

STUDENT & FACULTY HANDBOOK

Pharmacology and Molecular Sciences Graduate Program

**The Johns Hopkins University
School of Medicine**

http://www.hopkinsmedicine.org/pharmacology_molecular_sciences/index.html

Revised September 2019

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ADMINISTRATION

STRUCTURE

The Pharmacology Graduate Program is the graduate training program within the Department of Pharmacology and Molecular Sciences, currently directed by Prof. James Stivers. A faculty member within the Department directs the Pharmacology Graduate Program. The **Program Director** provides overall leadership of the Program, serves as Principal Investigator for the T32 Training Grant, advises students, and serves as the chair of the Pharmacology Steering Committee. He/She works closely with the Pharmacology and Molecular Sciences Department Chair to coordinate on Departmental and Program issues and procedures. The Program Director works closely with the Academic Program Administrator to implement policies and procedures and to advise students.

The **Steering Committee** is composed of six members, including the Program Director, the Department Chair, the Admissions Chair, and three additional participating faculty members. The Steering Committee oversees major policy initiatives including changes to requirements for the Ph.D. degree in Pharmacology, and is directly responsible for the implementation of the training program. The Steering Committee works together with the Admissions Committee to select prospective graduate students for the Program.

The **Academic Program Administrator** works closely with the Program Director to implement policies and procedures. He/She advises and tracks requirements for graduate students day-to-day, manages graduate student payroll and health insurance and acts as liaison to the Registrar. He/She oversees scheduling of requirements including Doctoral Board Oral examinations and Research in Progress. The Academic Program Administrator also works closely with the Admissions chair as administrator for admissions and to coordinate graduate student recruiting events.

The **Admissions Chair** directs Pharmacology graduate admissions activities, including the review of applications, interviews and candidate selection. He/She oversees participation in additional recruiting activities at local and national venues.

The **Senior Academic Program Coordinator** acts as the course administrator for Pharmacology and Clinical Pharmacology courses. He/She oversees course scheduling, management of course materials and grades. The Senior Academic Program Coordinator is responsible for the administration of the Pharmacology training grant, including appointing and terminating training grant trainees, assisting with assembly of RPPRs and training grant applications. He/She is also responsible for maintaining updated alumni information.

CURRENT LEADERSHIP

STEERING COMMITTEE

Program Director: Caren Freel Meyers

James Stivers (Dept. Chair)

Sean Taverna

Ronald Schnaar

Jun Liu

Richard Ambinder

ACADEMIC PROGRAM ADMINISTRATOR

Amy Paronto

ADMISSIONS COMMITTEE

Admissions Chair: Sean Taverna

James Barrow

Greg Carr

Caren Freel Meyers

James Stivers

Ronald Schnaar

Jun Liu

Richard Ambinder

SENIOR ACADEMIC PROGRAM COORDINATOR

Amy Forcier

REQUIREMENTS FOR A Ph.D. IN PHARMACOLOGY

OVERVIEW

Year 1 Requirements

- Courses:
 - Foundations of Modern Biology (7 modules)
 - Organ Physiology (ME:360.720)
 - Two electives (consider taking in Year 1, must be completed by the end of Year 4)
 - Research Ethics I and II
- Research rotations: 2 required, 3 recommended; Research (ME:330.801; register annually)
- Select faculty preceptor
- Journal club: Primary Source Readings and Analysis (ME:330.708; register for Year 1)
- Seminar: biweekly, plus thesis and supplemental seminars; Topics in Pharmacology (ME:330.802, register annually)
- Career and Professional Development (CPD) requirements: 3 hours of career panels, workshops, or other events within the OPTIONS iCAN series
- Research retreat: attendance required; participation expected in RCR session

Year 2 Requirements

- Courses: Graduate Pharmacology I (ME:330.707, Fall semester) and Graduate Pharmacology II (ME:330.715, Spring semester); Essential Grantsmanship (ME:330.714; Spring semester, required for students matriculating in 2017 or later); Two electives (can take in Year 3, complete by end of Year 4)
- Seminar: biweekly, plus thesis and supplemental seminars; Topics in Pharmacology (ME:330.802)
- Research: toward completion of thesis research requirement; Research (ME:330.801)
- Doctoral Board Oral Examination (DBO): qualifying exam for the Ph.D. degree
- Individual Development Plan (IDP)
- Career and Professional Development (CPD) requirements: 3 hours of career panels, workshops, or other events within the OPTIONS iCAN series
- Research retreat: attendance required; participation expected in RCR session

Year 3 Requirements

- Two electives (consider taking in Year 2, must be complete by the end of Year 4)
- Seminar: biweekly, plus thesis and supplemental seminars; Topics in Pharmacology (ME:330.802)
- Research: toward completion of thesis research requirement; Research (ME:330.801)
- Thesis proposal
- Thesis committee selection and first thesis committee meeting
- Individual Development Plan (IDP)
- Career and Professional Development (CPD) requirements: Join an OPTIONS career community; attend 6 activities; 1 informational interview
- Research retreat: attendance required; participation expected in RCR and presentations
- Research In Progress (RIP): participation expected in Years 3, 4 and 5
- Progress Meeting with Steering Committee

Year 4 and Higher Requirements

- Courses: Two electives (must be completed by the **end of Year 4**); Renew Research Ethics training (by October of **Year 5**)
- Seminar: biweekly, plus thesis and supplemental seminars; Topics in Pharmacology (ME:330.802)

- Research: toward completion of thesis research requirement; Research (ME:330.801)
- Annual or biannual thesis committee meetings
- Individual Development Plan (IDP)
- Career and Professional Development (CPD) requirements: develop a personalized plan to explore and achieve career goals.
- Research retreat: attendance required; participation expected in RCR and presentations (Years 4 & 5)
- Research In Progress (RIP): participation expected in Years 4 and 5
- Preparations for Graduation
 - Dissertation writing
 - Thesis Review and Approval
 - Thesis Revisions and Submission
 - Thesis Research Seminar & Degree Completion

YEAR 1 REQUIREMENTS

Required Courses: Course grades are monitored by the Academic Program Administrator and the Program Director.

1. **Foundations of Modern Biology** consists of 7 modules. With the exception of Bioinformatics, each module is 16 lectures. Bioinformatics is 8 lectures. Courses are held from 9:00 - 10:30 a.m. each day (M-F). All modules are graded.

Module Descriptions:

Biochemical and Biophysical Principles (ME:100.710): The physical and chemical principles underlying biological processes are presented and discussed. Topics include thermodynamics, chemical equilibrium, chemical and enzymatic kinetics, electrochemistry, physical chemistry of solutions, and structure and properties of water. Elementary concepts of statistical thermodynamics are introduced as a way of correlating macroscopic and microscopic properties. The course director is Dr. Herschel Wade.

Macromolecular Structure and Analysis (ME:100.709): The structure and properties of biological macromolecules are presented. Experimental and computational methods used to study macromolecular structure including X-ray crystallography, magnetic resonance, spectroscopy, microscopy, and mass spectrometry are also covered. Dr. Dominique Frueh and Dr. Jie Xiao are the course directors.

Molecular Biology and Genomics (ME:260.709): This course module covers the molecular Biology and Genomics of both prokaryotes (using *E. coli* as the model organism) and eukaryotes, with a focus on “model organisms” including yeast, flies, worms, mice as well as humans. Both the Molecular Biology (reductionist) perspective and the Genomics (systems biology) perspectives are provided on each topic, and there is heavy emphasis on mechanism and regulation of fundamental processes in biological information transfer DNA→RNA→protein. This module covers genes and genomes, transcription and RNA processing, translation, the RNA world, replication, chromosome structure and function and genome instability. The course director is Dr. Jeff Corden.

