pertain to health and disease. More than 40 distinct human diseases are caused by defects in DNA repair, including syndromes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. Environmental, clinical and endogenous sources of DNA damage will be discussed. An

understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.

3540 Reproductive Development from Model Organisms to Humans (Every other Fall) 3 Credits

Course Directors: Judy Yanowitz

This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.

3550 Stem Cells (Fall) 3 Credits

Course Directors: S. Paul Monga & Staff

The course entitled "Stem Cells" will provide a comprehensive overview on this intriguing and highly debated topic. The course will focus on the biology of stem cells and their role in health and disease with emphasis on development, carcinogenesis and tissue engineering. Lectures on various aspects of stem cells from renowned experts will cover both embryonic and adult stem cells. Specific lectures will include stems cells in the blood, liver, brain, muscle, kidney, pancreas, prostate, lung, gut, skin and eye. Students will also be educated on therapeutic cloning as well as bio-ethical issues and existing laws governing stem cell research. Letter grades will be based on midterm and final exams as well as on the attendance in the lectures.

MOLECULAR PHARMACOLOGY (MSMPHL)

2310 Principles of Pharmacology (Spring) 3 Credits

Course Directors: Yu Jiang & Alessandro Bisello

This course consists of a series of lectures and tutorial sessions that focus on the general principles of pharmacology. Major topics are principles of pharmacokinetics (including drug absorption, distribution, and metabolism), pharmacodynamics (quantitation of drug-receptor interactions) and mechanisms of action of cardiovascular and autonomic drugs. In addition, this course will include both animal laboratory and human simulator demonstrations that illustrate important pharmacological principles discussed in class.

2350 Research Seminar (Fall and Spring) 1 Credit

Course Director: Patrick Pagano

Beginning in the second year of the program students will be required to attend the Departmental Seminar Series. These seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers in pharmacology and related fields. In order to receive credit for the course, students must attend a minimum of 80% of the seminars.

2355 Pharmacology Summer Seminar (Summer) 1 Credit

Course Director: Patrick Pagano

Beginning in the summer of the second year, students will be required to participate annually in the Departmental Summer Research Seminar Series. These seminars will be held once a week throughout the summer and will be focused on the students' research plans and recent results. This presentation will be made to an audience with diverse research interests and should therefore include a brief summary of general background information. Each student will be required to present once each summer and attend a minimum of 80% of the summer seminars in order to receive credit for the course. Scheduling conflicts should be resolved well in advance as attendance and presentation are necessary.

2360 Biology of Signal Transduction (Spring) 3 Credits

Course Director: Guillermo Romero

This course will explore different types of signaling pathways activated by receptor-ligand interactions. Topics to be covered include, but are not limited to: G-protein linked receptors, adenylate cyclases, small GTPases, kinases and phosphatases, nitric oxide, phospholipases, steroid hormone signaling, and pharmacological applications of signaling pathways.

2370 Drug Discovery (Fall) 3 Credits

Course Directors: Lans Taylor, Bruce Freeman, Barry Gold and Ivet Bahar (Only offered in even years-i.e. 2016, 2018)

Drug discovery is an interdisciplinary science that seeks to identify small molecular and/or biologic probes and to understand at the molecular level how these probes affect macromolecular processes. This course will discuss various topics that are relevant to current approaches and principles in drug discovery including target validation, drug origins, cell-based screening, high throughput screening, proteomic approaches to drug discovery, computational biological aspects of drug discovery and pharmacoinformatics as well as topics

in preclinical drug development and intellectual property. The course will include case studies intended to aid Students in a full understanding of the drug discovery process.

2390 Directed Study (All) 1 to 9 Credits

Course Director: Patrick Pagano

This course provides an opportunity for students to carry out a specific laboratory project in any area of interest in pharmacology.

3300 PhD Dissertation Research (All) 1 to 14 Credits

Course Director: Patrick Pagano

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the PhD degree in the School of Medicine.

3310 Cancer Biology and Therapeutics (Fall) 3 Credits

Course Directors: Reza Zarnegar & Thomas Kensler

This course presents biochemical and clinical aspects of cancer biology and therapy and is designed for graduate students training in the basic sciences or medicine. The lectures cover the biology of normal and neoplastic cells, mechanisms of neoplastic transformation, chemical and environmental carcinogenesis, viral oncogenesis, breast and prostate cancer, radiotherapy, tumor immunology chemotherapy and chemoprevention.

3320 Journal Club (Fall & Spring) 1 Credit

Course Director: Patrick Pagano

Beginning in the second year of the program students will participate in the Departmental Journal Club. Presentations will be held each week that the Department hosts a seminar speaker (i.e. 2-3 times/month) during the Fall and Spring semester. Students entering their fifth year of study may petition the Program Director to be excused from the Spring Session of the Journal Club. Sixth year students and beyond are not required to enroll in Journal Club although their attendance is encouraged. A log-in sheet will be available at all Journal Club meetings. All students in attendance are required to complete an anonymous peer-evaluation sheet that will be provided to the presenter. Students must inform the Program Director in advance if they are unable to attend a specific Journal Club. Excusable absences from Journal Club include individual or family illness or presentation (i.e. poster, platform

talk) at a major scientific conference. Students are allowed two unexcused absence/semester.

3330 Genome Instability and Human Disease (Spring) 3 Credits

Course Directors: Bennett Van Houten, Christopher Bakkenist, & Patty Opresko (only offered in even years-i.e. 2016, 2018)

Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndromes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will mechanisms in immunology, oncology, neurology and aging will be central to all lectures.

The course comprises twenty-nine lectures that will be taught twice a week. Lectures will be fashioned around selected manuscripts and the recent text book: "DNA Repair, Mutagenesis and Other Responses to DNA Damage (2014) Errol C. Friedberg, Stephen J. Elledge, Alan R. Lehmann, Tomas Lindahl & Marco Muzi-Falconi. Lecturers will include faculty from the Universities of Pittsburgh and Carnegie Mellon who are engaged in laboratory and clinical research at the forefront of the DNA damage and repair fields, as well as distinguished Professors visiting Pittsburgh from other Institutions.

MSMPHL 3335 DNA Repair Journal Club (Fall & Spring) 1 Credit

Course Director: Bennett Van Houten & Christopher Bakkenist

The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their

classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).

3340 Foundations of Successful Career Planning and Development Part 1 (Fall) 1 Credits

Course Director: Steven Wendell

The goals of the fall and spring consecutive courses are to enhance the career development capacity and foster the life-long career management habits of graduate students and postdocs to maximize their scholarly training success and facilitate personal career outcomes. The courses will provide foundational background through experiential learning and small-group discussions while facilitating peer mentoring. These approaches support the self-construction of individually relevant understandings of career development that is consistent with similar independence in scholarly expertise. The areas of focus include self-assessments, career exploration, goal setting, professional development, career planning and management, career adaptability and additional topics identified by students. Participation in the subsequent spring course is expected for those enrolled in the fall prerequisite course.

3341 Foundations of Successful Career Planning and Development Part 2 (Spring) 1 Credits PREQ: MSMPHL 3340

Course Director: Steven Wendell

The goals of the fall and spring consecutive courses are to enhance the career development capacity and foster the life-long career management habits of graduate students and postdocs to maximize their scholarly training success and facilitate personal career outcomes. The courses will provide foundational background through experiential learning and small-group discussions while facilitating peer mentoring. These approaches support the self-construction of individually relevant understandings of career development that is consistent with similar independence in scholarly expertise. The areas of focus include self-assessments, career exploration, goal setting, professional development, career planning and management, career adaptability and additional topics identified by students. Participation in the subsequent spring course is expected for those enrolled in the fall prerequisite course.

3360 Molecular Pharmacology (Fall) 2 Credits

Course Director: Ferruccio Galbiati

This course examines molecular mechanisms of drug interactions with an emphasis on drugs that modulate cell signaling, cellular responses to drugs and drug discovery. The course will include student participation through presentations and discussion of relevant contemporary scientific literature. Topics include: cell cycle checkpoints and anti-cancer drugs, therapeutic control of ion channels and blood glucose, anti-inflammatory agents and nuclear receptor signaling and molecular mechanisms of drugs used for the treatment of cardiovascular diseases.

3375 Neuropharmacology (Spring) 3 Credits

Course Director: Michael Palladino

This course will broadly review neuropharmacology and neurobiology, study monoamine, cholinergic and GPCR biology, and explore the blood-brain barrier and its significance to neuropharmacology. The course will focus on the molecular mechanisms of drug action for different classes of compounds including but not limited to; antidepressants, antipsychotics, anti-epileptics, anesthetics, weight loss, stimulants, neuroprotective, addiction, pain and migraine drugs. In addition to the formal lectures the course will emphasize critical reading of the primary literature through journal-club style discussions and cover the most recent treatment and therapeutic avenues being developed for a broad range of neurologic and psychiatric disorders. The course is ideally suited for Molecular Pharmacology and Neuroscience graduate students or any other graduate student with interest in neurological diseases and their treatments. The course is also appropriate for senior undergraduates who have completed 4 semesters of chemistry, 2 semesters of biology, and other relevant upper division course work (e.g. Cell Biology, Physiology or Biochemistry) will provide the substance of their doctoral dissertation.

MOLECULAR VIROLOGY AND MICROBIOLOGY (MSMVM)

2400 MS Thesis Research (All) 1 to 14 Credits

Course Director: Fred Homa

A directed research project which results in a thesis for a Master's degree.

2410 Molecular Virology (Spring) 2 Credits

Course Director: Fred Homa

This course stresses basic concepts of animal virology. Subjects include virus structure, attachment and entry, mechanism of regulation at the RNA and protein levels, viral nucleic acid replication, viral assembly and egress, and expression and regulation of viral genes, antivirals and viral immune evasion. Lecture format. Foundations of Biomedical Sciences, or an equivalent course (approved by Course Director) is a prerequisite.

2420 Experimental Virology (Spring) 2 Credits

Course Director: Paul Kinchington

This course is designed to teach students entering graduate research projects how to critically evaluate the scientific literature in terms of multiple different viruses, experimental strategies, interpretation of data and the basis of conclusions made in published articles. Paper discussion in small group format. Completion or concurrent registration in Molecular Virology (or equivalent) required. May be taken only one time for credit.

2430 Microbiology Teaching Assistant (Spring) 1 Credit

Course Director: Jennifer Bomberger

The purpose of this course is to introduce graduate students of the Interdisciplinary Biomedical Sciences Graduate Program to the principles of teaching. The students will be trained in basic teaching techniques as well as provided material for teaching students specific concepts. As part of this course, students will participate in teaching first-year medical students the fundamentals of microbiology, in conjunction with the Laboratory and Problem Based Learning sections of the Molecular Pathogenesis of Infectious Disease course of Basic Science Medical School block. Each student will be responsible for 8-10 medical students in a laboratory setting. The student will present basic laboratory techniques, explain concepts of microbiology and infectious disease, including diagnostic tests, interpretation of results, and data management. In addition, the student will assist the Faculty Facilitator in the Problem Based Learning Sessions where they will review laboratory findings with the students.

2450 Research Seminar (Fall & Spring) 1 Credit

Course Director: Carolyn Coyne & James Bina

Each class is divided into a Research report and a Paper discussion designed to develop skills needed for scientific presentation. The student research progress report details the background, reasoning, analyses, critical evaluation of experimental strategies, data analysis and interpretation of their Thesis project. Students are expected to elucidate issues and answer questions from other graduate students and faculty. The research paper discussion is designed to teach students to critically evaluate and present published data in contemporary scientific research articles. Students, in consultation with the course director, select published articles for presentation and discussion. A topic is chosen for each semester. Restricted to MVM graduate students or by special permission of instructor.

2480 Mechanisms of Microbial Persistence (Every other Summer) 2 Credits

Course Director: Neal DeLuca

Microorganisms have evolved a vast array of mechanisms to avoid detection or elimination by host defenses, and to establish persistent infections that can lead to chronic or recurrent disease. The ability to establish persistent infections often complicates the successful therapeutic treatment of disease caused by such microorganisms. This course is designed to familiarize students with the mechanisms by which select bacterial and viral pathogens establish persistence in their host cells and/or organisms, and the subsequent considerations for pathogenesis and therapy.

2490 Directed Study (All) 1 to 9 Credits

Course Director: Fred Homa

This course provides the students an opportunity to carry out a specific laboratory project in any area of interest in molecular virology and microbiology.

