



University of  
**Pittsburgh**



2025 – 2026

## **CMP**

# **Student Handbook**

*Guidelines and Regulations for Graduate Study  
in the Cellular & Molecular Pathology Program*

The Student Handbook is not meant to be a complete summary of all University or Department of Pathology policies, procedures, and academic regulations. The information in the Handbook can change at any time, with or without notice. It does not constitute a contract between the University of Pittsburgh and its students. The information here overrides what was published in previous Handbooks.

*Updated 9/3/2025*

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- Office of the Learning Environment: <https://www.ole.pitt.edu>
- Office of the Provost: <https://www.provost.pitt.edu>
- AAMC compact between students and mentors: <https://www.aamc.org/what-we-do/mission-areas/medical-research/grad-compact>
- Office of Graduate Studies: <https://somgrad.pitt.edu>; contact: 412-648-8957 or [somgrad@pitt.edu](mailto:somgrad@pitt.edu)
- Office of Academic and Career Development: <https://www.oacd.health.pitt.edu>
- Pitt post-doctoral positions: <https://postdocjobs.pitt.edu>
- University of Pittsburgh Health Sciences home page: <https://www.health.pitt.edu>

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## 1. Overall Objectives & Guidelines

The graduate training program in Cellular & Molecular Pathology at the University of Pittsburgh has been designed to accomplish several objectives:

- Development of trainees into independent biomedical research scientists.
- To develop competence in conducting laboratory research; to plan, execute, report, and defend an original piece of research.
- To develop general competence in core Pathology disciplines (and specific expertise in one or more areas of Pathology, including neuropathology, liver pathology, lung development and disease, vascular biology, cancer biology, regenerative medicine, translational medicine, or immunopathology).
- To develop a general professional competence in oral and written expression, including the critical analysis of primary scientific articles, seminar presentation skills, grantsmanship, and teaching.

In formulating the graduate training program, the faculty has been guided by several principles. First, the Cellular & Molecular Pathology (CMP) Graduate Training Faculty and each student's Major Advisor/mentor should aid each student in the development of an individualized training program based on the student's background and interests. Second, research experience should form the core of each student's training and as such, should not be postponed by a lengthy period of time devoted to coursework that is not inherently valuable to training the student as a competent biomedical scientist. Third, students should be evaluated in terms of those competencies that are important to an independent research scientist: designing, conducting and evaluating research, both their own and that of others. It is anticipated that students should be able to complete the program after entering CMP in approximately four years. Thus, the progress that a student makes in the program is considered primarily in terms of the student's performance as an investigator.

While the program currently lacks a formal policy on publishing before graduation, students should aim for approximately one to three publications, with at least one as the first author. They should also actively interact with other scientists in their field to earn co-authorship on colleagues' publications. Additionally, some journals are regarded as more prestigious than others, and it may be advantageous to have one publication in a high-impact journal rather than multiple papers in lower-impact journals when applying for positions after graduation.

## 2. Purpose of this Handbook

This document supplements the ***Regulations Governing Graduate Study at the University of Pittsburgh*** and thereby provides a complete handbook for students concerning the Program's rules, expectations, and recommendations for each aspect of the CMP graduate program.

<https://catalog.upp.pitt.edu/index.php>

Questions regarding specific issues of the graduate program should be directed to Dr. Andrew Duncan, Associate Professor of Pathology and Director of the Cellular & Molecular Pathology Graduate Training Program. Note that the CMP program, while closely affiliated and interactive with select educational components of the Pathology Department a stand-alone educational training program within the University of Pittsburgh School of Medicine (UPSOM).

## 2.1: Changes to the Guidelines

Each graduate student should print a copy of the Student Handbook upon entering the program. To ensure students receive an up-to-date version, a new edition of the Handbook will be dated and posted online at the start of each fall semester. The Director will supervise the editing process, incorporating input from students and faculty. This annual update is expected to make no substantive changes to the graduate program itself. Instead, its purpose is to update or clarify previous information. Major substantive changes, such as a revision of the format of the Comprehensive Examination or alterations to educational requirements or appointed Directors, will require further discussion among faculty and students and must be approved by a majority of the CMP faculty.

During their progress through the Program, each student should refer to the Handbook for general guidance and questions.

## 3. Advisors

To aid the student in attaining the objectives outlined in this document, the faculty has created separate mechanisms for providing academic and research advice. Upon entering the Program, each student will select a Major Advisor/Mentor. The Major Advisor is the faculty head of the laboratory where the student will perform his/her thesis dissertation. It is expected that the Major Advisor will also serve as a general advisor to the student (see below). Further advice regarding research projects is the function of the PhD Dissertation Committee. At all stages of their graduate training, each student must have a Major Advisor and, upon completion of their Comprehensive exam, an active Dissertation committee must be formed within 6 months. Advice on academic issues and other issues relating to graduate education will be handled formally by the Program Director (i.e., the Academic Advisor), with meetings regularly scheduled prior to each academic term.

### 3.1: Directors of the CMP Graduate Program

The **Director** of the CMP Graduate Training Program (hereafter referred to as Director) has the primary responsibility for ensuring the graduate program is running effectively. Students who have questions related to required coursework, curriculum development, or completion of Program milestones should consult with the Director. The Director is responsible for approving student registration forms, approving the composition of student evaluation committees, (i.e., Comprehensive Examination, Thesis, and Dissertation Defense committees), and may, at his/her discretion, approve minor modifications in the Program's academic requirements for students on an individual basis.

If designated, **Co-directors** are considered to have equal responsibilities as the Director.

The **Associate Director** has full capacity to act in place of the Director when unavailable.

The **Director for CMP Curriculum** is responsible for working with the Director(s) and Associate Director to assure direct oversight of the curriculum content including, but not limited to, establishing overall requirements, evaluation of course content, and evaluation of the teaching by educators.

All Director positions are suggested by the Chair of the Department of Pathology or the Chief of the Division of Experimental Pathology, with final approval by a vote from the majority of CMP graduate faculty. There is no limit to the time the Directors may serve.

**Administrative staff** member(s) from the Department of Pathology will assist the Directors. The Graduate Coordinator (Amanda Bytzura, [amb430@pitt.edu](mailto:amb430@pitt.edu)) is responsible for maintaining student files, notifying students of upcoming deadlines, assisting students with scheduling exams and committee meetings and monitoring the status of students. The Pathology Payroll Coordinator (Carolyn Nolte, [noltecr@upm.edu](mailto:noltecr@upm.edu)) assists with fiscal issues related to insurance and stipends.

**The CMP Executive Committee** consists of the Experimental Pathology Division Director or Pathology Chair, the CMP Directors, the CMP faculty representatives on the IBGP admissions committee, the CMP Summer Undergraduate Research Program Director(s), and the Pathology Investigator Residency/Research Program Director(s). The executive committee is charged with reviewing requests of Pitt graduate faculty who wish to cross-affiliate with CMP (decisions final, based upon majority opinion) and to pre-approve requested changes to the structure/requirements of CMP, with final approval based upon a majority vote by CMP members. Executive Committee Members include the following:

- **Experimental Pathology Division Chief:** Alex Soto-Gutierrez, MD, PhD
- **CMP Directors:** Andrew W. Duncan, PhD & Wendy M Mars, PhD
- **CMP Director of Curriculum:** Dave Gau, PhD
- **Pathology Investigator Residency / Research Training Program (PIRRT) Directors:** Charleen Chu, MD, PhD, & Tim Oury, MD, PhD
- **Summer Undergraduate Research Program, CMP Directors:** Amanda Clark, PhD, & Sungjin Ko DVM, PhD
- **CMP Representatives on the IBGP Admissions Committee:** Bharat Bhushan, PhD, George Hussey, PhD, & Delphine Gomez, PhD

### 3.2: Major Advisor (Mentor)

At all times during their graduate training, students will be engaged in laboratory research. While a student is working in a faculty member's laboratory, that faculty member will serve as the student's Major Advisor. Major Advisors are limited to CMP Graduate Training Program faculty members.

Students and the Major Advisors should discuss the nature of their interactions prior to a student entering the lab so that each has a full understanding of what they should and should not expect from one another, using the AAMC compact as a guideline (<https://www.aamc.org/what-we-do/mission-areas/medical-research/grad-compact>). This compact is part of the transfer agreement letter and should be read and discussed carefully, prior to a student signing on to a lab. Students should understand that different faculty members have different styles of interacting with students and matching mentoring styles is key to ongoing success. New students are encouraged to consult with more senior students to obtain student perspectives concerning the mentoring styles of different faculty members.

## 4. CMP Graduate Program

The following sections outline the academic courses, the research experiences, and the oral and written examinations (herein referred to as “milestones”) that the student must successfully complete prior to being awarded a doctoral degree. Students can affiliate with CMP via the Interdisciplinary Biomedical Graduate Program (IBGP) or the MD/PhD program (MSTP) in the School of Medicine. A calendar listing the deadlines associated with these milestones is included in Section 10.5. These requirements are described in terms of the academic and research accomplishments expected during each year of the student’s progress through the Program. The Director must approve deviations from the outlined sequence and time schedule. Further, when students transfer into CMP from another graduate program, the Director determines whether courses taken in the other graduate program fulfill the various CMP requirements as outlined below.