Bioinformatics (ME:800.707): This course provides an introduction to bioinformatics, the combined field of molecular biology and informatics (information science and technology). The course focuses on the analysis of proteins, genes, and genomes. Topics include DNA and protein sequence analysis, database searching (including BLAST), phylogeny, proteomics, and microarray data analysis. The course director is Dr. Winston Timp.

Organic Mechanisms in Biology (ME:330.709): This course deals with the chemical mechanisms of enzymes. It is intended to illustrate how catalysis in biological systems can be understood using principles derived from organic reaction mechanisms. The course directors are Dr. James Stivers and Dr. Caren Freel Meyers.

Pathways and Regulation (ME:360.728): This course will cover the principles of membrane transport, bioenergetics, metabolic pathways, cell cycle and cell death with particular emphasis on regulatory mechanisms including receptor-mediated signaling, small GTPases, lipid molecules, kinases and phosphatases. The course directors are Dr. Guang William Wong and Dr. Steve Claypool.

Cell Structure and Dynamics (ME:110.728): The objective of this course is to provide the basics of cell biology, including the structure, function and biogenesis of cellular organelles. Also covered are essential concepts on the cytoskeleton, cell-cell and cell-extracellular matrix

interactions, cell motility, chaperones, and protein turnover. The course directors are Dr. Rob Jensen and Dr. Hiromi Sesaki.

2. Organ Physiology (ME:360.720): The Organ Physiology Course is an integrative course, bringing together diverse disciplines in an effort to understand the functioning of living organisms. The course utilizes a variety of innovative educational methods, ranging from eLecture learning to traditional/taped lectures, labs, small group discussions, textbook readings, speakers, and other methods which all focus on heightening the students' learning experience. The course aims to provide a basic understanding of the many different aspects of the internal structure and function of the body, which includes Respiratory, Renal, Gastrointestinal, Cardiovascular, Endocrinology, and Reproductive Physiology. The various organ systems of the body will be discussed in sequence, but the interaction of these systems in the living animal must constantly be kept in mind. Students will be presented a comprehensive survey of many of the complex interrelationships that exist between the structure and function of cells and organs. Above all, the course seeks to identify the mechanisms by which an organism maintains the processes that we regard as characteristic of life. The investigations of these mechanisms range from the molecular level to studies of human subjects. In this course, we can consider only a selected sample from the broad range of physiological science, emphasizing topics that provide a basis for later independent study. Also, objective should be to not only talk about what is known, but also discuss what is not known.

3. Primary Source Readings and Analysis (ME:330.708): This course is designed to help students 1) strengthen their ability to critically analyze scientific literature, 2) refine skills in experimental design, 3) correctly authenticate and report key research reagents, 4) enhance data recording and reporting, 5) understand the do's and don'ts of data processing and presentation, and 6) learn new trends in scientific publishing. The course is further enhanced with content on professional development, including discussion of techniques to manage the stresses of a scientific career, strategies to evaluate and demonstrate productivity, the use of social media for career promotion, and activities to improve oral communication skills. **Schedule and format:** Class is generally held biweekly between October and April. Sessions are hosted by guest faculty from inside and outside the PMS Program, who will act as consultant and assign a research article to be discussed in class. The course director (Dr. Netz Arroyo) attends and oversees sessions to ensure continuity and active participation from all students. One student serves as the discussion leader for each class. The student discusses the assigned paper with the faculty consultant before class, and prepares a presentation highlighting the main discussion points from the article. He/she leads a group discussion in class with inputs from the guest faculty and course director. Those students who are not leading the discussion must complete an assignment prior to each discussion session. Assignments vary from session to session depending on discussion session content. **Class attendance is mandatory. Assessments and grading:** The course follows a Pass/Fail grading system in which a passing grade is determined based on: 1) pre-class assignments, 2) in-class participation, 3) oral presentation, 4) midterm exam, and 5) final exam. Completion of midterm and final exams is mandatory to pass the course. As for all required courses, students who receive a "fail" for the course are placed on academic probation and must repeat the course.

4. Research Ethics I and II: This course is a means for the School of Medicine to fulfill institutional and societal expectations for the proper training of graduate students in the responsible conduct of research. In this two-phase course, students learn the fundamental principles of academic and scientific integrity (fall session), along with the appropriate protection of human and non-human animal subjects and the accurate reporting of research results (spring session). By inviting graduate students from a variety of training programs, the course also provides a forum for students to share

their experiences in fulfilling academic requirements, working with mentors, conducting research, writing grants, publishing scientific manuscripts, and initiating career searches.

5. **Two approved electives** (consider taking in Year 1, must be completed by the end of Year 4): Most courses in SOM and JHSPH and select courses in the School of Arts and Sciences are acceptable as electives. Registration for any elective course is contingent upon approval by the Program Director. Students are required to complete two approved elective courses by the end of Year 4.

6. **Statistics coursework** is required of all students in the Program matriculating in Fall 2019 and later. Development of a comprehensive statistics course is currently in progress, and students will be kept updated on changes as the course is created to fit the new academic calendar. In the meantime, students may take Statistics for Laboratory Scientists (PH:140.615) through the School of Public Health. Students must complete the statistics requirement by the end of Year 3, though it is strongly encouraged that students do so as early as Year 1.

Research rotations: Research rotations offer first year graduate students the opportunity to learn new techniques and approaches, and to interact with the faculty preceptor and students day-to-day. This requirement in the first year is intended to help the student select a faculty preceptor and lab for his/her thesis research. Similarly, research rotations give the faculty preceptor the chance to observe the student's aptitude and motivation to conduct research in his/her laboratory. Students must register for Research (ME:330.801; Year). In the first year, two research rotations are required, three are recommended; the first rotation begins in late September/early October, the second rotation begins immediately following the holiday break, and the third rotation begins in mid-March. Students must select a rotation advisor and lab by 1 week before the start of the rotation. Research rotations must be carried out in the labs of faculty who participate in the Pharmacology Graduate Program, and only one Pharmacology student may rotate in a lab during a given rotation.

Students must submit a written summary of research conducted during the rotation (up to 3 pages) by the last day of the rotation. Students should get feedback on the written summary from their rotation preceptor. The Program Director reviews research summaries and provides feedback to students. For the first two rotations, the student will give a presentation (a poster or a short talk) at the end of the research rotation. The faculty preceptor for the research rotation is asked to provide an evaluation of the student at the end of the rotation. Students and faculty preceptors are required to meet to discuss the evaluation. Students are assigned a grade for each rotation, given by the faculty preceptor. Research rotation evaluations and grades are monitored by the Academic Program Administrator and the Program Director.

A grade of "A" signifies a strong performance and positive experience during the rotation. A grade of "B" is assigned if the student needs improvement in one or more areas. The preceptor is asked to elaborate on this grade assignment and confirm they have communicated their concern to the student. A grade of "C" is assigned if there are serious problems with the student that require immediate attention. The preceptor is asked to explain this grade assignment and confirm they have communicated the concern with the student. A grade of "C" is considered failing and will prompt a meeting between the Program Director and student to discuss the problem and plans to improve performance in subsequent research labs. A final grade for research rotations is assigned at the end of the first year according to a 4 point grading scale based on the average of individual research rotation grades (A = 4.0 pt, B = 3.0 pt, C = 2.0 pt). An average of 3.0 or above (B) is required to pass research rotations in the first year. Students who receive an overall grade of "C" for research rotations will come before the Steering Committee. Such cases are acted upon by the Steering Committee on a case-by-case basis and could lead to placement of the student on [probation](#).