3400 PhD Dissertation Research (All) 1 to 14 Credits

Course Director: Fred Homa

After advancement to candidacy for the PhD degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the PhD degree in the School of Medicine.

3410 Microbial Pathogenesis (Spring) 2 Credits

Course Director: James Bina

This course is an introduction to molecular basis of bacterial and parasitic pathogenesis. Topics include microbial physiology and genetics, gene expression, virulence factors, pathogenic strategies of bacterial agents. Lectures format. Foundations of Biomedical Sciences, or an equivalent course (approved by Course Director) is a prerequisite.

3420 Viral Pathogenesis (Fall) 2 Credits

Course Director: Amy Hartman

This course provides lectures in a particular virus that expand the basic biology of the virus life cycle to the level of virus-host interactions. Pathogenic properties of select viruses are outlined from the perspective of disease manifestations, immunology, and the natural history of infection. Lectures will also address the molecular basis of viral pathogenesis and current advances in therapeutic strategies. Lecture/paper discussion format. Molecular Virology (or equivalent) is required.

3435 Tumor Virology (Every other Fall) 2 Credits

Course Director: Kathy Shair

This course introduces students to viruses known or suspected of causing tumors, with special emphasis on viruses casually linked to human cancer, including polyomaviruses, Epstein-Barr virus, Kaposi's sarcoma-associated herpesvirus, adenoviruses, papillomaviruses, hepatitis viruses, human T-cell lymphotropic virus. Topics focus on establishing causality between specific virus infections and cancer, oncogenes, tumor suppressors, oncogenic cofactors, disruption of innate/adaptive immune responses, latency, viral mimicry/piracy of cellular regulatory genes, genomic instability and role of non-coding RNAs in viral pathogenesis.

3471 Innate Immunity

(Spring) 2 Credits

Course Director: Saumendra Sarkar

This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effectors cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Molecular Virology and Comprehensive Immunology are highly recommended, but are not prerequisites the course.

3475 Imaging Host-Pathogen Interactions

(Every other Summer) 1 Credit

Course Director: Jennifer Bomberger

This course will provide an introduction to fluorescence microscopy with an emphasis on the study of host-pathogen interactions. Experts in the fields of bacterial pathogenesis, viral entry, viral protein signaling, fungal pathogenesis, polymicrobial infections will present lectures on the use of imaging in their fields of research, give demonstrations of various imaging techniques and lead a journal club discussion of relevant papers from the literature. The goal is to provide students with a basic understanding of fluorescence microscopy for the purpose of properly designing their own experiments and effectively evaluating the work of others.

3480 Immunology of Infectious Disease (Fall) 2 Credits

Course Directors: JoAnne Flynn & Karen Norris

This course examines the immune responses to pathogens, as well as on immune evasion of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation, pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology. Graduate level immunology is a prerequisite. Lecture/paper discussion format.

Academic Policies and Procedures

The Interdisciplinary Biomedical Graduate Program

As a new student, you are admitted to the Interdisciplinary Biomedical Graduate Program (IBGP) for your first year of study. The IBGP is designed to assist you in identifying a research laboratory, and to encourage your timely progression through the process of obtaining a PhD. The activities of the IBGP are governed by the Steering Committee (comprised of the Associate Dean for Graduate Studies and the program directors). The operation of the Steering Committee is assisted by subcommittees which are responsible for admissions, curriculum and recruiting. These committees evaluate applications for admissions and recruit new students into the program, coordinate the first-year curriculum, oversee your research rotations, administer the Preliminary Evaluation, and supervise your transfer to a specialized degree-granting program.

Advising and Evaluation

You are assigned a first-year mentor upon admission to the IBGP. The mentor is a member of the Steering Committee selected by the Associate Dean for Graduate Studies. The first-year mentor will help you to identify individuals who can provide specialized advice on research rotations, will advise you of the various milestones that are a part of the IBGP, will assist you in decisions regarding second and third term classes, and will sign all of your registration forms until you formally transfer to one of the PhD granting programs. Your mentor will represent your interests at meetings of the Steering Committee should there be concerns about your academic progress, and will present any requests you may have for waivers of stated requirements. The mentor's role essentially terminates when you move from the IBGP to a specialized PhD granting program.

You will be evaluated by the Steering Committee over the course of the year. At the conclusion of your first year, you will undergo the Preliminary Evaluation which incorporates several elements including class performance and laboratory rotations, with equal weight applied to each. A successful Preliminary Evaluation will allow you to transfer into a specialized degree-granting program.

If you are not performing at a satisfactory level, remedial action or consideration for dismissal from the program may be initiated by the Steering Committee.

Curriculum

There are three courses in the curriculum that are required of all students, while other classes are electives. The *Foundations of Biomedical Science Lecture* (INTBP 2000) and *Foundations Conference* (INTBP 2005) are the Interdisciplinary core courses. They meet Monday, Tuesday, Thursday and Friday for two hours each morning of the first semester (fall term), and are supplemented with biweekly small group sessions which meet Tuesday and Friday afternoons. This course is designed to provide a fundamental overview of the elements of contemporary biomedical science that should be mastered by all students, regardless of their scientific interests. The second course required of all students is *D2K: From Data to Knowledge- Biomedical Experimental Design and Analysis* (INTBP 2013) which is offered in the summer term of your first academic year. Finally,

all students are required to take *Scientific Ethics and Responsible Conduct of Research* (INTBP 2290) which is also scheduled in the summer term.

After the first semester, there is considerably more flexibility in the choice of classes. Each of the degree granting programs offers one or more classes in the second semester. Students should choose second semester classes based on their own interests and the requirements of the programs they anticipate joining. Thus, it is a good idea to start to consider which programs might be attractive towards the end of the first semester and to determine which, if any, classes are required by that program in the second semester. Your first-year mentor will help you to plan a schedule of classes in the second semester. There are a wide range of graduate classes offered by the School of Medicine. The most current list is available at <http://www.gradbiomed.pitt.edu/current-students/course-information>.

The Office of Academic Career Development is dedicated to providing professionals in the schools of the health sciences with the tools, resources, and support they need to achieve their full potential as leaders in biomedical research, education, and clinical practice. <http://www.oacd.health.pitt.edu/>

In some cases students may feel that their educational background precludes the need to take one or more of the classes offered by the Interdisciplinary program. In each case, students should discuss this with the first year mentor and the Associate Dean who may indicate that the requirements may be waived or, that the student can take an exam to be exempted from the course.

A minimum of 32 credits of formal course work and 40 credits of dissertation research are required to earn the PhD degree in the School of Medicine. If you have completed all credit requirements for the degree, and are working full-time on a dissertation, you may register, with permission of the dean, for the *Full-Time Dissertation Study* (FTDS 0000) course. However, it must be the only course to appear on your registration for that term; you may register for no other courses.

Students with a Master's degree may receive advanced standing equivalent to 30 credits of course work in some circumstances. Such determinations shall be made by the Associate Dean in consultation with the Director of the program in which you decide to pursue a degree.

All students are expected to maintain a minimum cumulative grade point average of 3.00. (Please be advised that a grade of B- or lower is not considered a passing grade when taking the core courses.) If the cumulative average falls below 3.00, the student will be placed on academic probation for the next term of registration. If the deficiency is not corrected or vastly improved in this subsequent term, the student may be dismissed at the discretion of the program. A program also may require a student to retake a major/core course in which a grade point average below 3.00 is earned.

Registration

All students in the IBGP register with their first-year mentor after their first term. (In their first term, new students are registered at orientation to avoid any late fees and/or complications.) The University is on a trimester calendar: Fall, Spring, and Summer Terms. To maintain your appointment as a full-time Graduate Student Assistant or Researcher requires 9-15 credits in the Fall and Spring Terms and 3 credits in the Summer Term. (Note: if you are deferring undergraduate loans, please check with your lender for minimum credit requirements particularly for the Summer Term.) After officially transferring to a specialized degree-granting program, all students will register with their respective program director and/or program designee.

All completed and signed registration forms for first-year students in the IBGP should be submitted to the Graduate Studies Office, 524 Scaife Hall. During all subsequent years, your enrollment form should be signed by your Program Director and given to the Program coordinator so they can remove the advising hold that will be placed on your account each term. Once the hold is removed, you can proceed to self-register. Instructions and a tutorial can be found at www.my.pitt.edu under “Student Services”.

Research Rotations

Laboratory research is the major component of our PhD programs. Research rotations should be considered an essential resource for learning broad-based skills at the bench as well as an opportunity to focus your scientific interests. Prior to choosing a laboratory, you should speak with your first-year mentor and examine the list of faculty who are interested in having a student in their laboratory by checking the website under Research Rotation Opportunities at <http://www.gradbiomed.pitt.edu/Current-Rotation-Opportunities>.

The Associate Dean and First Year Mentors supervise the selection of laboratory research rotations. You are expected to complete three (3) research rotations during the first year. A “Laboratory Research Rotation Form” must be completed, signed and returned to the Graduate Studies Office within one week of beginning a rotation. At the end of each rotation, you are required to complete a written report that is prepared in the style of a scientific paper [See Appendix II]. It is recognized that some rotation projects emphasize concepts and techniques rather than generating large volumes of data. Thus considerable flexibility in the style and content of the report is possible. The main goal is to generate a written, scholarly account of the scientific principles, questions, and activities undertaken during the rotation period. It is therefore expected as part of this exercise that rotation advisors will read, comment upon, and discuss changes to the rotation report with the student. When the written report is complete, the rotation supervisor will review the performance of the student and assign a letter grade for the rotation on the evaluation form provided by the graduate office.

It is expected that the three rotations will be performed in three different laboratories headed by training faculty of the IBGP. This will provide students with an opportunity to identify an area of research interest, to establish a relationship with a potential dissertation advisor, and to learn various laboratory techniques. In rare instances, it is possible to petition the IBGP director for permission to take a fourth rotation if necessary. If a student has completed a master’s degree thesis based on original research, a report of this project may be submitted in place of a rotation report upon approval. Requests to modify the rotation schedule must be made, in writing, to the Associate Dean for

Graduate Studies. All rotations shall take place in accordance with the following schedule unless a waiver is granted upon petition to the Associate Dean:

Rotation Begins	Rotation Ends & Report Due	Evaluation Form Due
June 30, 2016	September 16, 2016	September 23, 2016
September 19, 2016	December 9, 2016	December 16, 2016
January 3, 2017	March 24, 2017	March 31, 2017
March 27, 2017	May 26, 2017	June 2, 2017

NOTE: Reports submitted after each due date will lose 1/3rd of a grade for each day the report is late. Research Rotation Evaluation forms are due from the rotation advisor, in the Graduate Studies Office, within two weeks after the report due date.

Transferring from the IBGP to a Specialized Degree Granting Program

Upon successful completion of your Preliminary Evaluation, you will transfer into one of the specialized, degree granting programs. The choice of program is likely to be dictated by the choice of dissertation advisor. The process of moving into a specialized degree-granting program should occur as follows:

- i) Identify a dissertation advisor. This will come about as the result of your rotation experiences, from exposure to faculty during classes, and from talking to other graduate students. (See *Suggestions on Choosing a Dissertation Advisor* which follows). It is expected that most of the training faculty will welcome students into their laboratories. However, there are some practical realities that may be encountered. If a laboratory is already full, or if there is not sufficient funding available to support an additional student, a faculty member may not be able to take you.
- ii) Identify the appropriate program. Many of the training faculty have appointments in two programs, so the choice of program can be influenced by your choice of the class requirements that you would prefer to meet.
- iii) Petition the program director for admission into that program. The program director will determine whether you have met the course requirements for the program, or may suggest second year classes to take. Once the Preliminary Evaluation has been completed and the curricular requirements met, the transfer will formally take place.

Clearly, this is a process that will begin before the end of the first year. Students are strongly encouraged to meet with the Program Director of the degree granting program in which you are interested prior to the end of the Fall semester to determine which classes would be most appropriate in the Spring semester.

Please do not hesitate to direct any questions relating to the IBGP or any of the above described procedures to your first-year mentor or to the Graduate Studies Office, 524 Scaife Hall.

The most important decision you will make at the University of Pittsburgh is the selection of a dissertation advisor. Please consider the following which were prepared under the auspices of the University Council on Graduate Study www.pitt.edu/~graduate/advisor.html.