### 4.1: IBGP Students in the CMP Program

Students are admitted to a variety of PhD degree-granting programs through the Interdisciplinary Biomedical Graduate Program (IBGP). The first year of study is a focused interdisciplinary core program that covers the basic knowledge and skills necessary for research in all areas of biomedical sciences. After successfully completing the first year, students choose one of four specialized degree-granting programs for their advanced courses and dissertation work. Therefore, students enter the CMP Graduate Program only after completing the first-year requirements of the IBGP. *IBGP students should consult the IBGP Handbook for the most recent guidance during their first year and before entering a degree-granting program such as CMP.*

#### 4.1a: IBGP Students – First Year (before entering CMP)

The IBGP curriculum emphasizes research experience and practical skills from the first day. The approach is flexible and accommodates students whose research interests are still evolving by introducing them to a variety of fields through interdisciplinary courses and laboratory experiences. For those students who have a clearly defined research interest, the program offers the opportunity to move quickly into a dissertation project and accelerate their study.

The first year generally includes three, 9-11-week research rotations with graduate faculty selected by the students in an effort to match their research interests. These research rotations provide an opportunity for students to experience individual laboratory environments, including techniques being used in the laboratory, as well as the research questions being addressed. Further, the experiences help students make an informed choice in selecting their dissertation mentor. A first-year faculty mentor assigned to the student aids them in the selection of research rotations. A list of current rotation projects available to students can be found at the following web site: <https://www.gradbiomed.pitt.edu/current-students/lab-rotations>. However, not all faculty elect to list their projects, and the website is not always current, so it is important to work with your first-year mentor to find a suitable rotation.

**Foundations of Biomedical Science and Foundations Journal Club** (INTBP 2000 and INTBP 2005): These are two core courses taken in the fall by all students entering the IBGP. These courses are designed to convey knowledge of the molecular mechanisms controlling cell and tissue function and to develop an understanding of the experimental evidence supporting these concepts. The conceptual breadth of modern biomedical science is covered through a longitudinally integrated presentation of material drawn from biochemistry, cell biology, genetics,

immunology, microbiology, neurobiology, pathology, pharmacology and physiology. The development of critical thinking skills is emphasized through an evaluation of experimental evidence and reading of the primary literature. Contemporary approaches to problem solving in biology as well as principles underlying modern methods of biomedical research are integrated through the analysis of mechanisms underlying biological phenomena.

**Basics of Professionalism in Graduate Education (MSCMP 2280):** This fall course covers several topics including how to successfully choose a mentor, professional communication, and importantly, training related to a full understanding of how to handle research incidents and report Title IX issues at the University.

In the spring, students take specialized courses in areas of interest such as signaling, pathobiology, or immunology.

During the summer term, all students must complete a course covering Biostatistics (INTBP 2013, 3 Cr), a course on Scientific Ethics & Responsible Conduct of Research (INTBP 2290, 1 Cr), and in the subsequent fall, all CMP students are also required to take a course on Grant Writing (INTBP 3240, 2 Cr). At the end of the first year, the IBGP Steering Committee completes a Preliminary Examination (Section 10.1). Identification of a dissertation laboratory for thesis research is a requirement in order to pass the Preliminary Examination at the end of the first year of a PhD program

A typical curriculum for IBGP Year 1 is the following:

| <b>IBGP Year 1</b>                                                                                |                         |
|---------------------------------------------------------------------------------------------------|-------------------------|
| <b>Fall Term</b>                                                                                  |                         |
| INTBP 2000 Foundations of Biomedical Science                                                      | 6 credits               |
| INTBP 2005 Foundations Journal Club                                                               | 2 credits               |
| MSCMP 2280 Basics of Professionalism in Graduate Education                                        | 1 credit                |
| INTBP 2010 Laboratory Research Rotation 1                                                         | 3 credits               |
|                                                                                                   | <i>12 total credits</i> |
| <b>Spring Term</b>                                                                                |                         |
| MSCMP 2730 Molecular Mechanisms of Tissue Growth & Differentiation (required for CMP) or Elective | 3 credits               |
| Elective                                                                                          | 3 credits               |
| INTBP 2010 Laboratory Research Rotation 2                                                         | 3 credits               |
|                                                                                                   | <i>9 total credits</i>  |
| <b>Summer Term</b>                                                                                |                         |
| INTBP 2013 Biostatistics                                                                          | 3 credits               |
| INTBP 2290 Scientific Ethics & Responsible Conduct of Research                                    | 1 credit                |
| INTBP 2010 Laboratory Research Rotation 3                                                         | 3 credits               |
|                                                                                                   | <i>10 total credits</i> |

#### **4.1b: IBGP Students in CMP – Coursework**

Upon joining a lab and matriculating into CMP, students continue with coursework, including required and elective courses (typically one or two classes in both the Fall and Spring terms) and research. Students typically complete most required coursework by the end of the second year.

- **Required course:** All students are required to complete Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730, 3 Cr) by the end of year 2. Students are

encouraged to complete this course during their first year of graduate school, while still an IBGP student.

- **Hard electives:** Students must complete one of the following three “hard elective” courses: Molecular Pathobiology (MSCMP 2740, 3 Cr, Spring), Cancer Biology and Therapeutics (MSCMP 3710, 3 Cr, Fall), or Basics of Personalized Medicine (MSCMP 3790, 3 Cr, Fall). The former two offer training related to Anatomical Pathology research, whereas the latter represents training related to research in Laboratory Medicine.
- **Soft electives:** A minimum of two “soft” elective courses, optimally related to the student’s research project, is also required. CMP elective courses include Intro to Tissue Engineering (MSCMP 2760, 3 Cr, Spring), Biomaterials and Biocompatibility (MSCMP 2770, 3 Cr, Spring), ECM in Tissue Biology (MSCMP 3735, 3 Cr, Spring), Stem Cells (MSCMP 3740, 3 Cr, Spring), Angiogenesis (MSCMP 3750, 3 Cr, Spring), and Cell Therapy (MSCMP 3770, 3 Cr, Spring). Students may take electives sponsored by other Health Science graduate programs if they are pertinent to the student’s research.
- **CMP Research Seminar & Research in Progress:** CMP graduate students are required to enroll in the CMP Research Seminar (MSCMP 2750, Fall term and Spring term) each term or a substitute approved by the program director for a minimum of 5 terms, though they may be excused from this seminar series during the term in which they will defend their thesis (Section 5.4). Students are also expected to attend the monthly Research in Progress (RIP) series, where one to two students present their research to their peers (Section 5.9).
- **Research:** During the first 1 to 1.5 years in CMP, research effort (or time in the lab), reflected as Directed Study (MSCMP 2790; up to 9 Cr), counts toward course credits (Section 4.3).

A typical curriculum is the following:

| Year 1 in CMP (IBGP Year 2)                                                                             |                                                                                   |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Fall Term</b>                                                                                        | <i>This schedule assumes two electives were taken in IBGP Year 1, Spring Term</i> |
| MSCMP 2750 Research Seminar                                                                             | 1 credit                                                                          |
| MSCMP 3710 Cancer Biology and Therapeutics (hard elective)                                              | 3 credits                                                                         |
| INTBP 3240 Grant Writing                                                                                | 2 credits                                                                         |
| MSCMP 2790 Directed Study                                                                               | 8 credits                                                                         |
| Research in Progress (RIP) Series                                                                       | 0 credits                                                                         |
|                                                                                                         | <b>14 total credits</b>                                                           |
| <b>Spring Term</b>                                                                                      |                                                                                   |
| MSCMP 2750 Research Seminar                                                                             | 1 credit                                                                          |
| MSCMP 2730 Molecular Mechanisms of Tissue Growth & Differentiation (if not taken in Spring IBGP Year 1) | 3 credits                                                                         |
| MSCMP 2790 Directed Study                                                                               | 9 credits                                                                         |
| Research in Progress (RIP) Series                                                                       | 0 credits                                                                         |
|                                                                                                         | <b>13 total credits</b>                                                           |
| <b>Summer Term</b>                                                                                      |                                                                                   |
| MSCMP 2790 Directed Study                                                                               | 9 credits                                                                         |
| <b>Year 2 in CMP (IBGP Year 3)</b>                                                                      |                                                                                   |
| <b>Fall Term</b>                                                                                        |                                                                                   |
| MSCMP 2750 Research Seminar                                                                             | 1 credit                                                                          |
| Research in Progress (RIP) Series                                                                       | 0 credits                                                                         |
| <b>Spring Term</b>                                                                                      |                                                                                   |
| MSCMP 2750 Research Seminar                                                                             | 1 credit                                                                          |
| Research in Progress (RIP) Series                                                                       | 0 credits                                                                         |

| Year 3 in CMP (IBGP Year 4)                                                                          |           |
|------------------------------------------------------------------------------------------------------|-----------|
| Fall Term                                                                                            |           |
| MSCMP 2750 Research Seminar                                                                          | 1 credit  |
| Research in Progress (RIP) Series<br><i>RIP continues each Fall and Spring term until graduation</i> | 0 credits |

#### **4.1c: Comprehensive Examination (typically end of CMP Year 1)**

All students in the CMP graduate training program must complete their comprehensive examination within 16 months of beginning their research with their CMP program mentor (Section 10.2). To ensure timely graduation, students should plan to have a second committee meeting and submit their Application for Admission to Candidacy form no later than 6 months after passing their comprehensive exam. The University requires PhD students to earn at least 40 credit hours of PhD Dissertation Research. Therefore, students are encouraged to make rapid progress through this critical program milestone. The Director has prepared brief guidelines concerning both the exam process and entering dissertation, which are available for students and faculty upon request.