Selection of a faculty preceptor: Students must select a lab for their thesis research by June 1 of Year 1. In some cases, students may need a 4th rotation; these students must get approval from the Program Director, and a timeline will be set for completion of the rotation and selection of a thesis lab. The faculty preceptor selected by the student must be a member of the Pharmacology Graduate Program. This faculty mentor is the primary person responsible for the student's training. Occasionally co-mentors are permitted. Co-mentors must be approved by the Program Director. A letter must be submitted to the Director stating why co-mentorship is essential for the student's training. If approved, the co-mentor must complete mentor training and agree to the terms of co-mentorship by the Program and SOM.

Note: A faculty preceptor is permitted to mentor no more than **three** Pharmacology students at any given time. Labs with more than three Pharmacology students will be barred from admitting new students into the lab until at least one current student is within six months of graduation. This helps to ensure that each student receives high-quality mentoring and promotes an even distribution of students throughout the Program.

Seminar: This biweekly seminar (Topics in Pharmacology) offers students, postdocs, faculty and other scientists in the department an excellent chance to learn about current research in Pharmacology and related fields and to interact with outside speakers from other academic institutions, industry and the government. Speakers are invited by individual faculty members to visit the Department of Pharmacology and Molecular Sciences. The speaker typically meets with faculty throughout the day, and has lunch with students and postdocs. Lunch with the speaker is an opportunity to hear about his/her career path and to begin establishing a network with scientists outside of JHU. To further encourage these interactions, outside speakers are also invited and hosted by the students. All students must register annually for Topics in Pharmacology (ME:330.802).

Seminar is held biweekly throughout the academic year, at 11 a.m. on Wednesdays. Additional thesis and supplemental seminars will occasionally take place. Attendance is required at all seminars. Students must sign in for each seminar, and attendance is monitored. Excused absences are permitted for educational activities (e.g. travel to a conference or participation in a course); students must obtain approval for such absences in advance from the Academic Program Administrator. At their individual discretion, any student may miss up to 3 seminars in a given academic year without affecting their grade. These unexcused absences may involve illness, vacation, or any other reason the student decides.

Students are assigned a letter grade for this course at the end of the academic year. A grade of "A" is assigned to students who attend all seminars. A grade of "B" is assigned to students with one unexcused absence. A grade of "C" is assigned to students with two or more unexcused absences, and will lead to placement of the student on academic probation. Students who fail to address this deficiency and maintain a B or better in subsequent years may be brought before the Steering Committee if deemed necessary. Signing in for seminar and then leaving before the end of the seminar, or signing in on behalf of another student is considered cheating, which is a violation of the [academic ethics policy and honor code](#) and is grounds for [dismissal](#).

Lunch with the speaker is an opportunity to hear about his/her career path and to begin establishing a network with scientists outside of JHU. Students are required to attend 3 seminar lunches during the course of each academic year. Students will indicate which lunches they wish to attend to the Seminar Coordinator, Debbie Saylor. Missing a seminar lunch will count toward one of the 3 unexcused absences described above (i.e., a missed seminar and a missed lunch = 2 unexcused absences). Students can earn back their unexcused lunch absence by attending a future lunch in lieu of the missed lunch. Unexcused absences cannot be reclaimed by attending additional seminars.

Career and Professional Development (CPD): Students start exploring careers in Year 1 by attending a total of 3 hours of Investigating Careers and Networks (iCAN) events or other career panels. The iCAN

series features PhD professionals and alumni who share their career journeys, day-to-day activities, and tips on success. These events are 1.5 hours and are typically held every 1-2 months. Alternatively, students can attend the NIH Annual Career Symposium to satisfy this requirement. Attendance at the NIH symposium in either year is sufficient to satisfy the entire requirement.

Pharmacology Retreat: The Department sponsors a retreat each fall , the main purpose of which is to foster scientific interaction between faculty and trainees in the Program, and offer opportunities for required training in RCR, professional and career development. The retreat consists of short research talks by faculty members, a required Responsible Conduct of Research training session, student poster presentations, and a student “flash talk” competition. Each student in Years 3 through 5 of the program must present either a poster or flash talk at the retreat. Over the three years at least one of these presentations must be a flash talk. The retreat offers the opportunity for first year students to learn about research in the Program and may help them as they consider labs for rotations. Attendance is required by all students in the Program.

YEAR 2 REQUIREMENTS

Required Courses:

- 1. Graduate Pharmacology I and II (ME:330.707, Fall; ME:330.715, Spring):** This course (directed by Dr. Jim Barrow) covers basic pharmacology concepts and major drug classes related to disease therapies. Both parts of this course are team taught by experts in pharmacology and drug development, as well as clinicians with specific disease-area expertise. **Graduate Pharmacology I** focuses on the basic concepts related to in vitro and in vivo pharmacology, including the mathematical basis of dose-response curves and pharmacokinetics. It is intended to provide students with a practical working knowledge of how to evaluate the effects of drugs on living systems, as well as an overview of the tools and techniques used to identify, study, and develop pharmacologically active substances. **Graduate Pharmacology II** focuses on understanding the physiology, clinical use, and limitations of therapeutic agents used in infectious diseases, cancer, cardiovascular diseases, endocrine disorders, inflammation, and nervous system diseases. Attendance is required. Grades for the courses will be determined based on attendance, homework and exams.
- 2. Essential Grantsmanship (ME:330.714, Spring semester):** Pharmacology students matriculating in 2017 or later must enroll in this course. The course is designed to provide a mentored opportunity for students to build grantsmanship skills through experiences in writing, reading, and reviewing research proposals. Students will prepare an abbreviated F31-style proposal based on their thesis project. Since the course has a limited time frame the abbreviated proposal (<3 pages) will include one specific aim, background and significance, one preliminary data figure and the research section for the single aim. The goal is to focus on essential grantsmanship skills rather than completion of an entire proposal. The grade will be pass/fail based on class participation, as well evidence of improved grantsmanship skills over the course as judged by evaluation of writing assignments. The skills taught in this course will be tested during the written component of the doctoral board oral exam (DBO).
- 3. Two approved electives** (consider taking in Year 2, must be completed by the end of Year 4): see description in Year 1 Requirements.

Doctoral Board Oral (DBO) Examination: This is a University requirement for all Ph.D. candidates intended to test the breadth and depth of the student's scientific knowledge and evaluate key aspects of each student's preparedness to conduct research.

DBO format: The DBO exam format will consist of written and oral sections. The **written section** ("open-book" and given to all students) will include guided questions based on a research problem, formulated in advance by a committee of Program faculty and approved by the Steering Committee. Competences in the elements of research design, learned in the first two years through research rotations and "Essential Grantsmanship", will be tested in the written exam. The **oral section** of the DBO exam will occur ~1 week later, to give the DBO committees time to review written answers with respect to experimental design and logic, methods, rigor & reproducibility, innovation, breadth & depth, and clarity & scientific writing style. The written answers will provide a starting point for further questioning in the oral exam. Two or three DBO committees will administer the oral exams to all 2nd year students. The student's faculty advisor discusses the student's progress with the committee at the beginning of the exam. Typically, the candidate is then asked to speak briefly about their research (at the discretion of the Chair). The student is then questioned for 10-15 minutes by each committee member.

DBO exam committee selection and scheduling: The DBO exam is conducted by five faculty members – two “inside” members who are participating faculty members in the Pharmacology Graduate Program, two “outside” members who are not participating members of the Program, and one member that may be either “inside” or “outside”. Two alternate DBO committee members must also be selected, one from inside and one from outside the Program. At least one examiner from outside the Program must be an Associate or Full Professor. The student’s faculty advisor serves on the exam committee. The Academic Program Administrator assigns the exam committees with assistance from and approval by the Program Director, and students are not allowed to select or veto any member. A list of the committee members is sent to the SOM Registrar, where the committee is authorized and the Chair is assigned. The exam is scheduled by the Academic Program Administrator to be held during the month of May, following completion of required first-year courses and Graduate Pharmacology. Students matriculating in 2017 or later must also complete Essential Grantsmanship prior to the DBO exam. The student’s advisor briefly reviews the student’s research progress for the committee at the beginning of the oral exam. The Chair, with consent of the committee, will decide on the timing of the exam and ordering of examiners. Typically, the candidate is asked to speak briefly about their research (at the discretion of the Chair), then is questioned for 10-15 minutes by each committee member.