Suggestions on Choosing a Dissertation Advisor for Doctoral Students at the University of Pittsburgh

Before starting dissertation research, you must have a major advisor who agrees to supervise your work. In addition, you must form a complete doctoral committee, subject to approval by the program chair and the dean, and be admitted to doctoral candidacy. But the first step is the choice of your major advisor.

You and your advisor must mutually agree on the advising arrangement and the research topic. Both of you should enter the relationship as well informed as possible about the other. In advising relationships, "divorces" are possible, but they upset the timely progress toward degree and are emotionally draining.

Trade-offs and compromises are to be expected in selecting an advisor. For instance, it might be preferable to choose an advisor whose students take a slightly longer time to complete their degrees if they usually gain better jobs than those of a different faculty member. While some students may be eager to work with a famous full professor, others might fear that the busiest advisors would have the least time for their students. Finally, be aware that procedures for matching students and advisors may vary by program.

To select the best advisor, you might meet with all the faculty members of your program and talk with other graduate students in the program about the qualities of the faculty members eligible to direct dissertations. Be cautious about making assumptions, and ask questions covering a range of topics. Some questions should best be discussed with the faculty member in question, others might better be asked of advanced graduate students. To help you, consider the following list of questions in selecting a dissertation advisor; the list is not intended to be a list of mandatory qualities that advisors should possess. Some items pertain more to specific disciplines than to others. Remember, too, that faculty members will have a number of questions to ask about you.

Questions To Consider In Selecting A Dissertation Advisor

These questions have been adapted from a document prepared by the Graduate School, State University of New York at Stony Brook, and are put forth by the Office of the Provost.

- Is the advisor an expert in the area of research or scholarship that you intend to pursue? Is his/her critical or theoretical orientation consistent with yours?
- How much freedom will you have in your choice of dissertation topic with this advisor?
- What is the reputation of the advisor within the discipline?
- How responsive is the advisor? How long does it take him/her to return written material with comments?
- How accessible is the advisor for discussion?
- Is the advisor likely to remain on the faculty for the duration of your degree work?
- How many students does he/she advise? If none, why? If a large number, does this affect the attention that he/she pays to individual students?

- How much time does he/she spend away from campus? Is he/she available during the summer?
- How long do students take to complete their degrees with this advisor?
- What proportion of this advisor's students successfully complete the program?
- What is the placement record of this advisor's students? Where do they get jobs?
- Does the advisor publish with his/her students as first author?
- How many publications does the typical student accumulate with this advisor?
- Do the advisor's students go to disciplinary or professional conferences?
- Do the advisor's students make presentations of their own work at conferences? Do they make presentations of joint work with the advisor?
- How much interaction is there with other advisees of this faculty member? Does he/she direct a research group or rather a series of individuals?
- How much of the research is collaborative with the advisor and/or other advisees?
- How much involvement is expected in "group" research projects that are not appropriate for inclusion in your dissertation? How much of this contributes to your professional development and marketability?
- How is credit for collaborative work assigned?
- Is the advisor engaged in patentable or saleable work? If so, how does he/she assign credit to the student? Does this work get published promptly?
- Is the advisor's work funded? What are the guarantees of funding for the advisor's students? Do the advisor's students get summer support?
- Does the advisor assist his/her students in obtaining their own funding from outside sources such as fellowship programs?
- Does the advisor have good relations with other faculty in the program?
- Does the advisor have a reputation for ethical behavior?
- Are the advisor's work habits compatible with your own?

Graduate Milestones

The University tracks your progress toward the degree by means of a series of Graduate Milestones. Successfully completing each milestone is a University requirement for the PhD degree. The following are the School of Medicine milestones. Full descriptions follow under the subsequent section, University Regulations Pertaining to Doctor of Philosophy Degrees.

- I. *The Preliminary Evaluation.* Conducted by the Steering Committee at the conclusion of your first year of study.
- II. *The Comprehensive Examination.* An oral and/or written examination usually conducted at the end of the second year of study by the student's specialized training program.

After or at the time of passing the Comprehensive Exam, the student, in consultation with his/her advisor, chooses and nominates a dissertation advisory committee according to the following guidelines passed by Steering Committee:

- a. There shall be a minimum of four members on the dissertation committee in addition to the thesis advisor, thereby requiring a minimum of five committee members.

- b. The dissertation advisor may or may not serve as the chair of the examination committee, and it shall be at the discretion of the training program. This must, however, clearly be stated as the program policy and uniformly applied to all students within the training program.
 - c. A majority of the committee, including the advisor, must have graduate faculty status, and must be from the student's training program.
 - d. A minimum of one graduate faculty member from the university community who is not a member of the student's training program must participate on the committee as an external member. The external member cannot serve as the committee chair.
 - e. The dissertation committee must be approved by the director of the student's training program prior to seeking approval from the Associate Dean for Graduate Studies. This is achieved by completing the Nomination of a Doctoral Dissertation Advisory Committee. Only upon these approvals may the student convene an Overview/Prospectus meeting and then petition for Admission to Candidacy.
- III. *The Prospectus/Overview Meeting.* The student's dissertation advisory committee, pending approval of the Associate Dean for Graduate Studies, meets and approves the dissertation proposal at this meeting.
- IV. *Admission to PhD Candidacy.* This is the formal petition from a student permitting him/her to study toward the PhD degree at the University of Pittsburgh. It must be approved by the Associate Dean for Graduate Studies.
- After being Admitted to Candidacy, the University requires students to meet with their dissertation committee yearly, at a minimum, and report the results in the form of a summary and action plan to the Graduate Studies Office in writing. Individual programs may require dissertation committees to meet more than once a year.
- V. *Dissertation Defense.* When the dissertation work and write-up are completed, a public defense is held. The Dissertation Defense Report is signed and submitted to the Graduate Studies Office following the defense.
- VI. *Dissertation Approval.* The Dissertation Approval Report is signed by your committee and submitted to the Graduate Studies Office upon completion and approval of all revisions.

University Regulations Pertaining to Doctor of Philosophy Degrees

<http://www.pitt.edu/~graduate/regphd.html>

Admission to Doctoral Study

In some departments, the requirements for admission to graduate study and for admission to doctoral study are identical, while other departments require the completion of a master's degree or its equivalent as a prerequisite for admission to doctoral study. Admission to doctoral study does not include any implication concerning "admission to candidacy for the Doctor of Philosophy degree."

Programs of Study

All PhD programs offered at the University of Pittsburgh should provide a coherent series of courses, seminars, and discussions designed to develop in the student a mature understanding of the content, methods, theories, and values of a field of knowledge and its relation to other fields. Each program should train the student in the methods of independent research appropriate to the discipline and provide an adviser and a committee to guide the student in an extended investigation of an original and independent research project of significance in the field.

The overall form and content of each student's program is the responsibility of the Graduate Faculty of the department or program. To carry out this responsibility, departments or programs must ensure that each student has a major adviser who, in consultation with the student, plans a program of study and research in accord with school and departmental guidelines. The adviser may prescribe additional courses both within and outside the department or program that are essential and/or appropriate to the student's program.

Some doctoral programs may include approved areas of concentration used to define and describe the students' training and expertise within the broader discipline. Such an area of concentration is added to the transcript upon the granting of the degree.

Doctoral level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study. Normally, courses numbered below 2000 do not meet the minimum requirements for doctoral study, although they may be taken to supplement a doctoral program.

Students must maintain a minimum cumulative GPA of 3.00 in courses to be eligible to take the preliminary and comprehensive examinations as well as to be graduated.

The requirement of proficiency in the use of foreign languages or other tools of research is at the discretion of individual departments or schools.

Departments or programs are expected to provide students with a copy of school and departmental regulations appropriate for their program and, in turn, students are expected to become familiar with these and to satisfy all prescribed degree requirements.

Credit Requirements

The minimum credit requirement for the PhD degree is met by six terms of registration as a graduate student for 12 or more credits per term or the equivalent number of credits in a reduced load. If the school requires completion of its master's degree program prior to admission into its doctoral program, at least four terms of registration for 12 or more credits per term or the equivalent number of credits in a reduced load are required as a minimum for the PhD degree. No more than 30 credits may be accepted for a master's degree awarded by another institution to meet the minimum credit requirement. In recognition of graduate study beyond the master's degree successfully completed elsewhere, no more than 12 additional credits may be accepted at the time of admission to meet the

minimum credit requirement. (See Acceptance of Transfer Credits) No more than 30 credits may be accepted for a previously earned PhD degree in recognition of master's degree work.

Graduate students already enrolled may, when approved in advance by their department or programs and the dean, spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for an advanced degree at the University of Pittsburgh. In all cases, at least three terms, or 36 credits, of full-time doctoral study or the equivalent in part-time study must be successfully completed at the University of Pittsburgh.

Students must register each term for the number of credits of course work, independent study, or research equivalent to the anticipated use of faculty time and University facilities. A student who has not registered for at least one credit during a 12-month period will be transferred automatically to inactive status and must file an application for readmission to graduate study (and pay the application fee) before being permitted to register again.

Residency Requirement

Students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study, which excludes any other employment except as approved by their departments.

Preliminary Evaluation

The preliminary evaluation should be designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently. The form and nature of the evaluation should be approved at the school level and described in the school bulletin. It should be conducted at approximately the end of the first year of full-time graduate study. The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation. Evaluation results must be reported promptly to the dean's office, but no later than the last day of the term in which the evaluation occurs.

Comprehensive Examination

The Comprehensive Examination should be designed to assess the student's mastery of the general field of doctoral study, the student's acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline. In some programs, the comprehensive examination is combined with the overview or prospectus meeting. It should be administered at approximately the time of the completion of the formal course requirements and should be passed at least eight months before the scheduling of the final oral examination and dissertation defense. In no case may the comprehensive examination be taken in the same term in which the student is graduated. Examination results must be reported promptly to the dean's office but no later than the last day of the term in which the examination is administered. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department, program, or school.

Doctoral Committee

Before admission to candidacy for the PhD degree, the student's major adviser proposes for the approval of the doctoral program director and the dean a committee of four or more persons, including at least one from another department in the University of Pittsburgh or from an appropriate graduate program at another academic institution, to serve as the doctoral committee. The majority of the committee, including the major adviser, must be full or adjunct members of the Graduate Faculty. This committee must review and approve the proposed research project before the student may be admitted to candidacy.

This doctoral committee has the responsibility to advise the student during the progress of the candidate's research and has the authority to require high quality research and/or the rewriting of any portion or all of the dissertation. It conducts the final oral examination and determines whether the dissertation meets acceptable standards.

Meetings of the doctoral candidate and his/her dissertation committee must occur at least annually from the time the student gains Admission to Doctoral Candidacy. During these meetings, the committee should assess the student's progress toward degree and discuss objectives for the following year and a timetable for completing degree requirements. It is the responsibility of the dean of each school to determine a mechanism for monitoring the occurrence of these annual reviews.

The membership of the doctoral committee may be changed whenever it is appropriate or necessary, subject to the approval of the department chair or program director and the dean.

When a doctoral committee member leaves the University, he or she must be replaced unless the dissertation is almost complete or the member has an essential role on the committee. In the latter case, the dean's approval should be obtained. When the chair of a committee leaves and cannot be conveniently replaced, a co-chair must be appointed from within the department, and the restructured committee requires the approval of the department chair or director of the school's doctoral program and the dean. If the defense takes place within a few months of the chair's departure, the requirement of the co-chair is usually waived.

A retired faculty member may remain as a member or chair of a committee if he or she is spending considerable time in Pittsburgh or its vicinity and is still professionally active. Retired faculty who meet these criteria may also be appointed as a member or as a co-chair (but not chair) of a newly-formed committee. Retired faculty who leave the Pittsburgh area and/or do not remain professionally active should be replaced on committees and the revised committee approved by the department chair or the school's director of doctoral programs and the dean.

Overview or Prospectus Meeting

Each student must prepare a dissertation proposal for presentation to the doctoral committee at a formal dissertation overview or prospectus meeting. The overview requires the student to carefully formulate a plan and permits the doctoral committee members to provide guidance in shaping the conceptualization and methodology of that plan. The doctoral committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the

doctoral degree. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal. The student is responsible for ensuring that all appropriate regulatory approvals are obtained for the proposed research. For example, if the research proposed in the overview or prospectus involves human subjects, that proposed research must be approved by the University Institutional Review Board (IRB) before it may be carried out.