Note: Students must inform the administrative coordinator before all scheduled meetings so they can prepare the necessary paperwork. Also, be aware that the administrative coordinator is available to help with making room reservations for the meetings.

#### **4.1d: CMP Year 2 & Subsequent Years**

CMP students focus on dissertation research and course electives during the second and subsequent years. Each student must meet with their thesis committee a minimum of every six months to discuss progress and future plans. After entering dissertation, students must accumulate at least 40 credit hours of PhD Dissertation Research to fulfill the University requirement. These credit hours cannot be accrued until the student completes the Comprehensive Examination and enters into Dissertation.

#### **4.1e: CMP Completion**

Students will be awarded a degree after successfully defending their thesis and fulfilling all University requirements for the PhD. Important steps for graduation are outlined in Sections 10.3 and 10.4.

### **4.2: MSTP (MD/PhD) Students in the CMP Program**

Program requirements specific for MSTP students (MD/PhD) factor into the MSTP students' advanced training outside of CMP. The overall University and Cellular & Molecular Pathology (CMP) program requirements for obtaining a PhD, as described in this manual, are similar for MD/PhD students except the only required course is either Tissue Growth and Differentiation or Basics of Personalized Medicine (plus three electives, Path Research Seminar, and RIP series). It is intended that these modifications to the standard program will permit fulfillment of the CMP PhD requirements within four years, although longer studies may be needed for completion of the thesis research.

#### **4.2a: MSTP Students in CMP – Coursework**

MSTP students enter CMP and complete their coursework, including required and elective courses (typically two classes in the Fall and Spring terms) and perform research. MSTP

students typically complete required coursework within 1.5 years of joining CMP, which maximizes the time they can focus on their PhD dissertation research.

- **Required course:** MSTP students entering the CMP program are required to take either Basics of Personalized Medicine (MSCMP 3790, Fall) or Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730, 3 Cr, Spring).
- **Electives:** CMP elective courses include Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730, Spring), Molecular Pathobiology (MSCMP 2740, 3 Cr, Spring), Intro to Tissue Engineering (MSCMP 2760, 3 Cr, Spring), Biomaterials and Biocompatibility (MSCMP 2770, 3 Cr, Spring), Stem Cells (MSCMP 3740, 3 Cr, Spring), Angiogenesis (MSCMP 3750, 3 Cr, Spring), Cell Therapy (MSCMP 3770, 3 Cr, Spring), Cancer Biology and Therapeutics (MSCMP 3710, 3 Cr, Fall), ECM in Tissue Biology (MSCMP 3735, 3 Cr, Fall), or Basics of Personalized Medicine (MSCMP 3790, 3 Cr, Fall). Students may also take electives sponsored by other Health Science graduate programs related to their thesis work.
- **CMP Research Seminar & Research in Progress:** CMP graduate students are required to enroll in the CMP Research Seminar (MSCMP 2750, Fall term and Spring term) each term or a substitute approved by the program director for a minimum of 5 terms, though they may be excused from this seminar series during the term in which they will defend their thesis (Section 5.4). Students are also expected to attend the monthly Research in Progress (RIP) series, where 1-2 students present their research to the other students (Section 5.9).
- **Research:** During the first 1 to 1.5 years in CMP, research effort (or time in the lab), reflected as Directed Study (MSCMP 2790; up to 9 Cr), counts toward course credits (Section 4.3).

A typical curriculum is the following:

| Year 1 in CMP for MSTP Students            |                         |
|--------------------------------------------|-------------------------|
| Fall Term                                  |                         |
| MSCMP 2750 Research Seminar                | 1 credit                |
| MSCMP 3790 Basics of Personalized Medicine | 3 credits               |
| Elective 1                                 | 3 credits               |
| MSCMP 2790 Directed Study                  | 7 credits               |
| Research in Progress (RIP) Series          | 0 credits               |
|                                            | <i>14 total credits</i> |
| Spring Term                                |                         |
| MSCMP 2750 Research Seminar                | 1 credit                |
| Elective 2                                 | 3 credits               |
| Elective 3                                 | 3 credits               |
| MSCMP 2790 Directed Study                  | 7 credits               |
| Research in Progress (RIP) Series          | 0 credits               |
|                                            | <i>14 total credits</i> |
| Summer Term                                |                         |
| MSCMP 2790 Directed Study                  | 9 credits               |

| Year 2 in CMP for MSTP Students   |           |
|-----------------------------------|-----------|
| Fall Term                         |           |
| MSCMP 2750 Research Seminar       | 1 credit  |
| Research in Progress (RIP) Series | 0 credits |
| Spring Term                       |           |
| MSCMP 2750 Research Seminar       | 1 credit  |
| Research in Progress (RIP) Series | 0 credits |

| Year 3 in CMP for MSTP Students                                 |           |
|-----------------------------------------------------------------|-----------|
| Fall Term                                                       |           |
| MSCMP 2750 Research Seminar                                     | 1 credit  |
| Research in Progress (RIP) Series                               | 0 credits |
| <i>RIP continues each Fall and Spring term until graduation</i> |           |

#### **4.2b: Comprehensive Examination (typically end of CMP Year 1)**

All students in the CMP graduate training program must complete their comprehensive examination within 16 months of beginning their research with their CMP program mentor (Section 10.2). To ensure timely graduation, students should plan to have a second committee meeting and submit their Application for Admission to Candidacy form no later than 6 months after passing their comprehensive exam. The University requires PhD students to earn at least 40 credit hours of PhD Dissertation Research. Therefore, students are encouraged to make rapid progress through this critical program milestone. The Director has prepared brief guidelines concerning both the exam process and entering dissertation, which are available for students and faculty upon request.

Note: Students must inform the administrative coordinator before all scheduled meetings so they can prepare the necessary paperwork. Also, be aware that the administrative coordinator is available to help with making room reservations for the meetings.

#### **4.2c: CMP Year 2 & Subsequent Years**

CMP students focus on dissertation research and course electives during the second and subsequent years. Each student must meet with their thesis committee a minimum of every six months to discuss progress and future plans. After entering dissertation, students must accumulate at least 40 credit hours of PhD Dissertation Research to fulfill the University requirement. These credit hours cannot be accrued until the student completes the Comprehensive Examination and enters into Dissertation.

#### **4.2d: CMP Completion**

Students will be awarded a degree after successfully defending their thesis and fulfilling all University requirements for the PhD. Important steps for graduation are outlined in Sections 10.3 and 10.4.

### **4.3: 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. A minimum of 32 course credits and 40 dissertation credits are required to earn a PhD degree.

University of Pittsburgh policy states that no more than 30 credits may be accepted for a master's degree awarded by another institution to meet the minimum credit requirement:

<https://catalog.upp.pitt.edu/content.php?catoid=226&navoid=23586>. Moreover, 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. Note that, with rare exceptions, the CMP Program generally does not accept external master's degree credits toward completing CMP course requirements.

Graduate students already enrolled may, when approved in advance by their graduate program 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 must be successfully completed at the University of Pittsburgh.

Students must register each term for the number of credits for 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.

## 5. Components of the Plan of Study for All CMP Students

In developing a plan of study, students are expected to strike a balance between breadth in pathology and depth in their area of specialization. Students are encouraged to be innovative in designing their graduate training experience. Thus, courses are defined as any accredited interaction between a student and one or more faculty members, such as the Special Topics course. This includes formal lecture courses (usually but not always at the graduate level), seminars, or tutorials at the University of Pittsburgh, CMU, or at other universities, research institutes, or special study programs. Additional components include the Pathology Research seminar, formulation of a thesis committee and bi-annual reports to this committee, research in progress (RIP) seminars, and completion of all student milestones.

### 5.1: Academic Policies, Procedures, & Registration

#### 5.1a: Academic Policies & Procedures

All students are expected to maintain a minimum cumulative grade point average of 3.0 on a 4.0 scale. If the cumulative GPA falls below 3.0, 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.

Please be advised that a grade of B or higher is considered a passing grade in core courses; a B- (B minus) is not considered a passing grade, even if the overall GPA is 3.0 or better. CMP requires a student to retake a core course if a grade below B is earned. Students who are allowed to re-take core courses will be placed on probation with guidance on how to return to good academic standing. Core courses are defined as follows (described in 5.2):

- For students who entered CMP via IBGP: Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730) and either Cancer Biology and Therapeutics (MSCMP 3710), Molecular Pathobiology (MSCMP 2740), or Basics of Personalized Medicine (MSCMP 3790).

- For students who entered CMP via MSTP: Basics of Personalized Medicine (MSCMP 3790) or Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730).

### **5.1b: Course Registration**

CMP students will meet with the program director before each term to discuss coursework. Afterwards, the program coordinator will remove the advising hold placed by the Office of the University Registrar each term, allowing the student to proceed with self-registration. Students are required to be registered for each term by the designated registration deadline.