DBO outcomes: The committee will deliberate a final decision on the DBO outcome based on student’s performance in both the written and oral components. The result of the examination will be one of the following: Unconditional Pass, Conditional Pass, or Fail.

If the candidate receives an unconditional pass (e.g., a majority of favorable votes by committee members), the examination committee is discharged.

If the candidate receives a conditional pass, the exact terms of the condition are to be reported on the examination form – i.e., what course(s), if any, need be taken; in what time frame the condition(s) should be met; and any other pertinent information that will point out clearly to both the student and faculty how to satisfy the condition(s). A Conditional Pass means that the committee noted a deficit in the student’s knowledge base that needs to be addressed to ensure that he/she has the necessary foundation for success. Such a condition should not be taken as a negative judgment on the student’s capacity to succeed, but an opportunity for him/her to firm up knowledge in a key area. As soon as all conditions have been met, the chair of the examination committee must report the removal of the condition in writing to the Academic Program Administrator, who will notify the Program Director and forward the original correspondence to the Registrar. The committee is then discharged.

If the candidate fails, the examination committee, through the chair, should recommend a course of further action:

- No further examination. The committee may feel the student should not be given the opportunity to re-take the examination, after taking into consideration the background of the student, his/her potential, and reaction to oral questioning. In this case, the student is subject to dismissal from the Program.
- Re-examine the candidate by the same committee at a later date. The candidate must receive a Pass or Conditional Pass on the second attempt. A second failure will result in dismissal.
- Re-examine the candidate by a different committee at a later date. Reasons should be given for the change in the committee membership. The newly formed committee must have

representation from the previous committee. The candidate must receive a Pass or Conditional Pass on the second attempt. A second failure will lead to dismissal.

The committee may recommend whatever action in its judgment seems appropriate, taking into consideration the background of the student, previous performance, potential, and reaction to written and oral questioning.

Individual Development Plan (IDP): The IDP involves a required yearly one-on-one meeting between the student and his/her faculty preceptor to discuss progress, concerns, and goals to ensure each student has an individual development plan. In Year 2, the student and his/her faculty preceptor must hold this meeting by June 30. Students will complete a questionnaire (available in New Innovations) before the meeting to facilitate the discussion. The meeting is confidential between the student and advisor(s). The advisor and the student should keep a record of the forms and must submit a signed statement to the Academic Program Administrator by the deadline.

Career and Professional Development (CPD): See description in Year 1 Requirements.

Seminar: All students must register annually for Topics in Pharmacology (ME:330.802). Please refer to the course description and policies for this course in Year 1 Requirements.

Thesis research: All students must register annually for Research (ME:330.801; Year) to meet the thesis research requirement for graduation. The student's faculty preceptor will assign a grade each year for research. A grade of "A" signifies a strong performance and good effort in the laboratory and requires no explanation. A grade of "B" is assigned if the student needs improvement in one or more areas. The preceptor is asked to elaborate on this grade assignment and confirm they have communicated their concern to the student. A grade of "C" is assigned if there is a serious problem that requires immediate attention. The preceptor is asked to explain this grade assignment and confirm they have communicated the concern with the student. A grade of "C" is considered failing and will prompt a meeting between the Program Director and student (and/or between the Program Director and preceptor) to discuss the problem and plans to improve performance moving forward. A grade of "C" may result in placement of the student on [probation](#). Failure to take corrective measures and meet conditions outlined in the probation could lead to withdrawal of funding in the thesis research lab and possibly dismissal from the Program.

Pharmacology Retreat: See description in Year 1 Requirements. Attendance is required, and students in Year 2 are expected to participate in the Responsible Conduct of Research training session.

YEAR 3 REQUIREMENTS

Required Courses:

Two approved electives (must be completed by the end of Year 4): see description in Year 1 Requirements. In some cases, completion of an internship may be counted as an elective. These would be considered on a case by case basis, approved by the Program Director.

Seminar: All students must register annually for Topics in Pharmacology (ME:330.802). Please refer to the course description and policies for this course in Year 1 Requirements.

Thesis research: All students must register annually for Research (ME:330.801; Year) to meet the thesis research requirement for graduation. Refer to Year 2 Requirements for a description and policies.

Thesis proposal: The thesis proposal has two goals: 1) to give you the opportunity to fully consider and articulate the background, significance, and design of your thesis research; and 2) to provide you with additional viewpoints and suggestions on how best to reach your research goals (through review of your proposal by your thesis advisory committee).

Thesis proposal submission deadline: Students are eligible to submit the thesis proposal following successful completion of the Doctoral Board Oral Examination. For students matriculating in 2017 or later, the research proposal developed during Essential Grantsmanship (ME:330.714) in Year 2 will serve as the starting point to develop the thesis proposal. Students who matriculated prior to 2017, may begin preparing the thesis proposal anytime following completion of the DBO examination, and are strongly encouraged to audit Essential Grantsmanship (Spring, Year 2) to assist in writing the proposal. Each student must have the thesis proposal approved by his/her faculty preceptor prior to submission to the Program Director. The names of the thesis committee members (below) and the thesis proposal are submitted at the same time. The deadline for submission is January 31 of the 3rd year.

Formatting the thesis proposal: The thesis proposal should take the form of an NIH NRSA F31 fellowship proposal. Only the Specific Aims (1 page) and Research Strategy (6 pages) of the F31 are required. Students must follow the rigid formatting requirements of the NIH NRSA F31 fellowship proposal. Guidelines are available on the [Pharmacology website](#).

Thesis advisory committee selection and first thesis committee meeting: The thesis committee consists of experts in your field and related fields who can guide you with research direction and technical challenges, and who will oversee your progress until your thesis research requirement is complete and your doctorate is awarded. Regular thesis committee meetings are essential to track the progress of each student's thesis research.

Selection of committee members: The student and faculty preceptor work together to decide who should be asked to serve on the thesis advisory committee. The committee should consist of the faculty preceptor and a minimum of three additional faculty members who are knowledgeable in the student's field of study and whose expertise may be beneficial to the student in performing the proposed research. In the case of co-mentorship, three faculty members in addition to both mentors is required for the committee. The student submits the list of proposed thesis advisory committee members and the thesis proposal to the Program Director and Academic Program Administrator by January 31 of the 3rd year. The thesis proposal and thesis committee members are approved by the Program Director. In some cases, it may be deemed that additional oversight by a Steering Committee member is needed on the thesis committee.

First thesis committee meeting: Once the thesis advisory committee and proposal are approved, the student should contact each of the thesis committee members to confirm that they are willing to serve and arrange a mutually agreeable date and time for the first thesis meeting. The first thesis meeting must take place in March or April of the 3rd year. Students are advised to schedule this meeting as soon as the thesis proposal and thesis committee have been approved to ensure the meeting takes place in March or April. The thesis committee meeting, in conjunction with the thesis proposal, is intended to help the student consider the broader concepts on which his/her thesis research is based, to assist the student in focusing his/her thoughts on the research problem, and to clarify any questions that the committee may have concerning the student's experimental approach. The first thesis committee meeting begins with an oral presentation of the proposal by the student followed by a period of questions, comments, and discussion.