Admission to Candidacy for the Doctor of Philosophy Degree

Admission to candidacy for the Doctor of Philosophy degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. To qualify for admission to candidacy, students must be in full graduate status, have satisfied the requirement of the preliminary evaluation, have completed formal course work with a minimum grade point average of 3.00, have passed the comprehensive examination, and have received approval of the proposed subject and plan of the dissertation from the doctoral committee following an overview or prospectus meeting of the committee. In some schools, admission to candidacy is a prerequisite to registration for dissertation credits. Students are informed of admission to candidacy by written notification from the dean, who also states the approved doctoral committee's composition.

Dissertation and Abstract

Each student must write a dissertation that presents the results of a research project carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It presents a hypothesis tested by data and analysis and provides a significant contribution or advancement in that field. It is the responsibility of the student's doctoral committee to evaluate the dissertation in these terms and to recommend the awarding of the doctoral degree only if the dissertation is judged to demonstrate these qualities.

Characteristics which a dissertation should demonstrate are: the establishment of a historical context for the presentation of an innovative and creative approach to the problem analysis and solution; a clear understanding of the problem area as revealed by analysis and synthesis of a broad literature base; a well-defined research design; clarity in composition and careful documentation; results of sufficient merit to be published in refereed journals or to form the basis of a book or monograph; sufficient detail so that other scholars can build on it in subsequent work; the preparation of the author to assume a position within the profession.

If the dissertation is the result of a collaborative research effort, the project should be structured in such a way that the student's dissertation results from one, clearly identified piece of work in which the student has supplied the unquestionably major effort. The contributions of the student and the other collaborators must be clearly identified.

Published articles authored by the student and based on research conducted for the dissertation study may be included in the dissertation, if the student's department and school have a written policy that this is acceptable. In any case, the published work must be logically connected and integrated into the dissertation in a coherent manner, and sufficient detail must be presented to satisfy the characteristics

of a dissertation. The student should be the sole or primary author of the published work. If the published articles were co-authored, the contribution of the student must be clearly delineated in the introduction so the committee can ascertain that the student's own work satisfies the requirements of a dissertation. Instructions on incorporating articles into the dissertation are provided in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh.

Candidates for the doctoral degree must provide a suitable number of copies of the dissertation, as determined by the doctoral committee and school policy, for review and use during the final oral examination. The general format of the dissertation and the abstract is determined by the Office of the Provost and is set forth in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh. Specific instructions should be available in the office of the dean of the school. After the final oral examination is successfully completed, the candidate must electronically submit the approved complete dissertation and abstract in final form. The candidate must submit a dissertation approval form, the required agreement with University Microfilms Inc. for the publication of the dissertation on microfilm and for the publication of the abstract in Dissertation Abstracts, and any appropriate fees to the designated student services representative in the dean's office of the candidate's school.

Language of the Doctoral Dissertation

The language in which doctoral dissertations are written shall normally be English. Exceptions may be granted by the student's dean with the approval of the dissertation adviser and committee, but only for sound reasons of scholarship. Permission shall never be granted on the ground of inadequate command of English.

Final Oral Examination

The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and need not be confined to materials in and related to the dissertation. Any member of the Graduate Faculty of the University may attend and participate in the examination. The date, place, and time of the examination should be published well in advance in the University Times. Other qualified individuals may be invited by the committee to participate in the examination. Only members of the doctoral committee may be present during the final deliberations and may vote on the passing of the candidate. A report of this examination, signed by all the members of the doctoral committee, must be sent to the dean. If the decision of the committee is not unanimous, the case is referred to the dean for resolution. The chair of the doctoral committee should ensure that the dissertation is in final form before requesting signatures of the members of the committee.

University Regulations Pertaining to Masters' Degrees

<http://www.pitt.edu/~graduate/regmasters.html>

The Master of Science (MS) degree is offered in departments within the Faculty of Arts and Sciences, the Joseph M. Katz Graduate School of Business, the School of Education, the School of Engineering, the School of Dental Medicine, the School of Health and Rehabilitation Sciences, the School of Medicine, the Graduate School of Public Health, the School of Pharmacy, and the School of Social Work. Some of the MA or MS degrees offered are specified as being "in" a particular discipline; e.g., Master of Science in Hygiene, Master of Science in Chemical Engineering.

Programs of Study

The MA and MS degree programs provide an introduction to scholarly activities and research and often serve as preparation for teaching careers. These degrees are awarded for the completion of a coherent program designed to assure the mastery of specified knowledge and skills, rather than a random accumulation of a certain number of courses. The overall form and content of the student's program of study is the responsibility of the faculty of the department. To carry out this responsibility, each student must be assigned a major adviser, who, in consultation with the student, plans a program of study and research in accord with school and departmental guidelines. At least four courses (12 credits) or one-half the master's degree program, whichever is greater, must be at the graduate level (the 2000 or 3000 series). No course numbered below 1000 or from 7000 to 7999 may be applied toward graduate degree requirements. Some master's programs may include approved areas of concentration or minors. Areas of concentration define and describe the student's training and expertise within the broader discipline. Minors represent significant course work completed in an area related to the student's specialty. Such areas of concentration or minors are added to the transcript upon the granting of the degree. Master's degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.00 QPA. The requirement of proficiency in foreign languages is at the discretion of individual departments or schools. Departments are expected to provide students with a copy of school and departmental regulations appropriate for their program. Students are expected to become familiar with these and to satisfy all prescribed degree requirements.

Credit Requirements

The Master of Arts and Master of Science degrees normally require the satisfactory completion of approximately 30 credits of graduate study approved by the department or school. Not more than six credits may be granted toward the completion of the requirements for a master's degree for work completed at another accredited graduate institution. (See Acceptance of Transfer Credits, for further information.)

Comprehensive Examination

MA or MS degrees are conferred only upon those students who, in one or more comprehensive examination or the equivalent, show that they have mastered the general field of their graduate study. Each department or similar unit is responsible for specifying the content and procedure for administration of the comprehensive examination and will specify for each candidate the field of his or her examination, which may vary from student to student. Whenever a program substitutes an equivalent requirement for the comprehensive examination, the department or program must obtain prior approval from the University Council on Graduate Study. Students on special or provisional status are not eligible to take a comprehensive examination. These examinations must be taken at least one month prior to the last day of the term in which the degree is to be granted. The results must be reported promptly to the office of the dean but no later than the last day of the term in which the examination is administered. A student who is unable to complete all degree requirements within a two-year period after passing the comprehensive examination may be re-examined at the discretion of the department or dean.

Thesis Option

The requirement of a thesis or its equivalent is at the discretion of individual departments or schools. The Interdisciplinary Biomedical Graduate Program requires a thesis and defense of all of its Master's graduates. The format of the thesis must be in accord with specifications stipulated in the University's Electronic Thesis and Dissertations guidelines <http://www.pitt.edu/~graduate/etd/>. Each candidate must provide a suitable number of copies of the thesis for review and use as designated by the thesis examining committee, consisting of at least three members of the faculty recommended by the major adviser and approved by the department chair. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the office of the dean. Specific instructions for final submission should be available in the office of the dean of the school.

Leave of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students or one year to master's students. The length and rationale for the leave of absence must be stated in advance, recommended to the Associate Dean by the Program Director, and approved by the Associate Dean. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

Financial Aid

Stipends

There are two primary forms of financial aid in the School of Medicine. These are the Dean's Stipend Awards and the Graduate Student Researcher appointments. It is School of Medicine policy that all graduate students in the Interdisciplinary Biomedical Graduate Program receive the same amount of stipend, regardless of educational background or program of study.

I. Dean's Stipend Awards

These scholarships are awarded to entering students for their first year before choosing a dissertation advisor and joining a degree-granting program. To retain the award students must maintain a minimum grade point average of 3.00 while taking a full-time course load (9-15 credits in the Fall and Spring Terms; 3 credits in the Summer Term). No supplementation of funds from other sources is permitted for recipients of the Dean's Stipend.

Students receiving Dean's Stipend awards are appointed as Graduate Student Assistants (GSAs) and are governed by all policies pertaining to the award. The full policy statement is presented at <http://www.pitt.edu/~graduate/tapolicyrev.htm>.

Termination of Appointment

Termination may result from unsatisfactory academic performance or from unsatisfactory professional conduct or performance. Examples of the latter include failure to attend classes regularly, failure to carry out assignments, or violation of the University Honor Code.

Termination proceedings may be initiated only if the TA/TF/GSA has been evaluated on a regular basis and has received an appropriate written warning with respect to his or her performance, or has violated one or more of the major canons of institutional responsibility or University policy.

The TA/TF/GSA must be informed in writing by the Associate Dean of the reason(s) for termination. The appeals procedure must be included with this correspondence.

Appeals Procedure

1. The TA/TF/GSA may appeal, in writing, within one week of notice of termination, to the Provost, who will convene an appeals committee.
2. The Provost or Provost's designee will serve as chair of an appeals committee and will appoint to the committee two faculty members from the University Council on Graduate Study and two graduate students, who must be TAs, TFs, or GSAs and who are recommended by the Graduate and Professional Student Association. No one from the involved academic program shall be on the appeals committee, and involved parties shall represent themselves before the committee.
3. Within 21 days from notice of termination, the appealing TA/TF/GSA shall be provided an appeals hearing, and he/she shall be notified of the appeals committee decision as soon as is possible.

II. Graduate Student Researchers

Fellowship support for students is awarded based on satisfactory academic performance in the first year. Following the first year, students traditionally receive support through their advisor's research grants as Graduate Student Researchers (GSRs) or through training program Fellowships. GSRs are governed by all policies pertaining to the award. (See the full policy statement at www.pitt.edu/~graduate/gsr.html)

Early Termination

Early termination refers to the dismissal of the GSR before the end of the contractual period of appointment. Early termination may be initiated *only if* the GSR has received an appropriate and timely written warning with respect to his or her performance, *or has clearly violated* one or more of the major canons of institutional responsibility or University Policy. The GSR must be informed in writing by the Program Director and/or Associate Dean of the reasons for termination. The appeals procedure must be included with this correspondence.

Appeals Procedure

1. The GSR may appeal the termination, in writing, within two weeks of notice of termination, to the dean, who will mediate the dispute and, if necessary, convene an appeals committee.
2. The dean or his or her designee will serve as chair of an appeals committee and will appoint to the committee two faculty members and two graduate students, who must be GSRs and are recommended by the school's graduate student association. No one from the involved academic department shall be on the appeals committee, and involved parties shall represent themselves before the committee.

3. Within six weeks, the appealing GSR shall be provided an appeals hearing, and he or she shall be notified of the appeals committee's recommendation and the dean's decision as soon as possible thereafter.

Educational Enrichment Account

A \$2,000 educational enrichment account also is provided to each first-year student. Funds may only be used to support the purchase of items or services that will enrich your graduate education. These include educational books, subscriptions to scientific journals, and expenses incurred to attend a scientific meeting. Funds may be used to purchase **one** computer or computer-like device. Examples include: laptop, desktop, iPad, tablets, etc. See the Graduate Studies Office for a complete set of guidelines and forms to access the account.

External Scholarships

External fellowships are available to those students interested in applying for such funds. All students are encouraged to apply for scholarships because they distinguish promising students who have successfully competed for funding. Opportunities may be found at the websites of the National Institutes for Health <https://www.nih.gov/grants-funding> and the National Science Foundation <http://www.nsf.gov/funding/> Other opportunities may also be found at the website for University's Office of Research, Health Sciences website <http://www.oorhs.pitt.edu/>. Students awarded a competitive fellowship whose award is greater than the program stipend may receive the larger stipend. Awards with a stipend that is less than the program stipend must be supplemented up to the full program level.

Loans

Graduate students are eligible for and permitted to receive student loans. You must complete a *Free Application for Federal Student Aid (FAFSA)*, obtainable from the Office of Financial Aid located in Alumni Hall. The FAFSA does not serve as the actual application for a loan or scholarship; however, it is required in order to be eligible for a loan. All information regarding student loans is handled by the Office of Financial Aid, 1st floor Alumni Hall, 624-7488. <https://oafa.pitt.edu/financialaid/applying-for-aid/aid-eligibility-requirements/>

Graduate Students who are enrolled at least half-time basis are generally eligible for the [Federal Direct Unsubsidized Loan](#) (graduate students are not eligible for Direct Subsidized funds), the [Federal Direct Graduate Plus Loan](#), and/or the [Private Educational Loan](#).

Emergency student loans of up to \$300 are available for educational purposes to students who are registered for 6 or more credits from the Student Organization Resource Center (SORC), room 119 William Pitt Union.