Full-time registration requires between 9-15 credits in the fall and spring terms. CMP students are required to register for a minimum of 3 credits in the summer term and can take up to 9 credits (suggested). However, if students have earned at least 40 dissertation credits and have entered *full-time dissertation research* (FTDS), they should register for 0 FTDS credits and will be considered full-time students.

## **5.2: Core Curriculum in Pathology**

Students are expected to attend all classes in which they are enrolled, get to them on time, and notify the instructor(s) when there is a scheduling conflict. Appropriate steps should be taken to minimize potential outside commitments, as exceeding the number of allowable unexcused absences in a semester may result in a grading penalty.

The core curriculum consists of one required course that should be completed within the first two years of entering the program. The core course, Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730), is an absolute requirement for all students entering through the IBGP and deals with issues of cellular and molecular biology related to normal tissue growth and differentiation. IBGP students are also required to complete one of three other specific courses (hard electives) dealing with basics related to Pathology: Cancer Biology and Therapeutics (MSCMP 3710), Molecular Pathobiology (MSCMP 2740), or Basics of Personalized Medicine (MSCMP 3790). The former two represent the anatomic side of Pathology training whereas the latter course represents the Laboratory Medicine side. Additionally, students entering from IBGP must take a minimum of two more electives of their choice. MSTP students must take either Molecular Mechanisms of Tissue Growth & Differentiation (MSCMP 2730) or Basics of Personalized Medicine (MSCMP 3790) for their one required course as well as a minimum of three electives of their choice.

## **5.3: Electives & Tutorials**

The elective courses are meant to further a student's expertise in pathology and assure they have fulfilled the University requirement of 32 credit hours of coursework. Students may also establish tutorials in specialized areas for which formal courses are not available. In such cases, a student (or group of students) identifies a faculty member willing to serve as a tutor and develops a syllabus, including a mechanism by which competency in the area will be assessed. The Director should approve the syllabus, in advance of the beginning of the tutorial. The tutorials are then offered as a Special Topics (MSCMP 2780) class for the appropriate credit hours. The subject matter of these tutorials usually will be "academic" in nature; i.e., with a focus on the reading of primary and secondary literature. It also may involve learning new laboratory techniques or a formal internship project related to the biomedical field.

## **5.4: CMP Research Seminar**

Incoming students are required to attend the CMP Research Seminar during each Fall and Spring term (MSCMP 2750). Students are required to participate in this course for at least five terms. After five terms, students may participate in another seminar series in which they have an opportunity to present research data, providing they have adequately demonstrated proficiency in oral presentation skills. If the student fails to reach these objectives, then he/she must continue in the weekly Research Seminar. Senior students are informally invited to attend this course to assist in the development of more junior students. Students are not required to take this course in the term in which they will defend their thesis. If a student has a conflict with their assigned presentation time, they should contact the Course Director after arranging for another date/time.

Students are required to present a paper approximately once each term, and it is expected that in the fall, the more senior students will make their presentations earlier in the term whereas the more junior students will make their presentations later in the term. The presentations will be critiqued by fellow students and the faculty supervisors. Presentations that are not considered acceptable by the faculty supervisors must be repeated. In addition to presenting a paper once during the term, each student is required to read the selected paper each week and be prepared to discuss it. The faculty view active participation in this course as an essential component of the CMP Graduate Training Program.

## **5.5: Departmental Seminar Series**

Each student is encouraged to attend the Department of Pathology research seminars, or similar series in other departments, on a regular basis. The seminars are typically on Wednesdays at noon and presented by invited speakers discussing the latest advancements in multiple fields related to the study of human disease.

## **5.6: Statistical Analysis**

All students are required to successfully complete a course on biostatistics. Students entering the program via the general program, IBGP, will enroll in this course during the summer term following the first year of graduate school (Data to Knowledge, INTBP 2013) or may opt to take a more advanced course if prior permission is obtained. Students entering the CMP program via the MSTP will complete a comparable statistics course as part of their MSTP requirements.

## **5.7: Ethics & Professionalism Training & Practices**

All students are expected to show ethically appropriate behavior with regards to the conduct of their research and mastery of safe laboratory practices. These competencies extend to the treatment of laboratory animals, publication of data, and the use of references to previous literature. Further, all documents submitted to satisfy curriculum or research requirements of the program should be free of plagiarism and conform to the rules defined in the University of Pittsburgh Academic Integrity Guidelines (<https://www.provost.pitt.edu/faculty/academic-integrity-freedom/academic-integrity-guidelines>). As part of their orientation to the University upon first entering the program, all students must attend training sessions in Radiation Safety, Laboratory and Formaldehyde Safety, and Library usage. All students should also familiarize themselves with the NIH "Guide for the Care and Use of Laboratory Animals" (2011), the "The

Animal Research Online (ARO) User's Guide" (from the IACUC office) and "Guidelines for Responsible Conduct of Research" (from the IRB, May 2011)

All IBGP students are required to complete a formal training program on research ethics during their first year in the program. This requirement will be fulfilled by taking a 1-credit course covering Professionalism (MSCMP 2280) in the fall term and Scientific Ethics (INTBP 2290) during the summer term. MD/PhD students take comparable courses through the MSTP program.

### **5.8: Grant Writing Skills**

All CMP students will be exposed to a formal course in grant writing before completing their thesis. Exposure to this component of the program is dependent upon how they enter the program. For IBGP students the required way to fulfill your requirement is via the formal grant-writing course is offered by the IBGP program (INTBP 3240, fall, 2 Cr). MD/PhD students take a comparable course through the MSTP program.

### **5.9: Research in Progress (RIP)**

All CMP students will meet the last Monday of the month from 5-6 PM to talk about the research being conducted by CMP students and select other topics. Generally, two students will do a 30 min. overview of their research although other topics of relevance to the CMP student body can also be discussed. The intent is to introduce newer students to the work of the more senior students as well as to get constructive feedback on the research projects being performed. RIP is open to faculty as well.

### **5.10: Professional Development**

Currently, this is not a requirement; however, the Graduate Studies Office (GSO) works hard to make information accessible to students from the very beginning of their experience at Pitt. The GSO now offers a variety of services including a Career Club. Information can be found at <https://somgrad.pitt.edu/current-students/career-and-professional-development>

Students are also encouraged to participate in the Biomedical Graduate Student Association (BGSA) and/or 4<sup>th</sup> Rivers Solutions (4RS), two student-run organizations that also provide opportunities for professional development in non-academic careers.

## 6. Course Descriptions

### **MSCMP 2280** (FALL only)

(1 Cr)

Basic Understanding of Professionalism as Related to Graduate Education

Students will be introduced to the underpinning concepts of Professionalism in the context of graduate education at the University of Pittsburgh School of Medicine. This will include formal training in activities related to Title IX as required by the University of Pittsburgh.

### **MSCMP 2700** (ALL)

(1 to 14 Cr)

MS Thesis Research

This is a directed research project that results in a thesis for a master's degree.

### **MSCMP 2730** (SPRING ONLY-core IBGP course, opt. MSTP) (3 Cr)

Molecular Mechanisms of Tissue Growth and Differentiation

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 departments of pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas. (Required for IBGP)

### **MSCMP 2740** (SPRING ONLY-IBGP hard elective)

(3 Cr)

Molecular Pathobiology

This course is structured to introduce students to the integration between basic and clinical research on the molecular pathogenesis of highly relevant human diseases such as diabetes, congestive heart failure, bone disease, neurodegenerative disorders, and asthma. The course provides students with an overview of the natural history of the 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. We discuss current research trends and factors that enhance fundability of research projects, the current knowledge gaps of the science and impact of therapeutic development.

### **MSCMP 2750** (SPRING AND FALL-core course)

(1 Cr)

Research Seminar

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a course faculty advisor. With prior permission, during the spring of their first year or fall of their second year in the program, students may elect to present their thesis project instead, in preparation for their comprehensive exam. The course meets weekly, during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscripts/data 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. (Required a minimum of 5 semesters)

### **MSCMP 2760** (SPRING ONLY)

(3 Cr)

Intro to Tissue Engineering and Regeneration-(sponsored by BioE)

The purpose of this course is to introduce students to the fields of tissue engineering and regenerative medicine. Tissue engineering is defined as the development and manipulation of laboratory-grown molecules, cells, tissues, or organs to replace and/or support the function of injured body parts. Regenerative medicine is a related and overlapping field, focusing on methods that enable the body to heal itself rather than using laboratory made constructs. Tissue engineering and regenerative medicine are highly interdisciplinary and therefore cross 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 and regenerative medicine, understand techniques utilized to design, fabricate, and functionally assess tissue engineered systems, including human microphysiological systems. Students should be able to apply the combined knowledge of tissue organization, tissue engineering and regenerative medicine strategies to design a unique, reasonable tissue engineered or regenerative solution to an unmet clinical need. This course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.