Thesis advisory committee forms: The faculty preceptor acts as the thesis advisory committee chair. He/She must briefly summarize progress and suggestions by the committee in the space provided on the thesis committee meeting form, or in an attached document that is placed together with the form in the student's file. The thesis committee must indicate on the form whether research progress has been satisfactory and outline expectations moving forward. The thesis committee must indicate on the form the timing of the next thesis committee meeting (6 months, 1 year, or a timeframe deemed appropriate by the committee). The student and faculty preceptor must indicate on the form the completion of the required IDP meeting (below). All thesis committee members must sign the form. A completed thesis committee meeting form is required for successful completion of this annual requirement.

Individual Development Plan (IDP): The IDP involves a required yearly one-on-one meeting between the student and his/her faculty preceptor to discuss progress, concerns, and goals to ensure each student has an individual development plan (see description in Year 2 Requirements). Starting in Year 3, the student and his/her faculty preceptor must hold this meeting prior to and separately from the thesis committee meeting. The advisor and the student should keep a record of the forms. Completion of the annual IDP meeting must be indicated on the thesis committee meeting form for successful completion of this requirement.

Career and Professional Development (CPD): Students build career-specific skills and continue career exploration in a narrower field by joining one of the OPTIONS Career Communities and attending at least 6 workshops. In addition, students are required to conduct 1 informational interview with someone whose career or company they are interested in learning more about. For students who are confident about their career path and are actively engaged in a career-related experience, such as the Johns Hopkins Graduate Consulting Club, The Commercialization Academy, or a similar experience, special permission may be granted to bypass the OPTIONS communities.

Research In Progress (RIP): Research in progress (RIP) is a biweekly forum, held at 12 p.m. on Tuesday in which students and postdoctoral fellows present progress on their research. Lunch is provided, and all members of the Department are encouraged to attend. Students in Years 3, 4 and 5 are required to participate. Each presenter is given 30 minutes (25-minute presentation with 5 minutes for questions) to describe their research project and present results. Presenters should schedule their presentation date with the approval of their faculty preceptor and are encouraged to work closely with their faculty preceptor to receive guidance on the presentation. Members of the audience provide feedback on presentations. In order to ensure a well-balanced audience, presenters are encouraged to reach out to interested faculty members (e.g., collaborators or those faculty members on their thesis committee) to invite them to attend.

Pharmacology Retreat: See description in Year 1 Requirements. Students in Year 3 are required to present either a poster or flash talk. An elevator pitch talk must be given at least once during the three years students are required to present.

Progress Meeting with Steering Committee: In the fall all 3rd year students meet with the Graduate Program Steering Committee to discuss research progress and plans for submitting the thesis proposal. This is a brief informal session and does not require any preparation.

YEAR 4 & HIGHER REQUIREMENTS

Required Courses:

1. **Two approved electives** (must be completed by the end of Year 4): see description in Year 1 Requirements. In some cases, completion of an internship may be counted as an elective. These would be considered on a case by case basis, approved by the Program Director.
2. **Renew Research Ethics training** (by October of Year 5)

Seminar: All students must register annually for Topics in Pharmacology (ME:330.802). Please refer to the course description and policies for this course in Year 1 Requirements.

Thesis research: All students must register annually for Research (ME:330.801; Year) to meet the thesis research requirement for graduation. Refer to Year 2 Requirements for a description and policies.

Thesis Committee Meetings: Thesis committee meetings are a critical component of the training process to track research progress required for successful completion of the Ph.D. Students meet once or twice yearly with their Thesis Advisory Committee to update them on research progress and discuss specific aims moving forward.

Scheduling thesis committee meetings: Thesis committee meetings must be held annually through Year 5. The date of the first thesis committee meeting (held in March or April of the 3rd year) is the deadline for subsequent annual meetings. For example, if the first thesis committee meeting was held on April 4, 2017, the deadline for the next thesis committee meeting is April 4, 2018. After completing the 5th year, students are required to hold semiannual thesis committee meetings as they near completion of the research requirement. Students will receive an email reminder from the Academic Program Administrator approximately 60 days prior to this deadline. If the student fails to hold his/her annual meetings by the established date, they are placed on academic probation with a stated deadline to hold the thesis meeting.

Progress reports and thesis committee meeting forms: Starting in Year 4 with the second thesis committee meeting, a short (no more than 3 pages) summary of goals and progress since the last meeting should be assembled by the student, approved by the faculty preceptor, and then submitted to the Academic Program Administrator and members of the thesis committee 1 week before the thesis committee meeting. Progress reports will be kept on file as an additional record of research progress. Thesis committee forms must be completed as described in Year 3 Requirements.

Individual Development Plan (IDP): See description in Year 3 Requirements. Students in Years 6 and above may elect not to complete an IDP for their semiannual thesis committee meeting, however, an IDP is required at least yearly.

Career and Professional Development (CPD): Students in Year 4 and above must meet at least once in a one-on-one session with PDCO staff to create a personalized plan for the remainder of his/her PhD training that is based on individual career goals. Students can take up to 240 hours to gain experience for a future career by participating in an internship, joining a student-led group, completing a teaching certificate, or competing in 3-Minute Thesis.

Research In Progress (RIP): See description in Year 3 Requirements.

Pharmacology Retreat: See description in Year 1 Requirements. Students in Years 4 and 5 are required to present either a poster or elevator pitch talk. An elevator pitch talk must be given at least once during

the three years students are required to present.

Preparations and Requirements for Graduation: When the thesis advisory committee believes the thesis research project is nearing completion and it is time to begin writing the dissertation in preparation for graduation, the “Final Phase” box is checked on the thesis committee form. This typically occurs at the final thesis committee meeting (within 6 months of graduation) during which the student, preceptor, and committee members agree to and specify any remaining experiments or conditions that must be completed to fulfill the Ph.D. research requirement. The thesis committee form for this meeting should detail remaining experiments and specify a projected timetable for completion of experiments and thesis writing. If the student is unable to meet these expectations within the 6 month period, he/she must contact the Academic Program Administrator and Program Director to discuss the reason for the delay. The Program Director may require an additional thesis committee meeting. In case of a disagreement between a student and the faculty preceptor, the student’s thesis committee and the Program Director will make a final decision regarding degree completion.

Dissertation writing: The document is a scholarly effort that describes the scientific question that the thesis research addressed, the approaches that were used to answer this question, the results that were obtained from the studies, and the conclusions that were drawn from the work. Guidelines for the Ph.D. dissertation are provided by the Eisenhower Library of the Johns Hopkins University, and can be viewed at their website: <https://www.library.jhu.edu/library-services/electronic-theses-dissertations/formatting-guidelines/>. Students should discuss the style and format of their dissertation with the Program Director prior to writing. An example thesis is available upon request from the Program Director.

Thesis Review and Approval: Once a complete draft of the dissertation is written and approved by the faculty preceptor, it must be submitted to the Program Director and Academic Program Administrator. The Program Director will determine whether it complies with style and format requirements (allow for a 48 hour turnaround). After the draft thesis is approved by the Program Director, each thesis advisory committee member should receive a copy. Distribution should include letters to each committee member describing their responsibilities in reviewing the thesis, which will vary depending on whether or not the member is designated as a “reader”. Two committee members, one of whom is the advisor, will serve as official thesis “readers.” The second reader is not permitted to be associated with the student’s lab. In cases of co-mentorship, both mentors serve as “readers” and a third reader is required. The readers are required to write a joint review and approval of the thesis using guidelines that will be provided by the department. Thesis advisory committee members who are not designated as “readers” must still approve the draft dissertation via a form that will be sent to them.

Thesis Revisions and Submission: It is the responsibility of the student and preceptor to ensure that any changes required by the thesis advisory committee members are included in the final thesis document. Any significant changes must be approved by the readers prior to submission of the final copies of the dissertation to the University and Department. When all changes required by the thesis advisory committee have been completed, the student must submit the thesis in appropriate PDF format via ETD. One electronic copy must also be submitted to the Academic Program Administrator. Complete instructions for submitting the thesis are available from the Academic Program Administrator and on the [Pharmacology website](#).