Tuition Remission & Invoices

Each term of registration will generate a tuition invoice. As a student with an eligible academic appointment, you will receive full tuition remission which includes the tuition, Student Health Service, Security & Transportation, and Network Service fees. However, you are responsible for the Student Activity Fee and any fees resulting from late registration or late payment of the activity fee. Each semester, the Graduate Office automatically pre-pays your tuition and fees. It is the student's responsibility to check and make sure the tuition has been paid in a timely fashion.

Guidelines for Submission of Requests for Travel Funds

The Graduate Studies Office offers \$400 travel awards for students to attend scientific meetings. This section describes the procedures that shall be followed when applying for an award.

Goals of the Program

The goal of this program is to give students the opportunity to present data and begin to develop contacts with scientists beyond the University of Pittsburgh. The opportunity to meet potential post-doctoral advisors or employers emphasizes the value of meeting attendance to more senior students. The opportunities to meet and interact with senior scientists are much greater at smaller meetings than at large gatherings like the Experimental Biology meetings. Gordon Conferences, which are a week in duration and typically have 1-200 attendees, represent the prototype of meetings that we would prefer to support. There are many other meetings that fall into this general category.

The following conditions apply to this award:

1. An application must be submitted at least one month before the event.
2. The applicant must be presenting a poster or talk at the meeting. This must be documented with an abstract in which the applicant is the first author.
3. Preference will be given to advanced students who have been admitted to candidacy for the PhD and are close to graduation.
4. Availability of funds from the mentor.
5. No more than one travel fellowship will be awarded per student per year.
6. No more than one travel fellowship per laboratory will be awarded for any given meeting.

Application Procedure

Application for a travel award must be submitted in writing to the Associate Dean at least one month before the event. The following information must be provided in the application:

- 1) Your name, program, advisors name, the date you passed your Comprehensive Exam, and your expected date of graduation.
- 2) The title, location and date of the meeting you wish to attend.
- 3) A letter from your advisor which briefly describes the nature of the meeting and the anticipated attendance, the benefits to you of attending, and the expected total cost of the meeting. The advisor should also indicate whether other travel fellowships are available for the meeting. This will not preclude support by this mechanism, but is necessary to ensure that support does not overlap.
- 4) A copy of the abstract of the presentation that you will make at the meeting.

Applications will be approved by the Associate Dean. We expect to be able to award eight fellowships each year. Submission of applications that are incomplete or late will greatly reduce the chance of success of the application.

Biomedical Graduate Student Association

The Biomedical Graduate Student Association (BGSA) is an organization which represents all graduate students in the School of Medicine. Its purpose is to foster academic and social interactions among graduate students within training programs and with other members of the University community. It functions as a support network for all biomedical graduate students, and facilitates communication between students, faculty, and administration.

Please go to our website for up to date information and a calendar of events.

www.bgsa.pitt.edu/index.html

The Pitt Promise, Code of Conduct, and Judicial Procedures

University Honor Code / Code of Conduct

The faculty and the students of the School of Medicine recognize the importance of personal integrity and honor. To achieve this end, each student accepting an offer of admission to the School of Medicine Graduate Division of Biomedical Sciences will accept the obligations of the Honor Code/Code of Conduct and will expect to apply the code to all aspects of his or her professional life regardless of the level of training. Students and faculty of the School of Medicine shall be honor bound to enforce the Honor Code/Code of Conduct and to report violations of it.

The Honor Code/Code of Conduct emphasizes the individual's involvement in and responsibility for the corporate well-being of the community of the Medical School. In keeping with the latter, it is incumbent upon every member of the community to promote the climate which this code seeks to establish. This involves not only counseling with fellow members of the school concerning their actions, but also bringing the sanctions of the School's disciplinary procedures to bear upon those whose conduct is in violation of the Code.

Mission

The mission of Student Conduct is to process violations of the Student Code of Conduct. By processing these violations, we seek to provide a safe learning environment and opportunities for students to learn from their own behavior and the behavior of others. Student Conduct supports this mission, the values identified in the Pitt Promise, and the educational mission of the University of Pittsburgh by:

- Developing, disseminating, and enforcing campus regulations
- Providing a fair and consistent conduct process
- Assessment as normative practice
- Mentoring students through meaningful interactions
- Educating students about the effects of their behavior on themselves and those around them

- Promoting healthy decisions
- Fostering safe and inclusive communities both on and off campus
- Connecting students with support services in order to encourage their personal, social, and academic growth
- Collaborating with faculty, staff, students, and the campus community to manage and address conduct matters

The website of the Office of Student Affairs addresses all issues regarding student conduct. The link to University of Pittsburgh Student Code of Conduct and Judicial Procedures::

<http://www.studentaffairs.pitt.edu/conduct/> (Revised Sep 2015)

Guidelines on Academic Integrity

Effective
September 2005
Reprinted
August 2009

Academic Integrity

This document contains a set of principles which shall be applicable to each of the academic units* throughout the University. A student desiring information about an academic unit's specific procedures and the makeup of its Academic Integrity Hearing Board may obtain a copy of the procedures and other necessary information from the Office of the Dean, either in the academic unit in which he or she is registered or in the academic unit in which a particular course is taught. Additional information or guidance may be obtained from the Office of the Provost. Copies of this document and guidelines for academic units should be distributed by the deans to all instructional staff in each academic unit.

**“Academic unit” is used to refer to a college, academic unit, or regional campus.*

Preface

Provided here are Academic Integrity Policy Guidelines based on the 1983-86 document which was initially approved by the Board of Trustees on the recommendation of the University Senate Council. The original document evolved from and represented careful deliberation among staff, Senate committees, and student leaders of the University. The purpose of this document is to clarify and codify the rights and responsibilities that are inherent in traditional faculty-student relationships and to reflect procedural modifications that were approved, effective January 1, 1989, by the Chancellor. In following the Guidelines, the faculty members of each academic unit of the University are expected to adapt them to the circumstances of their own academic unit. The Guidelines are designed to assure due process, equity, and prompt and objective review by third parties, with appropriate appeals procedures. There is a general intent to maintain confidentiality, to avoid unnecessary formality, and to resolve issues at the lowest possible level. Faculty have a particular interest and responsibility in assuring that the Guidelines are adhered to, by virtue of their profession and their role as academic officials of the University. Any failure to follow these Guidelines would be harmful to the whole University community. All members of the University community have access to advice and interpretation regarding these Guidelines. Students may consult with the Campus Judicial Coordinator. Faculty may consult with their dean or academic unit hearing officer, and any individual

may ask for any other guidance they need from the Office of the Provost. In general, we seek to preserve the traditional freedoms and duties associated with academic endeavors. The University should work to preserve the rights and responsibilities of faculty and students in their relationships with one another. Just as faculty and students must be free to seek truth and to search for knowledge with open minds, they must also accept the responsibility that these activities entail, maintaining the highest standards of integrity, mutual respect, and honest inquiry. The full document is available here www.provost.pitt.edu/info/acguidelinespdf.pdf

Research Integrity Policy

Revised: October 15, 2008

Preface

The University of Pittsburgh seeks excellence in the discovery and dissemination of knowledge. Excellence in scholarship requires all members of the University community to adhere strictly to the highest standards of integrity with regard to research, instruction and evaluation. The principle of academic integrity is integral to membership in the University community. Each such member is deemed to recognize the value and special importance of this responsibility, which is linked to accepting an appointment at the University.

As scholars and citizens of the University community, all parties must be ever cognizant of the axiom that every increment of authority and discretion brings with it corollary responsibilities to colleagues, staff, students, the University as a whole, the community, and society at large. In addition, federal regulations impose policies and procedures on the University for dealing with possible misconduct in science.¹

All those engaged in research should be cognizant of the value to the University of calling attention to research misconduct, and of the importance of bona fide challenges in assuring and maintaining the integrity of scholarly investigation and of this institution.

Should the conduct of research or the collection or reporting of research data and information be challenged on the ground of misconduct, whether by a faculty member, student, staff member, research associate or fellow, or a person outside the University, the framework for resolution of the grievance shall involve the dean² and the Research Integrity Officer working within a process of peer and administrative review. Throughout, responsible and honest discourse, the protection of academic freedom, and protection of the individual against unnecessary public dissemination of unproven allegations are essential ingredients in the process.

Research misconduct, as defined below, carries potential for serious harm to the University community, to the integrity of research, and to society as a whole. Accordingly, it is incumbent upon faculty members to exercise active leadership in their supervisory roles in mentoring, collaborating with, or directing junior colleagues, staff, or students. First, faculty must be fully cognizant of the quality of work being done for which they assume responsibility and, second, they must seek to avoid undue pressure placed upon more junior faculty, staff, or students which could lead to the publication or other report of any inaccurate, incomplete, or falsified data or information. In judging whether misconduct has occurred, it is important to distinguish fraud from honest error and ambiguities that are inherent in the process of scholarly investigation and are normally corrected by further research.

This policy shall be followed in responding to all allegations of research misconduct on the part of faculty, research associates, and staff. In the case of students involved in alleged misconduct, this policy shall apply in those instances where the research in question is supported by federal agencies or where the relevant dean requests that the Research Integrity Officer invoke the policy. Student matters may also, as appropriate, be handled under the relevant Academic Integrity Guidelines.

The procedures described below are steps in an academic peer review and fact-finding process and are not intended or designed to represent rules of a judiciary. Principles of basic fairness and confidentiality shall be observed in these peer-review procedures. Any allegations of misconduct must be treated on an individual-case basis.

Safeguards give the individual accused of misconduct the confidence that his or her rights are protected and that the mere filing of an allegation of research misconduct will not bring the research to a halt or be the basis for other disciplinary or adverse action absent other compelling reasons. Safeguards for a complainant or a witness in any proceeding described in this document include protection against retaliation for making good-faith allegations or providing testimony, fair and objective procedures for the examination and resolution of the allegations, and diligence in protecting the position and reputation of one who makes allegations or gives testimony in good faith.

Both the person bringing an allegation and the one against whom the allegation is made in any of the procedures described below may seek the advice of the Senate Committee on Tenure and Academic Freedom, as may any administrator. A dean, in initiating any of the procedures described below, shall advise the principals that they may seek such advice.

The University's Research Integrity Officer, who is appointed by the Chancellor, shall work closely with the relevant academic administrators, inquiry panels, and investigative boards. In consultation with the General Counsel, he/she shall ensure procedural compliance with applicable law, government regulations, University policy, and principles of fairness in each stage of the proceedings set out in this policy. Academic administrators and inquiry panels or investigative boards shall keep the Research Integrity Officer fully informed of their activities and shall consult him/her as to process before making any final recommendations or decisions. The Research Integrity Officer shall monitor compliance with all procedures and time schedules described in this policy and shall inform the Provost of any failures to comply with such time schedules. The Research Integrity Officer shall not have decision-making responsibility regarding the substance of any allegations. He or she may, at the request of a panel or administrator in a research misconduct proceeding, assist in drafting the recommendations arrived at by that panel or administrator. The Research Integrity Officer shall make or supervise all relevant contacts with government agencies or other outside parties, and shall maintain the record of all proceedings. In the case of short absences from the campus, the Research Integrity Officer may designate an Acting Research Integrity Officer.

The Provost shall have oversight responsibility to ensure compliance with the policy. Only the Research Integrity Officer or the Provost has the authority to modify the various time limits specified in the procedures. (All subsequent references to the number of days for particular stages in the process refer to calendar days.)

Even if a respondent leaves the University before a case is resolved or does not participate in the proceedings, the University has a responsibility to follow the procedures described in this policy and reach a conclusion.