**MSCMP 2770 (SPRING ONLY) (3 Cr)**

Biomaterials and Biocompatibility-(sponsored by BioE)

Synthesis and properties of polymeric biomaterials; surface modification; surface characterization; biodegradation; metallic biomaterials and corrosion; protein adsorption; cell adhesion; coagulation and thrombosis; complement and the foreign body response; biomaterial-centered infection; sterilization; natural biomaterials

**MSCMP 2780 (ALL) (3 Cr)**

Special Topics

Students focus on a selected topic or internship (most often defined by the student) related to cellular and molecular pathology and write a paper on their topic/experience under the direction of a faculty advisor.

**MSCMP 2790 (ALL) (1 to 9 Cr)**

Directed Study

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

**MSCMP 3700 (ALL) (1 to 14 Cr)**

PhD Dissertation Research

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.

**MSCMP 3710 (FALL ONLY-IBGP hard elective) (3 Cr)**

Cancer Biology and Therapeutics

This course presents biochemical and clinical aspects of cancer biology and therapy, designed for graduate students training in the basic sciences or medicine. The lectures cover fundamental topics in cancer biology and pathology, the biology of major cancer types, viral oncogenesis, and an overview of cancer therapeutics including chemotherapy, DNA repair-based therapies, targeted therapies, hormonal therapies, and immunotherapy. This course also covers experimental models and databases used in cancer research and the process of cancer drug development.

**MSCMP 3730 (SPRING AND FALL) (1 Cr)**

### Topics in Experimental Neuropathology

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 their own research data or 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).

### **MSCMP 3735 (FALL ONLY)**

(3 Cr)

#### ECM in Tissue Biology and Bioengineering

This course explores the essential roles of the extracellular matrix (ECM) in tissue structure, signaling, regeneration, inflammation, and wound healing, with a focus on both biological mechanisms and bioengineering applications. Students will learn about ECM composition, gene regulation (including TGF- $\beta$  signaling), integrin-mediated pathways, and histologic visualization techniques. Case studies will include liver regeneration, wound healing, cancer invasion, and ECM remodeling in bone, cartilage, CNS, and muscle. The course will also cover cutting-edge applications such as decellularized organs, hyaluronic acid in reconstruction, and ECM's role in tissue engineering. Designed for graduate students in biomedical sciences and bioengineering, the course emphasizes interdisciplinary engagement and foundational understanding.

### **MSCMP 3740 (SPRING ONLY)**

(3 Cr)

#### Stem Cells

The course will provide a comprehensive overview on this intriguing and timely topic. The course will focus on the biology of stem cells and their role in health and disease with emphasis on development, carcinogenesis, aging and tissue engineering. Lectures on various aspects of stem cells from renowned experts will cover embryonic, adult, and induced pluripotent stem cells. Specific lectures will include stem cells in the blood, placenta, bone, liver, brain, adipose, pancreas, gonads, lung, gut, skin, breast, dental/oral tissues and eye. Students will also be educated on therapeutic cloning, bio-ethical issues, synthetic and systems biology, and existing laws governing stem cell research.

### **MSCMP 3750 (SPRING ONLY)**

(3 Cr)

#### Angiogenesis: Molecular Pathways and Pathophysiological Functions

Angiogenesis is one of the important research areas in biomedical sciences. Formation of new and remodeling of existing blood vessels are fundamental processes involved in organism tissues homeostasis. Aberrant angiogenesis and vascular remodeling contribute to the development and progression of major cardiovascular and non-cardiovascular diseases. This course will provide extensive knowledge of developmental and pathological angiogenesis, as well as most recent advances in its clinical applications. Topics include: 1. Angiogenesis and vascular remodeling in physiological and pathological processes; 2. Molecular and cellular regulation of angiogenesis and vascular remodeling; 3. Methodologies and techniques for angiogenesis studies; 4) Current advances in angiogenic therapies.

### **MSCMP 3760 (SPRING AND FALL)**

(1 Cr)

#### Regenerative Medicine Research Seminar

The seminar in regenerative medicine provides exposure to cutting-edge research in the broad fields of regenerative medicine, tissue engineering, and synthetic biology. The course blends lectures by experienced faculty, work-in-progress talks by graduate students, and professional development seminars (e.g., alternative careers in science, grant writing, and scientific communication). Lectures are held approximately twice per month, and student engagement is strongly encouraged. Grades are based on attendance and participation.

**MSCMP 3770 (SPRING ONLY)****(3 Cr)****Cell Therapy**

This course showcases cell therapy from theory to practice, from the bench to the bedside and is meant to be unlike any other graduate course. In each area of cell transplantation lectures are provided by those who have implemented cell transplantation techniques and have moved it to a clinical therapy. Most of the lectures in the course are given by those who actually do the patient transplants. Immunology and pharmacology and cellular engineering & edition will be addressed as it directly relates to cellular therapy. Stem cell biology will not be addressed individually but will be raised in the context of specific applications.

**MSCMP 3790 (FALL ONLY-IBGP hard elec., MSTP opt. core) (3 Cr)****Basics of Personalized Medicine**

Personalized medicine is becoming a reality that is being driven by ongoing discoveries in cell biology, genomics, proteomics, and metabolomics. The translational speed of these discoveries, particularly in the diagnostic, prognostic, and theragnostic arenas, is rapid. We believe that in the future personalized medicine diagnostics will involve both physicians and basic scientists. A major obstacle to this approach is the lack of training components for basic scientists in this area. This course aims to close that gap and provide an appreciation for, and understanding of, key principles of clinical development and testing in order to help bridge this gap. The course will be designed to delve into concepts of personalized medicine using focused topic areas. The first week will introduce the principles and overriding concepts of clinical test development, which differ qualitatively from investigational research. Next there will be six 2-week sessions, with each section focusing on a separate testing modality. Topics will include inherited genetic diseases and predispositions, acquired genetic changes (cancer), metabolomic profiles of endocrine diseases, immune networks for transplant and rejection, proteomic profiling in blood disorders, and proteomic detection of shock and organ failure.

## 7. Teaching by CMP Students

Teaching is seen as an important part of the graduate training program. It provides experience in classroom instruction as well as an opportunity to obtain a broader perspective of pathology. Pathology Research Seminar (MSCMP 2750) is designed to give students a teaching-like opportunity; however, teaching is not a required component of the CMP Graduate Program. Therefore, students must take the initiative to obtain other teaching experiences. Certain faculty members allow graduate students to give classroom lectures in their graduate courses. Additionally, the IBGP offers teaching opportunities through group sessions and private tutoring for the Foundations Course. Students wishing to obtain this teaching experience should contact the Program Director.

## 8. Assessment of Graduate Students

### 8.1: Annual Academic Assessment

By June 30 of each year, all students must submit a brief progress report summarizing their activities during the past year and optimally, include their plans for future study. This report will serve as the focal document for the annual student evaluation by the Director(s) of the CMP Graduate Training Program, although reports from the student's research advisor, committee chairpersons, course instructors, teaching supervisors, etc. will also be incorporated into the assessment. Therefore, the progress report should incorporate everything the student wishes the faculty to know at the time of the assessment. It should be organized as follows:

- Statement of last year's goals and the extent to which they have been achieved
- List of the courses taken and the grades attained
- summary of research efforts
- List of Program "milestones" completed
- List of any awards or honors attained
- List of manuscripts and abstracts published
- Attendance and presentations at scientific conferences
- Statement of specific objectives for the coming academic year

The length of the progress report should be approximately 1 page. Students should also turn in an updated Curriculum Vitae in School of Medicine format, as well as an NIH-formatted Biosketch for a fellowship. While they may seem redundant, each of these documents serve a different purpose.

The UPSOM CV format link can be found at:

<https://medfaculty.pitt.edu/sites/default/files/UPSOMCV32021.pdf>

The Biosketch instructions can be found here:

<https://grants.nih.gov/grants/forms/biosketch.htm>

These reports should be submitted to the Director via the Administrative Coordinator. Yearly progress will then be assessed by the Directors. One of three decisions will be made for each student after the annual academic assessments:

- The student may be advanced to the following academic year in good standing.

- The student may be conditionally advanced; they would then be directed to specific courses or other requirements that would address the committee's concerns.
- The student may be placed on probation for a specified period, and if the conditions of the probation are not satisfied, dismissed from the program for poor academic performance.

## **8.2: Student Worker Evaluation for Graduate Student Researchers (GSRs)**

In addition to an Annual Academic Assessments of CMP students, there will be an annual evaluation of student workers. Further information will be provided after the University of Pittsburgh and the Graduate Student Union have reached an agreement.

## **8.3: Termination of an Academic Appointment**

Termination may result from unsatisfactory academic performance. Examples include failure to attend classes regularly, having a GPA below 3.0, failure to carry out assignments, research progress that does not meet the standards of the program, or violations of the University policies for academic or research integrity. Termination proceedings may be initiated only if the student has been evaluated on a regular basis and has received an appropriate written warning with respect to their performance or has violated one or more of the major canons of institutional responsibility or University policy.

Specifically, within CMP, students may be terminated for failure to pass required core courses (or one of these courses on successive occasions), failure to pass the Comprehensive Examination, or Doctoral Thesis Examination, failure to make adequate progress in laboratory research, or breaches in legal ethical conduct such as plagiarism. Except for instances involving breaches in legal or ethical behavior, students will not be terminated from the Program without first being notified in writing that they have been placed on probation. This written communication will include a detailed description of the reason(s) for placing the student on probation, and the goals the student must accomplish in order to be taken off probation. Students will typically have one term to resolve their problems and get off probation, or they will be terminated from the Program. This "Program Probation" is different from "University Probation" in that it does not preclude financial support from the University.