Thesis Research Seminar: After the dissertation has been reviewed and approved by the thesis advisory committee, the student must present a public seminar describing his/her thesis research. **The thesis seminar should be scheduled to fall on a date at least two weeks after the thesis has been distributed to the thesis advisory committee members.**

Degree Completion: A student is considered to have completed his/her degree requirements when the thesis has been approved by their committee, the thesis has been submitted via ETD, the thesis seminar has been presented, and the signed letter of dissertation approval has been delivered to the Academic Program Administrator. The University considers student status to end upon receipt of a signed form from the Program Director to the Registrar's office stating that these requirements have been met. Complete instructions for completing the final degree paperwork are available from the Academic Program Administrator and on the [Pharmacology website](#).

Time To Degree: The progress of biomedical research is often unpredictable. Therefore, the time it takes each student to complete the doctoral degree will vary. Each student's research progress will be evaluated by the student's preceptor on a regular basis, and by their thesis advisory committee on an annual or semi-annual basis. The Program expects most students to complete their degree within 6 years of entering the Program. A terminal Master's degree will be given if the Ph.D. is not complete by the end of Year 8, unless the steering committee approves an extension due to extenuating circumstances. Students must be in their final phase for the Ph.D. thesis research requirement no later than 7.5 years. Note that official [Leave of Absence](#) is not included in the total training time.

MASTER OF SCIENCE DEGREE

A student has the option to leave the Pharmacology Program with a Master of Science degree if:

- 1) He/She has successfully completed all first year requirements and unconditionally passed the qualifying exam, or
- 2) He/She has successfully completed all first year requirements and writes a Master's essay on research completed in Year 2.

GRADUATE PROGRAM POLICIES

Students are subject to all applicable university, divisional, department and program policies. The following is a non-exhaustive list of several important policies applicable to students in our Program.

PHARMACOLOGY GRADUATE PROGRAM ACADEMIC ETHICS POLICY AND HONOR CODE

The strength of the scientific community depends on academic and personal integrity. At Johns Hopkins University and in the Pharmacology Graduate Program, we expect students to be honest and truthful. Ethical violations are taken seriously and may result in dismissal from the Pharmacology Program. All students sign a general School of Medicine Honor Code upon matriculation. In addition, there is a specific [Pharmacology Graduate Program Academic Ethics Policy and Honor Code](#) that is signed by each student in the presence of the Program Director at the beginning of the first year. This document is intended to educate each student regarding such violations, and gives definitions and examples.

POLICY FOR PROBATION, FUNDING WITHDRAWAL, AND DISMISSAL

The [Pharmacology Graduate Program Policy for Probation, Funding Withdrawal, and Dismissal](#) addresses consequences of student underperformance. Failure to meet any Program requirement by the specified deadline could result in placement of the student on probation. Dismissal from the Pharmacology Graduate Program is a possible consequence of failing to successfully complete probation terms. Students may also be subject to dismissal without a formal probation period under certain circumstances.

GRADE POLICY

Grades in required and elective courses must be B- or better. ***A student who receives 1) a grade lower than B- (and/or a "fail" in a pass/fail course) in three required courses, or 2) a grade lower than C- in any required course is subject to dismissal from the Program.*** Each such instance is reviewed by the Graduate Program Steering Committee and acted upon on a case-by-case basis, taking all aspects of the student's performance (coursework and laboratory research) into account. Required courses may not be audited or dropped because of academic difficulties. In most scenarios, if a student receives a grade lower than a B- in a required course, the class must be repeated, and a grade of B- or better must be achieved. In the case of a grade below B- in an elective course, the student has the option of retaking the course to achieve a satisfactory grade or of taking another elective course and achieving a grade of B- or better. An "Incomplete" in any course must be resolved within 1 month. The student may be placed on academic probation if he/she fails to resolve an Incomplete within this period.

VACATION POLICY

In addition to posted university holidays, a maximum of two weeks (10 days) of vacation are allowed during the first year and three weeks (15 business days) during subsequent years. Additional vacation or personal leave time must be approved by a student's faculty preceptor or the Program Director. Trainees shall continue to receive stipends during vacations and holidays. ***Time between semesters or academic quarters is considered an active part of the training period, including the summer months. However, students may choose to take their vacations during these time periods.*** Vacation or personal leave time exceeding those listed above without the prior approval of the faculty preceptor or Program Director may be cause for concern. In most cases, this will lead to poor performance in courses and is a

valid reason for a student to receive a research grade of “C”. Cases in which students are repeatedly absent or absent for extended periods of time from work without approval will be reviewed on a case-by-case basis by the Steering Committee.

SICK LEAVE POLICY

Sick leave should not exceed 15 calendar days per year. Unused days may not be carried over into the following 12-month period and are not payable upon departure. Sick leave may not be subtracted from any paid leave earned through the policy above. At its discretion, the Department, Program or faculty preceptor may require the student to submit verification of the need for sick leave from their healthcare provider to the University Health Service Center for review. Any documents containing a student’s medical information must be kept separate from his/her academic file. Extended absences (more than 14 business days) must be reported by the student and/or faculty preceptor to the Academic Program Administrator as quickly as possible. If the illness requires an extended absence, the student may apply for a leave of absence (LOA), as described in “[Procedures for the Award of the Doctor of Philosophy Degree](#)”. Students are also subject to the School of Medicine [Involuntary Leave of Absence Policy](#).

LEAVE OF ABSENCE

Students may request a Leave of Absence (LOA) for a medical condition, military duty, personal hardship or to pursue an internship. Time spent on a LOA is not counted toward the time to degree. Students seeking to take a LOA must apply according to the procedures described in “[Procedures for the Award of the Doctor of Philosophy Degree](#)”.

PARENTAL/NEW CHILD ACCOMODATIONS FOR GRADUATE STUDENTS

All eligible full-time graduate students and postdoctoral trainees will receive an eight-week accommodation to care for a new child, with no loss in tuition benefits, stipend support, or benefits from a training grant, fellowship, or scholarship. See the full policy [here](#). The Program Director must be notified if a student plans to use parental leave.

OUTSIDE EMPLOYMENT

A student who has completed 1st and 2nd year required courses, successfully passed the DBO examination and held at least one thesis committee meeting is eligible to pursue an internship opportunity either through the Johns Hopkins University School of Medicine [Biomedical Careers Initiative](#) (BCI) or elsewhere after obtaining approval in advance from his/her faculty preceptor, the Program Director and the Associate Dean for Graduate Student Affairs. Students who secure internship opportunities independently of BCI must register the internship with BCI and follow all BCI procedures for completing an internship. During internships, students must be placed on Leave of Absence (LOA) by the Program and are paid by the organization hosting their internship. Students may also receive compensation as teaching assistants (TA) or graders for JHU courses and/or through tutoring for students in the Program. These are considered excellent opportunities to gain teaching experience. However, as these activities can detract from thesis research activities, the student must obtain permission from the faculty preceptor. Other outside employment is prohibited. Extenuating circumstances may be considered on a case by case basis, and procedures for obtaining outside employment in these cases will adhere to the “[Graduate Student Employment and Consulting Policy](#)”.

JHU POLICIES To review University policies and statements, please visit <https://www.jhu.edu/university-policies/>.

ADDITIONAL PROGRAM FEATURES

The Pharmacology Graduate Program organizes or participates in additional events that enrich the graduate student experience.