This policy shall be administered in compliance with regulations of any agency (the sponsoring agency) sponsoring the research in question and shall be subject to appropriate modifications, if necessary. The full document may be accessed here:

<https://www.cfo.pitt.edu/policies/policy/11/11-01-01.html>

Guidelines for Ethical Practices in Research

Revised: March 2011

Office of Research Integrity

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The purpose of this set of guidelines is to provide a positively oriented set of practical suggestions for maintaining integrity in research. Not only does the ethical conduct of science satisfy a scientific moral code; it also leads to better scientific results because the adherence to ethical research practices leads to more attention to the details of scientific research, including qualitative analysis and quantitative and statistical techniques, and to more thoughtful collaboration among investigators. Also, the credibility of science with the general public depends on the maintenance of the highest ethical standards in research. Observance of these guidelines will help an investigator avoid departures from accepted ethical research practice and prevent those most serious deviations that constitute research misconduct. **Research misconduct** is defined as fabrication, falsification, or plagiarism, including misrepresentation of credentials, in proposing, performing, or reviewing research, or in reporting research results. It does not include honest error or differences of opinion. Misconduct as defined above is viewed as a serious professional deviation that is subject to sanctions imposed both by the University, by many professional associations, and, in the case of research proposed to or funded by a federal agency, by that agency. These guidelines can be used as a common repository of generally accepted practice for experienced researchers and as an orientation to those beginning research careers. Although some of these principles apply to all fields of research, much of what follows deals with scientific research, including those areas of the social and behavioral sciences that involve collection and interpretation of data. These materials can be adapted or specified in a more particular form appropriate for each scholarly discipline or academic unit. In fact, many academic units have developed excellent handbooks on research ethics and integrity. When in doubt about the accepted ethical standards in a particular case, a researcher should discuss the matter on a confidential basis with an academic supervisor, another respected colleague, or the University Research Integrity Officer. This document, an updated edition of Guidelines for Ethical Practices in Research, the most recent edition of which was issued in January, 2007, is not a policy, but it supplements existing University-wide policies and procedures governing various aspects of research, a partial list of which is found in the Appendix. Ethical concerns in research are the subject of the Responsible Conduct of Research subset of the self-administered education, testing, and certification program, the Internet-based Studies in Education and Research (formerly Research Practice and Fundamentals), accessible at:

www.cme.hs.pitt.edu/servlet/IteachControllerServlet?actiontotake=displaymainpage&site=rpf

Some University Units Supporting Research

1. Safety

The **University Radiation Safety Office** is responsible for ensuring that all sources of licensed radioactive material and ionizing radiation producing equipment, which fall under its responsibility, are used optimally and safely. The office also ensures that these sources of ionizing radiation are used in compliance with applicable federal and state regulations and with institutional licenses. The University of Pittsburgh Radiation Safety Program covers all of the main and regional campuses in addition to UPMC Presbyterian/Shadyside, Children's Hospital of Pittsburgh of UPMC, and Magee-Womens Hospital of UPMC.

The Radiation Safety Office is responsible for developing and implementing the policies and procedures of the radiation safety program as approved by the University's Radiation Safety Committee. The responsibilities and functions of the Radiation Safety Office include, maintenance of radioactive materials and accelerator licenses and X-Ray machine registrations, radiation safety training, personnel radiation monitoring, receipt and inventory of radioactive materials, radiation surveys and compliance audits, clinical radiation physics support, radiation safety procedure design and review, radioactive waste disposal.

Located in G-07 Parran Hall, 130 DeSoto Street

412-624-2728

radsafe@pitt.edu

The Director of Environmental Health and Safety (412-624-9505) should be consulted about proper use, storage, and disposal of hazardous materials, including bloodborne pathogens.

Safety@ehs.pitt.edu

IBC - All proposals for work involving recombinant DNA or gene therapy must be submitted to the Institutional Biosafety Committee (IBC). 412-578-3799 ibo@pitt.edu

The IBC Office is responsible for implementing policies and procedures of the IBC in order to help ensure compliance with the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules*. The office staff also provides guidance and IBC oversight support for the research community.

The IBC is the federally required review board responsible for oversight of research involving recombinant or synthetic nucleic acid molecules conducted at or sponsored by the University of Pittsburgh. The IBC oversight program covers all research at the main and regional campuses in addition to UPMC Presbyterian/Shadyside, Children's Hospital of Pittsburgh of UPMC, and Magee-Women's Hospital of UPMC.

2. Intellectual Property and Technology Management – Innovation Institute

Investigators may have occasion to protect their research findings, both for themselves and for the University, through copyrights or patents. The Innovation Institute Management is the University's hub for activities that promote and foster innovation and entrepreneurship on campus and throughout

the Pittsburgh region. The Innovation Institute is built on a foundation supported by education, collaboration, communication, and economic development.

The goals of the Institute are to encourage and support innovation and entrepreneurship on campus and in the community, and to foster a culture of innovation and entrepreneurship at Pitt among faculty, staff and students. <http://www.innovation.pitt.edu/>
200 Gardner Steel Conference Center 412-383-7670

3. Office of Research

The Office of Research (OR), a central office reporting to the Vice Provost for Research, is charged with assisting faculty, staff, and students in their efforts to promote and secure sponsored research funding. The OR reviews, negotiates, endorses, and provides administrative oversight related to proposals and awards in accordance with all applicable laws, policies and regulations. The Associate Vice Provost for Research Operations of the Office of Research serves as the designated University Officer empowered for all sponsored research activities. <http://www.research.pitt.edu/> 412-624-7400

4. Office of Research, Health Sciences

The mission of the Office of Research, Health Sciences, OORHS, is to foster both the emerging and the established research enterprises within and across the six schools of the Health Sciences at the University of Pittsburgh. <http://oorhs.pitt.edu/> 412-648-2232

5. Office of Clinical Research

The mission of the Office of Clinical Research, Health Sciences (OCR) is to promote the growth of clinical research within and across the six schools of the Health Sciences at the University of Pittsburgh. The OCR's goal is to facilitate promotion of an interdisciplinary collaborative environment that fosters the translation of research to the community. A successful collaborative environment will increase the institution's competitiveness for clinical and translational research initiatives, promote the development of junior clinical investigators, facilitate subject recruitment into clinical research studies, and improve health in the community by increasing access to university-based and medical system-wide clinical research. <https://www.clinicalresearch.pitt.edu/IRS>
401 Scaife Hall 412-648-2332

6. Recombinant DNA Office

The Pittsburgh Area Institutional Biosafety Committee (IBC) was first established in June 1991. A decade later, in May 2001, the IBC was organizationally placed under the [Research Conduct and Compliance Office](#), and provided with administrative structure to coordinate and support the actions of the committee as well as the review process. Three full-time personnel currently staff the IBC Office.

The IBC is charged with the following responsibilities: Review of ALL research proposals involving recombinant or synthetic nucleic acid molecules, Notifying the Principal Investigator of the outcome of review and committee recommendation(s), Determination of reducing ("Downgrade

Request") or increasing the biosafety containment levels (BSL), Conducting periodic reviews ensuring compliance with the [NIH Guidelines](#), Approving emergency plans covering accidental spills and/or personnel contamination developed and recommended by University Biosafety Officer(s) and the Department of Environmental Health and Safety, Reporting significant problems or violations of the [NIH Guidelines](#) to the appropriate federal agencies, The IBC may not authorize proposals which are not covered by the [NIH Guidelines](#) until the NIH establishes the standard of containment, Performance of such other functions as deemed necessary.

<http://www.abc.pitt.edu/about> Hieber Building, Suite 202

7. Research Conduct and Compliance Office

The Research Conduct and Compliance Office of the University of Pittsburgh will oversee and facilitate the conduct of ethical and regulation-compliant human and animal subject research through an integrated system of research review, audit and educational programs established in a manner that maximizes institutional effectiveness. <http://www.rcco.pitt.edu/>

Attachment A

Select Research Integrity Bibliography for Researchers

Books

Research Ethics: Cases and Materials, R.L. Penslar, ed., Indiana University Press, Bloomington, 1995.

Responsible Science: Ensuring the Integrity of the Research Process, Panel on Scientific Responsibility and the Conduct of Research, Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Academy Press, Washington, Vol. 1, 1992; Vol. 2, 1993.

Scientific Integrity: An Introductory Text with Cases, F.L. Macrina, for American Society for Microbiology, 1995.

Booklets

Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, National Academy Press, Washington, 1997.

Moral Reasoning in Scientific Research: Cases for Teaching and Assessment, Bebeau MJ, Pimple KD, Muskavitch KMT, Borden SL, Smith DL, Indiana University, Bloomington, 1995.

Honor in Science. Sigma Xi, the Scientific Research Society, Research Triangle Park, 2nd ed., 1986.

On Being a Scientist: Responsible Conduct in Research, Committee on Science, Engineering, and Public Policy, National Academy of Sciences, Engineering, and Public Policy, National Academy Press, Washington, 2nd ed., 1995.

Reports

National Science Foundation, Semi-annual Reports of the Office of the Inspector General to the Congress, beginning in 1990.

Office of Research Integrity, U.S. Public Health Service Annual Reports, starting in 1989.

Attachment B

Partial List of Relevant University Policies and Procedures

(Numbers and dates refer to the listings in the University Policy and Procedure Manuals.)

Academic Integrity Guidelines, 02-03-02, 02-03-03, 02-03-04, and 02-03-05, August 10, 1988. In addition to this University-wide document, each school has its own specific document governing the performance of students in the academic setting - in courses, examinations, and degree-related research, and the responsibilities of faculty with respect to students.

Biosafety Manual, available from Biosafety Office (624-9505). This is a helpful compilation of guidelines and regulations with respect to the safe utilization of equipment, substances, and procedures in the laboratory.

Bloodborne Pathogens, 06-01-03, January 31, 1995

Commercialization of Inventions through Independent Companies: Policy and Recommendations, 11-02-03, June 28, 1996. This describes University policy with respect to the participation of faculty, staff, and students in start-up companies based on inventions by those faculty, staff, and students, and defines the role of the Entrepreneurial Oversight Committee in administering this policy.

Conflict of Interest in Research, 11-01-03, June 21, 1996. This document states University policy for eliminating or dealing with conflict of interest and describes the annual disclosures of outside interests required of all persons involved in research.

Copyrights, 10-04-01, February 14, 1989, and 11-02-02, June 29, 1990. This describes procedures for seeking copyrights and specifies the relative rights of the author and the University.

General Health and Safety Manual and Biosafety Manual, available from Environmental Health and Safety Office (412-624-9505).

Guidelines on Data Retention and Access, February 3, 1997, available from Vice Provost for Research (412-624-0784).

Handbook for the Use of Animals in Research, Testing, and Teaching, available from Division of Laboratory Animal Resource (412-624-8950) or from the Institutional Animal Care and Use Committee. This provides guidelines and regulations governing the use of animals.

Patent Rights and Technology Transfer, 11-02-01, June 29, 1990. This describes the procedures for applying for patents and outlines the relative rights and responsibilities of the inventor(s) and the University.

Reference Manual for the Use of Human Research Subjects, available from the Institutional Review Board (412-578-3424). This is a detailed description of the regulations governing the use of human research subjects and of the procedures for seeking IRB approval.

Research Integrity Policy, 11-01-01, January 1, 2002. This defines research misconduct and describes the procedures for conducting inquiries and investigations into allegations of misconduct and for making and appealing decisions related to misconduct.

Rights, Roles, and Responsibilities of Sponsored Research Investigators, 11-01-02, April 3, 1992. This document outlines the rights and responsibilities of investigators and provides a mechanism for resolution of disputes.

For more information, please contact the Office of Research

Updated May 2003

Health & Safety Policies and Procedures

All University Policies & Procedures are available on-line via the world-wide web at the following web site: <http://www.cfo.pitt.edu/policies/>.

Policy Statement on Racism, Discrimination and Sexual Harassment

The School of Medicine at the University of Pittsburgh is committed to providing a safe, comfortable, and supportive academic environment free from all forms of discrimination and harassment based on race, culture, religion, or ethnic origin. In addition, any form of discriminatory behavior or harassment based on one's gender or sexual orientation is also a violation of University policy as well as federal, state, and local laws.

Any individual who is accused and found to have violated the University's policy against intentional physical or verbal abuse, harassment, or discrimination of another person based on their race, color, religion, culture, age, disability, gender or sexual orientation; with the purpose or effect of creating an intimidating, hostile, or offensive academic work, or social environment, will be subject to appropriate disciplinary action, including but not limited to reprimand, suspension, termination or expulsion.

Definition of Sexual Harassment and Procedures to Follow:

Sexual harassment takes many forms. It may range from unwelcome comments, gestures, or facial expressions, to unwanted physical contact. Both men and women, regardless of sexual orientation can be victims. **Sexual harassment is defined as any unwelcomed sexual advance, request for sexual favors or other verbal or physical conduct of a sexual nature when:**

1. Submission to such conduct is an explicit or implicit condition of employment or academic decision
2. Submission to or rejection of such conduct is used as the basis for employment or academic decision
3. Such conduct has the purpose or affect of:
 - A) Unreasonable interfering with an individual's work or academic performance
 - B) Creating an intimidating, hostile or offensive work, academic or social environment

This policy will be applied with due respect of the University's commitment to equality of opportunity, human dignity, diversity, and academic freedom.