When a student who is not on probation fails one of the major examinations listed above (Comprehensive Exam or Dissertation Defense), the student will be placed on probation and given a second opportunity to pass that examination. Failure on the second examination shall result in termination from the Program. When a student who is already on probation fails one of the major examinations, they may or may not be given a second opportunity to pass that examination, at the discretion of the Director.

When a student is informed that his/her laboratory research progress has been determined not to meet program standards, the student will be given one term to improve laboratory skills and productivity before being reevaluated. A second determination that laboratory performance is substandard, at this time or during any subsequent evaluation, will result in a student's termination from the program.

In all cases, the termination of a student requires a decision by the Director(s) and cannot be made by an individual faculty member or examination committee. Terminations are final.

## 8.4: University Probation

The University requires that all graduate students maintain a GPA of 3.0 or above to undergo the preliminary examination, to take the comprehensive examination, to be admitted to candidacy for the PhD degree, and to be graduated. Students whose GPA falls below 3.0 must be put on “University Probation” and cannot be awarded financial assistance from the University (e.g., teaching assistantship) until they have re-established a GPA of 3.0 or above.

## 8.5: Terminal Master’s Degree

If students leave the program, whether voluntary or not, after having completed the following requirements, they may write to the Director, petitioning to receive a Master’s Degree. Students wishing to receive such a degree must fill out appropriate forms, as mandated by the University. The requirements for a Master’s degree include: all of the PhD Coursework, including successfully passing the Comprehensive Examination. Students must also submit and defend a Master’s thesis to a committee consisting of at least three graduate faculty members. The instructions for writing a the Master’s thesis can be found in the University’s Electronic Theses and Dissertation guidelines ([www.etsd.pitt.edu/etsd-format-guidelines](http://www.etsd.pitt.edu/etsd-format-guidelines)).

# 9. Special Status

## 9.1: Leaves of Absence

Refer to Section 12 for the *Leave of Absence Policy* and *Parental Accommodation Guidelines*.

## 9.2: Short Break Policy

To protect their mental and physical health, students should not be expected to conduct research seven days a week or on University holidays when the University is closed. Students may also wish to take a short break during their time in the program. In accordance with Pitt guidelines, CMP strongly recommends that these leave times be pre-approved by the student’s mentor, with a maximum of 10 working days per year requested. This is in addition to the Pitt calendar holidays. Additionally, due to recent frequent difficulties with visas when students return to the USA, CMP strongly advises that foreign students avoid visiting their home countries until they have passed their comprehensive exams unless it is absolutely necessary. Students must obtain pre-approval from the Program Director if they expect to be away for more than two consecutive weeks.

## 9.3: Attendance at Scientific Meetings

It is expected that most students will attend scientific meetings during their time in the Program in an effort to further their careers. While there are no formal policies governing attendance at meetings, it is expected that attendance at these meetings will be pre-approved and funded with help by the student’s mentor. Further, it is expected that meeting attendance will not be excessive (once or twice per year is a general guideline) and that every effort will be made so

that attendance does not substantially interfere with class attendance. When a student wishes to attend a meeting that conflicts with a scheduled class, the student is expected to show good intent by notifying the teacher prior to submitting their registration for the meeting.

#### **9.4: Disability Accommodation**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact the program director, your instructor, and the Disability Resources and Services (DRS) division at the University. DRS can be reached at 412-648-7890 or 412-383-7355 (TTY). DRS will verify your disability and determine a reasonable accommodation for the course.

### **10. Milestones**

#### **10.1: Preliminary Examination**

All IBGP students must pass a Preliminary Examination at the end of their first year. This evaluation is conducted by the IBGP program directors and is a review of the first-year coursework and rotation reports for each student. Successful completion of the Preliminary Examination requires that the student has identified a laboratory for their dissertation research. Inability to do so could result in dismissal from the graduate program and, hence, the University of Pittsburgh. The IBGP Program Director must sign the Preliminary Examination milestone form. Upon the recommendation of the IBGP directors, students are advanced to the second year of graduate training and are permitted to officially join a specific laboratory and apply for admission to the Cellular & Molecular Pathology Program.

#### **10.2: Comprehensive Examination**

The Comprehensive Examination is a major requirement that a student must pass prior to being admitted to candidacy for the doctoral degree. The specific educational goals of the Comprehensive Examination are to test the student's ability to:

- Independently evaluate and critique a body of pathology literature
- Integrate the acquired information into broad conceptual schemes
- Develop testable hypotheses
- Devise experimental approaches and thereby evaluate hypotheses
- Demonstrate the communication skills required to present and defend scientific ideas in oral and written formats

The topic of the Comprehensive Examination is expected to overlap with the student's research interests and dissertation goals. In addition, the proposed plan is expected to be original in its conception and scholarly in its execution. The Major Advisor is only permitted to assist in generating the specific aims of the written proposal.

The Comprehensive Examination must be passed within 16 months of matriculating into a student's thesis lab, although it is typically taken within 10-12 months. This timeline provides the

student with an opportunity to master a literature that is relevant to their research interests and ultimately to demonstrate that the necessary competency has been achieved. Any requests for delay in this schedule should be made in writing to the Director; such requests should include a reason for the delay, as well as the time when the student plans to take the exam. Note that students are encouraged to schedule the Comprehensive Examination as soon as possible.

#### **10.2a: Committee**

The Comprehensive Examination committee is nominated by the student and Major Advisor with final approval by the Director. This committee must be established within 10 months of joining a thesis lab (typically by June 30). The committee consists of five or six members and must include a majority of members from the CMP Graduate Training Faculty. The Major Advisor is not required to be a member of the student's comprehensive examination committee; however, the Major Advisor can serve as a non-voting committee member and may not be the Chairperson. The majority of the committee members must have graduate faculty status at the University of Pittsburgh. Although not required, it is recommended that the Chairperson be a member of the CMP program. Before the first committee meeting, the student and Major Advisor, in conjunction with the Director, should select a Chairperson.

#### **10.2b: Written Examination**

The Comprehensive Examination is based on the student's thesis research area. The examination will require that the student submit and defend a proposal in the format of an NIH F30 or F31 research grant proposal.

The proposal is expected to be conceptually well-founded and adequately documented. The student is responsible for preparing an original research proposal. Thesis advisors ARE allowed to help develop and edit the Specific Aims, but the Research Plan must be prepared by the student and can be edited by fellow students or others. The Major Advisor and members of the Comprehensive Exam committee cannot see the Research Plan until it has been submitted. Attribution to published and unpublished sources must be comprehensive. The written research plan must be original to the student, although the project may have been previously outlined in the advisor's grant. The proposal should not be a verbatim or slightly modified version of any published or unpublished papers the student may have written with the advisor or anyone else. The proposal is to be well organized, written in a coherent, grammatically correct style, and should describe original and innovative experiments that will accomplish the stated aims and objectives of the research. The written proposal should not consist of just a collection of experiments but include well-defined hypotheses and rationale, as well as the significance of the proposed experiments.

1. **Structure and page limits:** The written research proposal will adhere to the following page guidelines:
  - a. Title Page
  - b. Specific Aims: limit 1 page
  - c. Significance/Background and Innovation
  - d. Approach: This includes sections on preliminary data, research plan, and methods) Parts c and d can be no longer than 6 pages, total.
  - e. Literature Cited: Must include complete citation with all authors, year, title, journal, volume, inclusive pages. References should be limited to relevant and current sources, published or unpublished, that are pertinent to the proposed research. No page limit.

2. **Formatting:** The proposal should be single-spaced, with 0.5-inch margins on all sides. The type of font should be Arial, size 11, and line spacing should have no more than 6 lines of text within a vertical line.
3. **Submission:** The research proposal must be converted to a PDF (Acrobat) format for electronic submission. The file should be named as: student's last name\_year.pdf. At least one week before the exam, a copy of the written portion should be sent to the graduate program coordinator and all comprehensive committee members.

#### **10.2c: Oral Examination**

One week or later after the student submits the written “application”, there will be an oral examination. The oral examination consists of a presentation of the proposal (lasting ~40 minutes) followed by an oral examination administered by the committee. At the oral examination, students will be expected to defend their hypothesis and to address questions concerning all background information relevant to the topic, significance, and design of the experiments they proposed. It is expected that the entire oral examination (presentation and defense) will last 2-3 hours.

#### **10.2d: Evaluation**

At the end of the oral examination, the student will leave the room, and the committee will assess their performance. The student will then be notified immediately of the committee's decision. The possible outcomes are pass, partial pass, or fail.

Students may receive a partial pass if they were deficient in some but not most of the areas on which they were examined. Significant problems associated with either the written or oral portion of the examination, or both, that are not so severe as to result in a failing score may result in a “partial pass”. If the committee decides on a partial pass, they must define those areas of the performance that were deficient and provide specific criteria that must be met for the student to pass. For example, the committee might decide that experimental descriptions were poor throughout the written portion of the examination, and thus the student must submit revised descriptions of the proposed experiments. As another example, the committee might decide that some of the student's oral answers were unacceptable, and thus the student must retake the oral portion of the examination. Whatever the reason for the partial pass, the committee must present the student with a detailed description of what needs to be done to satisfactorily complete the examination. **Partial passes must be remedied within eight weeks of the initial oral examination**, or the student will be considered to have failed the examination.