FACULTY MENTORING & ADVISORS

Some students find it helpful to interact with a faculty advisor to discuss courses, rotations, or other adjustments to graduate school. Drs. Caren Freel Meyers and Jim Stivers are available to assist students with issues that arise in graduate school. If students wish to have an assigned faculty advisor during their first year, or subsequent years, who is not their thesis research mentor, the Director, or Department Chair, one can be assigned upon request. Drs. Meyers and Stivers are available to confidentially discuss issues students may be having with their faculty mentor.

Beyond the Program level, the School of Medicine is also committed to ensuring that all students benefit from quality mentoring. Its “Policy on Mentoring Commitments for PhD Students and Faculty Advisors” was created to provide mentor training across the SOM and support good mentor-mentee relationships. A comprehensive list of expectations for both mentors and trainees is available in the form of the “JHU Mentorship Commitments of Faculty Advisors and PhD Students.” Additional information is available [here](#). Students may also wish to review the Program’s conflict resolution procedures, which exist to assist students resolve conflicts with faculty and/or staff in the rare cases where Program intervention is warranted. The conflict resolution protocol is available from the Administrative Coordinator.

NEW INNOVATIONS

New Innovations (NI) is a graduate biomedical education platform for data management and communication. Each student has a New Innovations account which can be accessed via <https://my.jhmi.edu> under the “Education” Tab. All students at the School of Medicine are required to keep their records up to date within NI for the duration of their training. Students are able to view and edit their personal information, progress in the program (including evaluations), and provide and track their scholarly activities. Using NI to track scholarly activities helps both students and the Program access information in one secure place, making it easy to refer to when working on CVs, grant applications, fellowships and preparing for graduation. For technical help with NI, students should contact the help desk as TeamNI@jhmi.edu, or visit <http://helpni.jhmi.edu> for tips, videos, and resource documents.

PHARMACOLOGY STUDENT INITIATIVE

The Pharmacology Student Initiative (PSI) is a student representative group started within the Pharmacology Department with the goal of fostering departmental camaraderie and collaboration. PSI works closely with the departmental administration to organize new events as well as to improve existing ones. They also host social events to allow all members of the Department to get to know each other better.

STUDENT-INVITED SEMINAR SPEAKER

The Department sponsors a student-invited seminar speaker annually. PSI selects and invites an outside speaker to visit Johns Hopkins, and students host the speaker for meetings during the day, lunch and dinner.

OPTIONS AND BIOMEDICAL CAREERS INITIATIVE (BCI)

Housed within the [Professional Development and Career Office](#) (PDCO), the OPTIONS career curriculum is designed to give trainees the opportunity for career exploration, professional development training and career skill building. During year 1 and 2, students explore careers by attending a total of 6 hours (3 hours each year) of Investigating Careers and Networks (iCAN) events or other career panels. The iCAN series features PhD professionals and alumni who share their career journeys, day-to-day activities, and tips on success. These events are 1.5 hours and are typically held every 1-2 months. Alternatively, students can attend the NIH Annual Career Symposium to satisfy this requirement. During year 3, students build career-specific skills and continue career exploration in a narrower field by joining one of the OPTIONS Career Communities and attending at least 6 workshops. Led by PhD professionals, these interactive workshops explore the various careers available while hosting an activity that highlights the most common skills and responsibilities within the field. Students who would like to continue exploring multiple career fields may select their own set of workshops from those offered throughout the 6 communities. In addition, students conduct an informational interview with someone whose career or company interests them. For students who are confident about their career path and are actively engaged in a career-related experience, such as the Johns Hopkins Graduate Consulting Club, The Commercialization Academy, or a similar experience, special permission may be granted to bypass the OPTIONS communities. During year 4 and beyond, students gain hands-on career experience. In at least 1 required one-on-one session, PDCO staff will help each student create a personalized plan for the remainder of his/her Ph.D. training that is based on individual career goals. Students may take up to 240 hours to gain valuable experience for future careers by participating in an internship, joining a student-led group, completing a teaching certificate, or competing in 3-Minute Thesis.

The [Biomedical Careers Initiative](#) (BCI) works closely with the Professional Development and Career Office (PDCO) to actively promote career development. BCI offers internship opportunities, networking events, and seminars exploring the broad range of career options available to Ph.D. graduates.

STUDENT WELLNESS Student wellness and well-being are important aspects of graduate training, and the Program aims to support students wherever possible. The Pharmer's Garden (Physiology 320), developed by the PSI, provides Pharmacology trainees with a safe, calm, plant-filled space within the department to work or relax. In conjunction with PSI, Pharmer's Garden organizes garden-related social events, such as volunteering at Baltimore Free Farm, apple/strawberry picking, etc.

The [Johns Hopkins Student Assistance Program](#) (JHSAP – see below under “Student Support Programs and Disabilities Services”) meets with students in Year 1 every fall to discuss stress management, work/life balance, and study and organization tips. The Pharmacology Program also invites a JHSAP representative to meet semi-annually with groups of Pharmacology students at similar stages of training in later years to focus on stage-specific stress management and wellness.

STUDENT SUPPORT PROGRAMS AND DISABILITY SERVICES

DISABILITY SERVICES

In assuring that every student has equal access to university programs, facilities and technology, JHU is committed to full compliance with all laws, regulations and best practices related to accommodations for students with disabilities. For questions about JHU procedures and policies, Graduate Students are encouraged to contact the [Office of Institutional Equity](#).

If you have a disability and may require accommodations, please contact the Disabilities Services Coordinator for Ph.D. students in the School of Medicine (Catherine L. Will, cwill@jhmi.edu, 410-614-3385) to discuss your specific needs. It is important to register with [Disability Services](#) in a timely manner. Occasionally, it may be necessary to request additional information from an individual's diagnostician to verify the information or accommodations.

DIVERSITY AND INCLUSION

JHU is committed to fostering an environment that embraces students of all backgrounds, cultures, and orientations. Dr. Damani Piggott, the Assistant Dean for Graduate Biomedical Education and Graduate Student Diversity, acts as an advisor, advocate, and role model for graduate students, supporting their academic achievement and career development. Dr. Piggott also works to implement initiatives designed to enhance inclusion, diversity, and the well-being of graduate students at JHU. The [Office of Institutional Equity](#) is another resource for students interested in supporting diversity initiatives at a university-wide level.

Numerous student-run groups exist that are committed to supporting and promoting diversity and inclusion, such as the [Biomedical Scholars Association \(BSA\)](#) or the [Gertrude Stein Society](#).

GRADUATE STUDENT ASSOCIATION (GSA)

The [Graduate Student Association](#) (GSA) of the Johns Hopkins University School of Medicine acts as a liaison between the graduate student body and all other elements of The Johns Hopkins University. Accordingly, the GSA represents the opinions and ideals of the graduate student body to the faculty and administration, and it reciprocally communicates the ideals and standards of the Johns Hopkins University School of Medicine to the graduate student body.

JOHNS HOPKINS STUDENT ASSISTANCE PROGRAM (JHSAP)

The [Johns Hopkins Student Assistance Program](#) (JHSAP) provides support in dealing with the pressures and challenges students face during their academic and professional careers. The Student Assistance Program offers:

- Discussion and support groups;
- Preventative and educational sessions;
- Identification and assessment of personal, family, and school/work-related issues;
- Brief counseling and consultation; and
- Referral to appropriate and accessible services and resources.

For more information or to schedule an appointment, call 410-955-1220 or 443-997-3800, or visit www.jhsap.org or <http://www.hopkinsmedicine.org/uhs/SAP.html>. See also "Student Wellness" under "Additional Program Features" above.

OFFICE OF INTERNATIONAL SERVICES

The [Office of International Services](#) (OIS) assists international students, scholars, researchers, clinicians, staff and faculty with visas and immigration. Walk-in advising hours are offered for students on F-1 or J-1 visas. OIS is also an excellent resource for information on practical matters such as housing, banking, and taxes.