Any student, faculty, staff member or employees who believe that they have been discriminated against or harassed has both formal and informal avenues of address. For additional information or to file a complaint one can contact:

Office of Affirmative Action
901 William Pitt Union
University of Pittsburgh
(412) 648-7860

Anti-Harassment Policy Statement

No University employee, University student, or individual on University property may intentionally harass or abuse a person (physically or verbally) with the purpose or effect of unreasonably interfering with such person's work or academic performance, or of creating an intimidating, hostile, or offensive work or academic environment. Consistent with the University Nondiscrimination Policy Statement, this Anti-Harassment Policy Statement includes cases where the conduct is based on race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or veteran status. This policy will be applied with due respect for the University's commitment to equality of opportunity, human dignity, diversity, and academic freedom.

For additional information, refer to University Procedure 07-01-03

University Procedure 07-01-03 *Nondiscrimination and Anti-Harassment*.

<http://www.bc.pitt.edu/policies/procedure/07/07-01-03.html>

Certified Student Organization Alcohol Policy

As a graduate student and *de facto* member of the Biomedical Graduate Student Association (BGSA) you are held to the following policies:

1. Student organizations, their officers and members assume sole responsibility for understanding and complying to applicable laws of the Commonwealth of Pennsylvania regarding the purchase, possession, distribution and consumption of alcohol at their events on and off campus.
2. Only graduate, professional and College of General Studies student organizations may use activity fees to purchase alcohol.
3. Only graduate, professional and College of General Studies student organizations may serve alcohol at on campus events provided that they use bartenders from University Catering.
4. Graduate, professional and College of General Studies student organizations may purchase and serve alcohol at off campus events provided the alcohol is served by a licensed vendor who accepts full responsibility for compliance to the applicable laws.
5. Undergraduate student organizations may hold off campus events at which alcohol is served and may use activity fees for non-alcohol related expenses at such functions, provided the events are held on the premises of a licensed vendor who accepts full responsibility for compliance to applicable laws.
6. Student organizations may not mention the availability of alcohol at an event by advertising, invitation, announcements, or other forms of promotion.
7. Student organizations may not solicit or receive free alcohol from any source.
8. Students and student organizations are prohibited from storing or consuming alcohol in assigned office space or public areas of the University.
9. Organizational violations of this policy will be adjudicated by the Office of Student Activities and may result in University sanctions, including revocation of certification.

Individual students are subject to disciplinary proceedings and sanctions through the University Student Judicial System.

Drug-free Workplace/drug-free Schools Policy

The University of Pittsburgh prohibits the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance on University property or as part of any University activity. Faculty, staff, and students of the University must also comply with the laws of the Commonwealth of Pennsylvania on the possession and consumption of alcohol.

Violation of this policy will result in disciplinary action, including, but not limited to a warning, written reprimand, suspension, dismissal, expulsion, and/or mandatory participation and successful completion of a drug abuse assistance or rehabilitation program approved by an appropriate health or law enforcement agency.

Any University employee paid from federally funded grants or contracts, or any student participating in any federally funded or guaranteed Student Loan Program, must notify the University of any criminal drug statute conviction for a violation occurring at the University while engaged in University activities.

Information and Assistance for Alcohol And/or Drug Abuse:

An important step in overcoming any problem is to know where to turn for assistance. Information, counseling, and treatment for alcohol and/or drug problems is available through resources in the community and costs may be covered by health care benefits. Confidential support services are available for those with abuse problems who individually pursue treatment and counseling. Some of those resources include:

University of Pittsburgh Student Health Service

Wellness Center
Nordenberg Hall
119 University Place
Pittsburgh, PA 15260
(412) 383-1800
www.studentaffairs.pitt.edu/shs/

University of Pittsburgh Counseling Center

Wellness Center
Nordenberg Hall
119 University Place
Pittsburgh, PA 15260
(412) 648-7930
www.studentaffairs.pitt.edu/cc/

Gateway Rehabilitation Center

100 Moffett Run Road
Aliquippa, PA 15001
800-472-1177

Mercy Behavioral Health Center

412 East Commons
Pittsburgh, PA 15212
(412) 323-4500

Western Psychiatric Institute & Clinic

3811 O'Hara Street
Pittsburgh, PA 15213
(412) 624-2100

24-Hour Hotlines:

- 1) Allegheny County Crisis Emergency Center 1-888-424-2287
- 2) DRUG CONNECTION: (854-0700)
- 3) CONTACT PITTSBURGH: (782-4023)

This hotline deals with all types of problems in addition to substance abuse, e.g. depression and suicide. Will also make referrals to appropriate long-term counseling services.

Local Chapters of National Support Organizations:

- 1) AA (Alcoholic Anonymous): (412-471-7472) 24 hours
Both crisis and long term help for individuals with alcohol abuse problems.
- 2) NA (Narcotics Anonymous) (412-391-5247) 24 hours
Both crisis and long term help and support for individuals with problems resulting from drug abuse other than alcohol.

NOTE: AA groups are often comprised of older while NA groups often are comprised of younger individuals and those who have mixed a lot of chemicals during their period of dependency.

- 3) AL ANON (1-800-628-8920) This is a support group for concerned families, friends and employers, etc. of alcoholics.
- 4) ALA TEEN (1-800-628-8920) Support group for teenage children of alcoholics.
- 5) OA (Overeaters Anonymous) (412-765-3004) 24 hours. Crisis and long term help and support for individuals with eating disorders.
- 6) CONTACT Pittsburgh, Inc. (412-820-HELP) - Offers immediate emotional support by telephone volunteers trained to help people of all ages who may be suicidal, in emotional distress or in need of reassurance, information or referral service.

Additional Resources:

Additional resources may be found in the blue pages of the telephone book under *Guide to Human Services*.

University of Pittsburgh Policy to Accommodate PhD Students

Graduate Student Parental Accommodation Guidelines

Purpose: Consistent with the University's efforts to strive to be inclusive and to support academic-personal life balance, the University believes it is important to provide accommodation for graduate students who become new parents, whether by childbirth or adoption, so that they may contribute to their family responsibilities while continuing to make progress towards their degree. This practice will help develop students who can successfully integrate their academic and personal pursuits. In recognition of the challenges of balancing the demands of graduate study and parenting a new child, these guidelines aim to improve the academic environment for student parents. The Graduate Student Parental Accommodation Guidelines assists graduate students immediately following the birth or adoption of a young child. The purpose of these guidelines is to make it possible for a student to maintain registered full-time student status, along with all the benefits of such status, while facilitating the return to full participation in courses, research and teaching.

Eligibility: The Parental Accommodation Guidelines apply only to full-time students enrolled in graduate programs who are in good academic standing and who are making satisfactory progress toward completion of a graduate degree. These guidelines do not cover students in professional programs. Students must have completed at least one full-time semester of their degree program to become eligible for coverage under these guidelines. The guidelines cover the situation of students who experience a child birth, who adopt a child who is unable to be enrolled in full-day public school due to age or other developmental reasons, or who is a partner of someone who has experienced a child birth or an adoption for whom the student has parental responsibilities. These eligibility requirements cover all provisions of the guidelines.

I. Parental Accommodation Period

All eligible students will be granted a Parental Accommodation Period six weeks immediately following the birth of a child or the adoption of a child for whom the student has parental responsibilities. During this period of accommodation, the student will continue to be enrolled as a full-time student. Because the student remains enrolled as a full-time student and continues to pay tuition, this is not a formal BGSA. It is instead a modification of deadlines and academic expectations to accommodate the student's new parental responsibilities. The student will be able to postpone completion of course assignments, examinations, academic milestones and other academic requirements for the six-week Accommodation Period. However, the Accommodation Period does not extend the University's academic Statute of Limitations.

Because the Accommodation Period needs to be tailored to the student's individual circumstances and the timing of the student's academic responsibilities, the student should consult in advance with the program advisor, research advisor or office of student services about how the student will meet academic goals and requirements. The student is responsible for ensuring that this consultation takes place as far in advance of the Accommodation Period as possible. Students enrolled in programs characterized by sequential courses must anticipate potential consequences associated with accommodation, and in consultation with the advisor, should plan how best to complete their program following the Accommodation Period.

The student must complete the accommodation period within six weeks of the birth or adoption. The student may not divide the time period of parental accommodation for use past this time limit. If both

parents are eligible graduate students, both may take the six week accommodation period. The total accommodation period for each birth or adoption is limited to six weeks; in the event of a multiple birth or adoption, the length of the accommodation period is limited to six weeks.

After the end of the Parental Accommodation Period, students are expected to return to graduate study and resume progress toward completing their degrees. Faculty are encouraged to remain flexible in their expectations of students who become new parents, so that students can meet the demands of graduate study at the same time that they face new demands in their parental roles. Nothing in these guidelines can or should replace communication and cooperation between student and advisor, and the good-faith efforts of both to accommodate the birth or adoption of a child. It is the intent of these guidelines to reinforce the importance of that cooperation and to provide support to make that accommodation possible.

Special Notice to International Students: Students who are attending the University of Pittsburgh with a F-1 student visa or J-1 Exchange Visitor visa are strongly encouraged to consult in advance with the Office of International Studies about their plans during the period of Parental Accommodation.

II. Student Funding During the Parental Accommodation Period

A. Teaching Assistants, Teaching Fellows, Graduate Student Assistants, or Graduate Student Researchers

With advance planning, TA, TF, GSA and GSR assignments can be adapted for modifications of schedule that new student parents need during a Parental Accommodation Period. Faculty advisors and students with TA, TF, GSA and GSR appointments are encouraged to work out the necessary adjustments preferably one semester before the anticipated birth.

Eligible Students Faculty members who supervise TAs, TFs, GSAs and GSRs who assume new roles as parents (see below for accommodations for birth mothers) should offer flexibility to allow students to take advantage of the Parental Accommodation Period. During this period the students will continue to receive their stipend, benefits, and associated tuition support.

Birth Mothers The situation is more difficult for mothers who give birth, and must cope with the health consequences of childbirth and recovery in addition to new parental roles. Eligible graduate students with TA, TF, GSA and GSR appointments who experience the health consequences of pregnancy will be excused from their regular duties for a period of time to be determined by a health care provider not to exceed the student's appointment period. During this period, they will continue to receive their stipend, benefits, and associated tuition support. In most cases, students who have been funded by external grants will receive their parental accommodation stipend and benefits through their specific grant, provided that the granting agency permits such action. If the funding agency has terms and conditions which do not permit funding pursuant to this guideline, the department or school will fund the parental accommodation period.

B. Fellowship Recipients

Eligible students who are supported by University of Pittsburgh fellowships will experience no change in their funding arrangements during the Parental Accommodation Period; they will continue to receive their fellowship support and benefits during the Parental Accommodation period. Eligible students who are supported by fellowships external to the University must adhere to the rules of the granting agency with respect to absences from academic and research work.

III. Approval

An eligible student must submit a Request for Graduate Student Parental Accommodation, after appropriate consultation with her/his advisor, principal investigator, and graduate chair. The request, with appropriate documentation of the anticipated birth or adoption (a letter from the student's medical provider with an estimate of delivery date or from the adoption agency with an estimate of adoption date), will be submitted to the student's graduate program office for approval. **(The request form can be obtained from the Graduate Studies Office, 524 Scaife Hall)**

Any student who believes that he or she has been treated unfairly or has been denied eligibility according to these guidelines should first discuss the situation with their program advisor, research advisor or office of student services. If a resolution cannot be reached at the departmental level, the student should present the grievance to the dean for informal evaluation, adjudication, and, if necessary, advice on additional, formal grievance procedures.

Bloodborne Pathogens Policy

It is the policy of the University of Pittsburgh to limit or prevent occupational or student exposure to blood and other potentially infectious materials (as defined below) and to provide certain treatment following any such exposure. This document serves to clarify the University program for education, prevention, post-exposure medical treatment and follow-up provided for employees and students who have been exposed to bloodborne pathogens as a part of workplace or other programmed activity.

I. Definitions

A. Bloodborne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

B. Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of employees' duties or students' programmed activities.

C. Other Potentially Infectious Materials means:

1. the following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;
2. any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
3. HIV-containing cell or tissue cultures, organ cultures, and HIV or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

II. Policy Implementation

The University shall provide education and prophylactic guidelines to employees and students who may be exposed to bloodborne pathogens. This action shall be described in

detail in the University's Bloodborne Pathogens Exposure Control Plan (ECP). University employees and students shall have access to treatment and follow-up of exposure to bloodborne pathogens. Employee treatment is specified by the OSHA standard 29 CFR 1910.1030 (f) (3), Workers' Compensation and the University Exposure Control Plan. Treatment costs will be subject to payment under the University's Workers' Compensation policy and procedures.