Students who fail the Comprehensive Examination will be allowed to take the examination a second time provided that they are not already on probation. **The second examination must occur within three months of the initial examination.** The examination must be passed before a student can apply for admission to candidacy for the PhD. Once this examination has been passed, the Program notifies the appropriate Dean of Graduate Studies of that fact. The Comprehensive Examination report is submitted to the School of Medicine Graduate Office.

### **10.3: Dissertation Proposal**

The dissertation is the culmination of the graduate program. The dissertation is intended to embody an extended original investigation of a problem of significance in the field of pathology. It must add to the general store of knowledge and to understanding in this field. And it must serve to demonstrate each of the competencies described at the outset of these guidelines.

### **10.3a: Doctoral Dissertation Advisory & Final Examination Committee**

After the student passes their comprehensive examination, the student and their Major Advisor will select the dissertation committee members. The dissertation committee must be approved by the Program Director prior to seeking approval from the Associate Dean for Graduate Studies. Only upon these approvals may the student convene an Overview/Prospectus meeting and then petition for Admission to Candidacy. The committee should meet the following criteria:

- This committee includes five or six members, usually from the same faculty as the Comprehensive Examination Committee. Note that CMP requires at least five members, even though university guidelines specify a minimum of four members.
- The majority of members have graduate faculty status to meet SOM requirements.
- The majority of members must be from the CMP Graduate Training Faculty.
- At least one member must be from outside the program of the Major Advisor (and could be from outside the University of Pittsburgh).
- The Major Advisor must be a member of this committee; however, in the CMP Program, the Major Advisor retains his/her status as an advisor, both to the student and to the committee, and does not chair the committee meetings.
- The student should select one of the committee members from within the CMP Program to serve as the Chair (recommended).

### **10.3b: Dissertation Overview/Prospectus Meeting**

A dissertation proposal and an overview meeting are University requirements. The student's dissertation advisory committee, pending approval of the Associate Dean for Graduate Studies, meets and approves the dissertation proposal at this meeting. The proposal submitted as the grant application for the Comprehensive Examination (with suggested amendments), that has been approved by the examining committee, most often serves as the dissertation proposal. The first meeting must occur within six months from passing the Comprehensive Examination. Upon completion of the committee meeting, the Dissertation Overview/Prospectus form is submitted to the School of Medicine Graduate Office.

### **10.3c: Admission to Candidacy for the PhD degree**

After successful completion of the overview, typically the first dissertation committee meeting after completing the Comprehensive Examination, the student files an application for admission to candidacy, indicating the dissertation topic. This is the formal petition from a student permitting them to study toward the PhD degree. Students must complete this milestone to receive PhD dissertation credit hours. This application must be approved by the Director and the Associate Dean for Graduate Studies of the school in which the student's mentor is appointed (i.e., School of Medicine).

### **10.3d: Thesis Committee Meeting (Bi-Annual)**

Thesis Committee Meetings are required every six months. During these meetings, students will present their progress and receive feedback from their thesis advisory committee. If a student's performance is unsatisfactory, they may be placed on academic probation for a specified period with guidance on how to regain good academic standing. The committee is responsible for writing a summary report of each meeting and submitting it to the program administrators, who will distribute it to the student and include it in their file. Report forms should be provided by the Graduate Coordinator.

To ensure that both students and mentors can openly share their concerns with the committee, it is recommended that at some point during the meeting, the committee meet with the mentor alone without the student (suggested to occur before the meeting begins) and with the student

alone without the mentor (suggested to occur at the end of the meeting). Any significant feedback from either the mentor or mentee should be communicated to the Program Director.

While it is ideal for all committee members to be present at meetings, for the biannual meetings only, students can proceed with a meeting if only four members are able to attend, as long as those members include the Major Advisor and the committee chair. In such cases, the student must schedule a separate meeting(s) to update the absent committee member(s).

### **10.3e: Written Dissertation**

Information regarding the written dissertation can be obtained from the Office of the Associate Dean for Graduate Studies (also see [www.etd.pitt.edu/etd-format-guidelines](http://www.etd.pitt.edu/etd-format-guidelines)). As a general rule, (a) the introduction to the dissertation should include a more thorough review of the literature than usually is the case for a research article, (b) the methods section should include all necessary information concerning the conduct of the research, including procedural information already published, (c) the student may wish to include within the results section (or in an appendix) some data which, because they are confirmatory or incomplete, will not be published, and (d) there must be a general discussion section that is more broad than a discussion section associated with a single manuscript.

Manuscripts (including articles in any state of the publication process, e.g., published, submitted for publication, or completed but not yet submitted) authored or co-authored by the student and based on the research conducted for the dissertation study may be included in the dissertation. To logically integrate this work into a dissertation, the student is required to write extensive introduction and discussion sections that give an overview of the objective or objectives of the research and draw general conclusions from the assembled data. If a manuscript is co-authored, the contribution of the student must be clearly delineated in the preface so the committee can ascertain the student's own work satisfies the requirements of a dissertation. The Style and Form Manual gives instructions on incorporating manuscripts into the dissertation.

A completed dissertation must be submitted to all committee members at least two weeks prior to the defense. The student can expect his/her advisor to read the dissertation prior to its submission, and the submission of the dissertation implies that the student's advisor has approved the dissertation as ready for distribution to the committee.

### **10.3f: Application for Graduation**

Candidates for graduation must file an official application for graduation in the Office of the Associate Dean for Graduate Studies in the first month of the term in which graduation is expected. It is the student's responsibility to complete this task. If the student does not successfully defend his/her thesis during this term, the student must file an application for graduation each following term until the student graduates. Students, be aware that there are costs, including fees and printing charges, associated with graduation and budget accordingly.

### **10.3g: Announcement of Thesis Defense**

At least one month before the final examination, the student provides the Graduate Coordinator with the title of the dissertation and the time and place for its defense. This information is sent to all appropriate departments of the University. It is assumed that all graduate students, postgraduate fellows, and faculty within the CMP Program will be invited to attend the dissertation defense.

### **10.3h: Final Oral Examination**

The Chairperson of the doctoral committee will oversee the examination and explain the guidelines to those in attendance at both the public and private defense. Generally, the mentor will introduce the student. The student begins by making a public presentation of the research project.

Approximately 45 minutes are allotted for this presentation. After a brief period of questions and discussion from the audience, the candidate and the doctoral committee move to a conference room to complete the oral examination. The Major Advisor does not participate in this examination and must remain silent throughout the process. When the questioning is complete, the candidate leaves the room while the committee evaluates the dissertation and its defense. The Major Advisor may be asked to leave for a portion of the committee's deliberation. The committee selects one of the following options: pass, revision of the written document and/or additional oral questioning at a later time or, fail. If the committee requires revision of the written document and/or additional oral questioning, this needs to be completed in a three month period. If the student fails the thesis defense, the student may take the examination again within three months. Failure to pass the thesis defense on a second occasion may result in the student being terminated from the program. At the conclusion of the defense, the student is provided with a verbal summary of the committee's deliberations. If the decision of the committee is not unanimous, the matter is resolved by the Associate Dean for Graduate Studies. Two forms must be completed:

- Dissertation Defense Report: This form signed and submitted to the Graduate Studies Office following the defense.
- Dissertation Approval Report: This form is signed by the student's dissertation committee and submitted to the Graduate Studies Office upon completion and approval of all revisions.

#### **10.4: Final Graduation Steps**

Once you have committee approval to defend, you will need to contact the IBGP graduate office for information on how to proceed. The applications are due during the early part of the term you intend to graduate and the dates will change each term. Note: There is a fee for graduation. Also, please note you must be registered for credit in the term of graduation. Finally, you must fill out a defense information sheet and submit it to the IBGP office about 3 weeks prior to your defense so that the office can prepare and send out defense announcements to the graduate faculty and students. After your public defense, you must submit your final thesis electronically. Instructions on how to prepare and submit your electronic thesis can be found at the following web link: [www.etd.pitt.edu](http://www.etd.pitt.edu)

After your theses is submitted electronically, successfully uploaded, and approved by the graduate office, notify the CMP Director, graduate coordinator (Amanda Bytzura) and payroll administrator (Carolyn Nolte) for the following reasons:

- The CMP Director needs to write a final CMP exit letter on your behalf to the School of Medicine.
- Carolyn Nolte ([noltecr@upmc.edu](mailto:noltecr@upmc.edu)) needs a written confirmation of your departure date from the CMP program to ensure the payroll paperwork is accurate. Even if you do not leave the University and accept a post-doc position within the system, you will no longer be a GSR, and your paperwork will need to be updated.
- Send Amanda Bytzura ([amb430@pitt.edu](mailto:amb430@pitt.edu)) an email with your new contact information (where you will be, how we can reach you, e-mail, etc.) so that she can send you an exit

interview. This is a great opportunity for you to help us understand how we can improve our program.

## 10.5: Calendar of Milestones & Deadlines

| <b>First Year of Graduate School</b> |                    |
|--------------------------------------|--------------------|
| a. Select Major Advisor and Program  | End of summer term |

| <b>Second Year of Graduate School (first year for MD/PhD Candidates)</b> |            |
|--------------------------------------------------------------------------|------------|
| a. Submit Annual Progress Report and updated CV/Bio                      | By June 30 |
| b. Establish Comprehensive Examination Committee                         | By June 30 |

| <b>Third Year of Graduate School (second year for MD/PhD Candidates)</b> |                                                                  |
|--------------------------------------------------------------------------|------------------------------------------------------------------|
| a. Complete Comprehensive Examination                                    | Within 16 months of joining thesis lab (typically before Dec 31) |
| b. Submit Comprehensive Examination Report                               | Upon committee approval                                          |
| c. Meet with Dissertation Committee                                      | By June 15                                                       |
| d. Submit Dissertation Overview Report                                   | Upon committee approval                                          |
| e. File for Admission to Candidacy                                       | Upon committee approval                                          |
| f. Submit Annual Progress Report and updated CV/Bio                      | By June 30                                                       |

| <b>Third Year of Graduate School (second year for MD/PhD Candidates)</b> |                           |
|--------------------------------------------------------------------------|---------------------------|
| a. Submit Annual Progress Report and updated CV/Bio                      | By June 30 of each year   |
| b. Bi-Annual Meetings with Dissertation Committee                        | Two per year              |
| c. Application for Graduation                                            | During term of graduation |
| d. Announcement of Dissertation Defense                                  | > 1 month before defense  |

## 10.6: Milestone Forms

Milestone forms documenting your comprehensive exam, entrance to dissertation, biannual meetings, and thesis defense are provided by the program coordinator, using information supplied by you. Please be sure to notify the Graduate Coordinator if anything regarding your progress has changed, such as a change in committee members or the Title of the Dissertation. Also, please be sure to notify the Graduate Coordinator of the date of each milestone so this information can be included on the forms.

## 11. Academic Appointments for PhD Students

### 11.1: Appointments and Support

CMP students are supported through academic appointments as:

- Graduate Student Researchers (GSRs) are generally funded through research grants to faculty members. [Graduate Student Researchers \(GSR\) Academic Regulations](#)
- Trainees are generally funded through NIH training grants (e.g., T32) [Predoctoral Fellows and Trainees Policy](#)
- Predoctoral Fellows are generally funded through NIH predoctoral fellowships (e.g., F30, F31) [Predoctoral Fellows and Trainees Policy](#)

It is a SOM policy that all PhD students receive the same stipend, regardless of their educational background or program of study. The only exceptions are competitive individual fellowships that pay higher stipends. Awards with a stipend that is less than the school stipend must be supplemented to the full school level.

### 11.2: Externship Opportunities

In accordance with University guidelines, the laboratory hours required are those necessary to make satisfactory progress toward completing the degree, taking into account the time necessary for the student to complete degree coursework when applicable. With mentor approval, senior students are allowed to be engaged in outside activities related to their professional growth, such as externships, although it is expected that the student will typically work no more than an average of 10 hours per week (assuming a one-year timeline) towards this goal.

## 12. Policies & Resources

The following policies and resources apply to ALL graduate students at the University of Pittsburgh School of Medicine. Students must familiarize themselves with these policies. Ignorance of any policy will not be accepted as an excuse for violation. Policies and Resources can be found at: <https://somgrad.pitt.edu/policies-and-resources-school-medicine-graduate-students>

- Leave of Absence
- Graduate Student Parental Accommodations Guidelines
- Financial Aid
- Educational Enrichment Account (for PhD programs who offer this)
- External Support for Graduate Students
- Tuition
- University of Pittsburgh Code of Conduct
- Academic Integrity Guidelines
- Research Integrity Policy
- Bias/Mistreatment
- Office of the Learning Environment (OLE)

- School of Medicine Ombuds Office
- Title IX
- Biomedical Graduate Student Association
- Graduate Student Unionization
- Drug and Alcohol Policies and Resources
- Building Emergency or Inclement Weather Policy for Students
- University Resources

## 13. CMP Graduate Training Faculty

Visit the CMP website for a description of the program:

<https://www.path.pitt.edu/training/research-opportunities/cellular-and-molecular-pathology-cmp-graduate-training-program>

### Current full-time/recent participants

|                            |                |                              |                    |
|----------------------------|----------------|------------------------------|--------------------|
| Dr. Kalil Abdullah         | (412) 647-7614 | abdullahkg@upmc.edu          | Neurosurgery       |
| Dr. Sameer Agnihotri       | (412) 692-9233 | sameer.agnihotri@pitt.edu    | Neurosurgery       |
| Dr. Jonathan Alder         | (412) 692-2118 | jalder@pitt.edu              | Medicine (PAC)     |
| Dr. Gavin Arteel           | (412) 648-4187 | gearteel@pitt.edu            | Medicine (GI)      |
| Dr. Jason Becker           | (412) 383-7054 | beckerj@pitt.edu             | Medicine (Card)    |
| Dr. Juliane (Arteel) Beier | (412) 648-9115 | jibeier@pitt.edu             | Medicine (GI)      |
| Dr. Bharat Bhushan         | (412) 648-1189 | bhb14@pitt.edu               | Pathology          |
| Dr. Timothy Billiar        | (412) 647-1749 | billiartr@upmc.edu           | Surgery            |
| Dr. Harry Blair            | (412) 383-9616 | hclair@pitt.edu              | Pathology          |
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| Dr. Tullia Bruno           | (412) 623-1780 | tbruno@pitt.edu              | Immunology         |
| Dr. Ronald Buckanovich     | (412) 641-4271 | buckanovichrj@mwri.magee.edu | Medicine           |
| Dr. Sandra Cascio          | (412) 641-2985 | sac131@pitt.edu              | Ob/Gyn             |
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| Dr. Divay Chandra          | (412) 628-4349 | dic15@pitt.edu               | Medicine (PAC)     |
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| Dr. Yu-Chih Chen           | (412) 623-7701 | cheny25@upmc.edu             | Comp Biol          |
| Dr. Charleen Chu           | (412) 647-3744 | ctc4@pitt.edu                | Pathology          |
| Dr. Lan Coffman            | (412) 641-2016 | coffmanl@upmc.edu            | Medicine (MWRI)    |
| Dr. Christopher Cunningham | (412) 647-2018 | cunningc@pitt.edu            | Otolaryngology     |
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| Dr. Charles Dela Cruz      | (412) 692-2328 | delacruz@pitt.edu            | Medicine (PAC)     |
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| Dr. Steven Dobrowolski     | (412) 692-9874 | dobrowolskis@upmc.edu        | Pathology (Child)  |
| Dr. H. Henry Dong          | (412) 692 6324 | dongh@pitt.edu               | Pediatrics (Child) |
| Dr. Chris Donnelly         | (412) 383-8983 | chrisdonnelly@pitt.edu       | Neurobiology       |
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| Dr. Toren Finkel           | (412) 383-4409 | finkelt@pitt.edu             | Medicine (AI)      |
| Dr. Zachary Freyberg       | (412) 648-0033 | freyberg@pitt.edu            | Psychiatry         |
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| Dr. Delphine Gomez         | (412) 383-3260 | gomezdz@pitt.edu             | Medicine (VMI)     |
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| Dr. Anne-Ruxandra Carvunis | (412) 648-3335 | anc201@pitt.edu                                            | Comp Biol      |
| Dr. Evan R. Delgado        |                | <a href="mailto:delgaddev@musc.edu">delgaddev@musc.edu</a> | MUSC           |
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| Dr. Peter Lucas            | (412) 692-6218 | lucas.peter@mayo.edu                                       | Mayo Clinic    |
| Dr. Jianhua Luo            | (412) 648-8791 | luoj@upmc.edu                                              | Pathology      |
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| Dr. Yuri Nikiforov         | (412) 802-6797 | nikiforovye@upmc.edu                                       | Pathology      |

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Brian Chew

### **Tony Chiang**

### **Carlos Cosme**

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### **Ava Dou**

### **Salma El-Mossier**

Sofie Fischler  
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### **Eileen Huang**

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### **Alice Jiang**

### **Dana Julian**

Rusy Lee

Jack Little

Jie Bin Liu

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Varun Mandi

Kaylee Montanari

Ugonna Mbaekwe

Chris Merkel

### **Joud Mulla**

Nadine Oury

### **Stephanie Podguski**

Gabriel Ratcliffe

Zana Ross

### **Kienan Salvatore**

Riley Sawka

Kavisha Silva

### **Claudia Sun**

### **Swathi Suresh**

Shristi Tiwari

Karensa Tjoa

Sam Vazquez

### **Kristin Wannemo**

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George Hussey

Tullia Bruno/Nicole Scheff

Sameer Agnihotri

Ben Nacev

Melanie Koenigshoff

Thomas Pearce

Steve Chan

Julia Kofler

Silmara de Lima

Peter Lucas

Steffi Oesterreich

Alex Soto-Gutierrez

Vijay Yechoor

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Sandra Cascio

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Charleen Chu

Bolded names, ASIP members

## 15. CMP Graduates: 2006/07 to Present

### 2025-2026

#### 2024-2025

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