Students who are not employees are not covered by OSHA standards or Workers' Compensation, but will have access to appropriate evaluation and treatment of exposures through referral centers identified below, and at the student's or student's health insurer's expense. Students who enroll in a University programmed activity where exposure to human blood or Other Potentially Infectious Materials is probable or possible must carry health insurance validated each term that will cover payment of treatment and follow-up procedures.

With the exception of students enrolled in the Schools of the Health Sciences (Dental Medicine, Graduate School of Public Health, Medicine, Nursing, Pharmacy, and Health and Rehabilitation Sciences), the use of unpreserved human blood and/or Other Potentially Infectious Materials and primate blood and/or Other Potentially Infectious Materials shall be excluded from all undergraduate courses and laboratory work. Petitions for exemptions from this rule can be made by the course instructor to the Biohazards Committee.

Diversity

The Division of Student Affairs is committed to supporting an equitable learning and working environment that values human dignity and quality of opportunity. We are committed to fostering a culture of inclusion in which diversity can thrive for all members within the University community. <http://www.studentaffairs.pitt.edu/dean/diversity/>

HBV Immunization and Preventive Training

Before engaging in a University programmed activity where exposure to human blood and/or Other Potentially Infectious Materials is probable or possible, each employee and each student must present either evidence of HBV immunization, or serologic evidence of a protective antibody titer against hepatitis B virus disease (HBV) and undergo training to prevent or minimize exposure. Hepatitis B immunization is available to University employees without charge. Students should check with their health insurers about coverage of, or reimbursement for, HBV immunization. Employees or students who want to forego such immunization must sign a formal disclaimer statement.

Exposure Follow-up

Any University employee or student who believes that he or she may have had an exposure to blood, body fluids, or Other Potentially Infectious Materials should:

1. Promptly report to one of the designated referral centers approved by the Occupational and Environmental Medicine Clinic, University of Pittsburgh and listed in the University Exposure Control Plan;

2. Provide information to the licensed health care provider at the referral center about the circumstances under which the possible exposure occurred; and
3. Complete and submit the appropriate accident and/or Workers' Compensation report in accordance with University policy.

Evaluation of the exposure and recommendations for follow-up will be provided at the referral centers. Any questions should be directed to the Environmental Health and Safety Office, telephone 624-9544. (Post-exposure medical treatment and follow-up as defined in the OSHA Standard.)

Building Emergency or Inclement Weather Policy For Students

Scenario 1: The University is closed; the School of Medicine is closed.

Scenario 2: The University cancels classes; the School of Medicine cancels classes.

1. Only the Chancellor may officially close the Pittsburgh campus of the University.
2. The University will remain open in all but the most extreme circumstances. However, University employees and students are urged to use their own discretion in deciding whether they can safely commute to work.
3. When a State of Emergency is declared by the Governor or other local governing official, school personnel are expected to abide by those directives and there will be no classes.

University Resources

The Maurice and Laura Falk Library of The Health Sciences

For more information on the Falk Library and other libraries on campus got to the Health Sciences Library System. Locations and hours of operation can be found on these webpages.

<http://www.hsls.pitt.edu/about>

Academic Resource Center

G-1 Gardner Steel Conference Center

Graduate Students have full access to all academic resources on campus. A Dissertation Boot Camp is available for graduate students completing this milestone. www.asundergrad.pitt.edu/arc

Student ID

To get your Panther Card, bring valid photo identification (for example, a driver's license or passport) to Panther Central, located in the main lobby of the Litchfield Towers. Hours of operation are Sunday through Saturday, 7:30 AM to 10 PM.

The fee for lost, stolen, or mutilated ID replacement is \$20. You must have a copy of a police report in order for the fee to be waived for a stolen card. (412-648-1100)

www.pc.pitt.edu/card/index.php

Pitt's Information Technology

Accounts are automatically created for students. You can activate your University Computing Accounts through an online account activation tool at My Pitt (my.pitt.edu). Account usernames are used as University email addresses. A University username with the *@pitt.edu* designation is the official email address for University students and employees.

All students, faculty, and staff have unlimited cloud storage space through pitt.box.com (in My Pitt)

Students are able to print documents by various means. See the info page from the IT website <http://technology.pitt.edu/service/printing>

Housing

When searching for housing it is common for students to use [Craigslist.org](http://craigslist.org). Rental companies as well as private owners advertise on this site. You should not wire funds to a landlord prior to a meeting and seeing the property and signing a lease agreement. Contacting current graduate students is also a reliable source of information for finding available housing. International students may also contact the Office of International Services which will connect new students coming from outside the U.S. with a current student from their home country.

Craigslist website <http://pittsburgh.craigslist.org/>

Student Organization Resource Center (SORC)

833 William Pitt Union – 412-624-7115

The SORC supports the activities of Pitt's 270 certified student organizations. It provides computer accounts, mail, fax, copy and notary service, and production support for printed materials. Student groups may obtain assistance in recruitment, financial management, facilities utilization, program planning, and community service.

The SORC also administers emergency loans of up to \$300 for educational purposes to students who are registered for 6 or more credits. At the heart of the SORC is the Student Activities Business Office which administers all activity fee funded organization accounts amounting to over \$1,000,000 annually.

Transportation

Parking

City parking permits may be obtained by city residents from the Parking Authority located at 232 Boulevard of the Allies. Permits cost \$20 per annum (check or money order) and you must supply your driver's license, vehicle registration, and proof of residency (utility bill with name and city address).

University parking permits entitle holders to park in specified University lots during certain hours of the evening. These permits are obtained during business hours through the Parking & Transportation Office, 624-4034, 204 Brackenridge Hall. You must complete an application and submit the license number and make of your vehicle in order to obtain permit <http://www.pts.pitt.edu/>.

Parking permits for the UPMC Towerview Lot are available by applying in person at the UPMC Parking Operations Office for a monthly fee.

Port Authority Transit (PAT)

All University of Pittsburgh students, staff and faculty may ride all Port Authority buses, trolleys and inclines within Allegheny County FARE-FREE 24 hours a day, seven days a week, 365 days a year. All that you have to do is show the driver a valid and current Pitt ID. Family members and guests must pay the full fare.

For schedule information www.portauthority.org/paac/default.aspx

Live bus tracking can be done by using the website www.pitlivebus.com to let you know exactly where the busses are up to the minute.

University Shuttle Services

www.pc.pitt.edu/transportation/routes.php

Pitt Students: Find Bus Times by Ride Systems GPS

Ride Systems GPS (www.pittshuttles.com/m) provides transit riders with next bus times by smartphone applications. Find stops and scheduled arrival times for your desired route.

Smartphone Apps For iPhone & Android OS

- Download our GPS App for your Apple or Android Phone
- Search "Ride Systems" in your App Store or Market
- Select "University of Pittsburgh"
- Select "route" tab
- Select "Arrival" tab for times

SafeRider

SafeRider provides safe transportation during the evening and early morning hours when special, nonemergency needs arise for students, faculty, and staff.

Call 412-648-CALL (2255) for your safe ride.

Shuttle Service For Passengers With Disabilities

Transportation arrangements for passengers with disabilities may be made by contacting 412-648-7690. A van with a wheelchair/cart lift and standard passenger seating operates between the hours of 8:30 a.m. and 7:00 p.m. Monday through Sunday when classes are in session. The On-Call shuttle is also equipped with the wheelchair/cart lift service and is available after 7:00 p.m.

Dining Facilities

Students may purchase meals within the Medical Center at the Presbyterian Hospital Cafeteria on the 11th floor of Scaife Hall or the Montefiore Cafeteria on the 4th floor of Montefiore Hospital

Lost and Found

Lost and Found for all of Scaife Hall is located in the UPMC Security Office. Anyone finding or losing an item in Scaife Hall may check there during office hours.

University Store on Fifth – Textbooks

www.pittuniversitystore.com/

4000 Fifth Avenue

412-648-1455

Hours:

Mon-Thu 9:00 AM - 6:00 PM

Fri 9:00 AM - 5:00 PM

Sat 10:00 AM - 4:00 PM

Sun 12:00 PM - 4:00 PM

Bicycle Racks

There are bicycle racks on the second and fourth floor entrances to Scaife Hall, the fifth floor of the Biomedical Science Tower Parking Garage, and the bottom level of the School of Public Health parking garage. You may register your bicycle with the Parking Office by calling 624-4034, or emailing them at parking@bc.pitt.edu

Healthy Ride

Healthy Ride is the latest mode of transit in Pittsburgh, PA. With 50 stations and 500 bikes to rent, located throughout the city, Healthy Ride provides affordable active transportation options for all! Healthy Ride takes advantage of the latest advances in technology and policy in order to create a system that is convenient, affordable, and fun. <https://healthyridepgh.com/>

Notary Public

William Pitt Union, Room 833

Phone: 412-624-7115

Students may have documents notarized for a fee, by a notary public in the William Pitt Union.

Bulletin Boards

Information pertaining to graduate students is posted on the large black bulletin board located on the 5th floor of Scaife Hall. This should be checked regularly.

News Publications*THE PITT NEWS*

The *Pitt News* is published by undergraduate students and contains campus news, features, sports, TV listings, calendar of events and classified ads. It is distributed three times a week in the Summer and daily in the Fall & Spring Terms.

THE UNIVERSITY TIMES

The *University Times* is the publication of record for the major policy-making and influencing bodies of the University. It carries news of the campus as well as off-campus news which might have a bearing on University policy. The *Times* is published bi-monthly during the academic year by the

Department of News and Publications and is staffed by permanent university employees. These newspapers, all of which are free can be found in stacks throughout the University. The most convenient spot to pick up these newspapers is in the fourth floor lobby of Scaife Hall.

Athletic Facilities

Pitt has well-equipped athletic facilities for use by students. Various fitness centers are available to you with your student ID. For facilities and hours of operation see the Student Affairs website. <http://www.studentaffairs.pitt.edu/ir/facilities-and-hours/>

Petersen Event Center

The John M. and Gertrude E. Petersen Events Center provides unprecedented recreational opportunities for University of Pittsburgh students. From Pitt Panthers Division I basketball, to space for concerts, commencement, and other sports, the Petersen Events Center has it all. <http://web-smg.athletics.pitt.edu/directions.html>

Intramural Sports

The intramural program is very active. The medical school competes in the Graduate/Faculty, Women's, or Independent Divisions, in the past having fielded teams in soccer, softball, basketball, women's basketball, football, co-ed volleyball, and other sports. To enter intramural competition sports, a team member should secure an entry form from the Intramural Office at Trees Hall.

Student Health Services

The Student Health Service is located next to the University Club and facing Soldiers and Sailors Memorial Hall front lawn. <https://www.studentaffairs.pitt.edu/shs/>

Hours:

Fall and Spring Semester: Monday, Wednesday, & Thursday 8:30 a.m. to 7:00 p.m.

Tuesday & Friday 8:30 a.m. to 5:00 p.m. Saturday 10:00 a.m. to 3:00 p.m.

Summer Semester (May thru Aug): Monday-Friday 8:30 a.m. to 5:00 p.m.

They offer quality primary health care by appointment with licensed medical doctors and nurse practitioners. They, also, offer on-site specialty services, dermatology, orthopedics, gynecology, nutrition counseling, health education, a pharmacy and health promotion planning.

Student Health Service

Nordenberg Hall - Wellness Center
119 University Place
412-383-1800

In addition to the services of Student Health, students may receive individual counseling through the **University Counseling Center**. There are five counseling psychologists and a consulting psychiatrist on staff.

Reasons why people seek help from counselors vary -- personal problems, emotional difficulties of many kinds, concerns about progress or direction. Appointments may be scheduled in advance either in person or by phoning 412-648-7930. Appointments can usually be arranged within a few days. In case of unusual urgency, a counselor may be seen at once.

Counseling Center
Nordenburg Hall
119 University Place
412-648-7930

Allegheny County Health Department
542 Fourth Ave.
Pittsburgh, PA 15219
412-687-2243

Free screening for venereal disease and immunizations are offered at the Allegheny County Health Department located on Forbes Avenue in Oakland. Free screening for tuberculosis is also offered.