PROFESSIONAL DEVELOPMENT AND CAREER OFFICE (PDCO)

The JHMI [Professional Development and Career Office](#) (PDCO) supports the professional and career development of JHMI faculty, postdocs, graduate students, and medical students. A variety of workshops and classes are offered, as well as a broad range of career-related services. The PDCO works together with PMS to provide a structured Career and Professional Development Plan outlined above.

FACULTY ADVISOR ROLES IN PHD REQUIREMENTS

PROGRAM AND NIH T32 GENERAL REQUIREMENTS

Faculty advisors must have sufficient time to commit to training given their other professional obligations.

As per T32 guidelines, faculty advisors are expected to:

- promote the development of trainee skills in approaches to experimental design, methods of data collection, data analysis and interpretation, and reporting
- provide opportunities for trainees to initiate, conduct, interpret, and present rigorous, reproducible and responsible biomedical research with increasing self-direction
- demonstrate a commitment to effective mentoring, and promoting inclusive and supportive scientific and training environments

FACULTY MENTOR TRAINING

Faculty advisors must complete training in mentoring graduate students, adhere to the guidelines of effective mentorship (see [“JHU Mentorship Commitments of Faculty Advisors and PhD Students”](#)), and are evaluated regularly by the Program.

The School of Medicine is committed to ensuring that all students benefit from quality mentoring. Its “Policy on Mentoring Commitments for PhD Students and Faculty Advisors” was created to provide mentor training across the SOM and support good mentor-mentee relationships. A comprehensive list of expectations for both mentors and trainees is available in the form of the “JHU Mentorship Commitments of Faculty Advisors and PhD Students.” Additional information is available [here](#). Students may also wish to review the Program’s conflict resolution procedures, which exist to assist students resolve conflicts with faculty and/or staff in the rare cases where Program intervention is warranted.

Faculty advisors are expected to play key roles in several requirements for the PhD degree in Pharmacology. These include:

RESEARCH ROTATIONS

The faculty mentor should be available to interact with rotation students during the rotation and make an effort to provide feedback on research activities and presentations. At the end of the rotation, he/she has a responsibility to: 1) review the rotation summary assembled by the student and provide feedback on the student’s rotation presentation, 2) provide an evaluation of the rotation student to the program, 3) meet one-on-one with the student to discuss the rotation and provide feedback to the student, and 4) attend the rotation presentation.

ACCEPTING STUDENTS INTO YOUR LAB

Faculty may mentor no more than 3 Pharmacology students at a time. When accepting a new student into the lab, the Pharmacology faculty advisor is agreeing to be the primary mentor to the student, and must participate as such in various requirements for the PhD (noted below). Co-mentors for students that are approved by the Program may not substitute for the primary mentor to fulfill the roles in these requirements.

ESSENTIAL GRANTSMANSHIP COURSE

Faculty advisors of Pharmacology students enrolled in “Essential Grantsmanship” (2nd year students) are expected to provide guidance to their students during the preparation of an abbreviated F31-style proposal based on their thesis project. Since the course has a limited time frame the abbreviated proposal (<3 pages) will include one specific aim, background and significance, one preliminary data figure and the research section for the single aim. The goal is to focus on essential grantsmanship skills rather than completion of an entire proposal. Mentor guidance should be provided at the point of proposal conception, review of mentee writing assignments, and a short written critique of the final product and the student’s progress. The mentor’s written evaluation will be considered along with the course directors’ in determining the satisfactory progress of each student. The primary mentor must fulfill this responsibility in cases where the student also has a co-mentor. This requirement is one way that the Program ensures that grantsmanship, elements of RCR and methods to enhance rigor & reproducibility are reinforced by our faculty mentors.

DOCTORATE BOARD ORAL EXAM (DBO)

Faculty advisors of 2nd year students must participate as a member of the DBO committee. The student’s faculty advisor discusses the student’s progress with the committee at the beginning of the exam. The primary mentor must fulfill these responsibilities in cases where the student also has a co-mentor.

INDIVIDUAL DEVELOPMENT PLAN (IDP)

JHU requires that, at least annually, every PhD student and their advisor discuss (a) the student’s academic progress and next steps; (b) the student’s professional development goals and any next steps; (c) how the advisor can be helpful regarding each. For the full policy, please see [*“Policy on Annual Academic and Professional Development Discussions for PhD Students and Their Faculty Advisors”*](#).

The faculty advisor must hold this meeting with his/her second year students by June 30 of Year 2, and before the annual thesis committee meeting with students in Year 3 or higher. The student will complete a [questionnaire](#) before the meeting to facilitate the discussion. The meeting is confidential between the student and advisor(s). However, the career development portion of the IDP is to be shared with the thesis advisory committee at the annual thesis committee meeting. The advisor and the student should keep a record of the forms and must submit a signed statement to the Academic Program Administrator by the deadline. The primary mentor must fulfill this responsibility in cases where the student also has a co-mentor.

THESIS RESEARCH

The faculty advisor oversees the thesis research of his/her student and has a responsibility to adhere to the guidelines of effective mentorship and provide regular evaluations of the student. The faculty advisor must assign a grade each year for research.

- A grade of “A” signifies a strong performance and good effort in the laboratory and requires no explanation.
- A grade of “B” is assigned if the student needs improvement in one or more areas.
- A grade of “C” is assigned if there is a serious problem that requires immediate attention.

The faculty advisor has a responsibility to communicate his/her concern to the student if assigning a letter grade of “B” or “C”. The advisor must also explain this grade assignment to the Program, and confirm they have communicated the concern with the student. A grade of “C” is considered failing and will prompt a meeting between the Program Director and student (and/or between the Program

Director and preceptor) to discuss the problem and plans to improve performance moving forward. In cases where the student has a co-mentor, it is the primary mentor who must provide the research grade.

THESIS ADVISORY COMMITTEE & MEETINGS

The faculty advisor is expected to work with his/her student to select appropriate members for the student's thesis advisory committee. He/she is expected to engage with the student prior to thesis committee meetings, working together with the student to summarize progress and proposed studies and timelines in the written summary and oral presentation. The faculty advisor must be present at the thesis committee meeting. The primary mentor must fulfill these responsibilities in cases where the student also has a co-mentor, although it is also considered appropriate for the co-mentor to attend the thesis committee meetings.

DATA MANAGEMENT, RCR, RIGOR & REPRODUCIBILITY

The faculty advisor is expected to have a clear Data Management SOP for his/her lab that is communicated with students and monitored on a regular basis in the lab. Likewise, the faculty advisor has a responsibility to employ the highest standards of scientific rigor and impart those standards to their students. The faculty advisor must also reinforce and augment the curricular material on responsible conduct of research (RCR), and methods for enhancing reproducibility with his/her students. Assessments will be made during the DBO and annual thesis committee meetings to ensure the student is receiving this guidance by his/her mentor in the lab.

RESEARCH IN PROGRESS & ANNUAL RETREAT

The faculty advisor is expected to engage with his/her student when they prepare oral and poster presentations for RIP and annual retreats (required in years 3-5), and to provide constructive feedback during this process. The advisor also has a responsibility to make every effort to attend his/her student's presentation and provide feedback.

CO-MENTORS

Each Pharmacology graduate student must have a primary faculty advisor from inside the Pharmacology Graduate Program. In some cases, the student and his/her primary faculty advisor may decide it is necessary to have a faculty co-mentor (from inside or outside the Pharmacology Graduate Program). Co-mentors must be approved by the Program Director. A letter must be submitted to the Director stating why faculty co-mentorship is essential for the student's training. If approved, the co-mentor must complete mentor training and agree to the terms of co-mentorship by the Program and SOM (if outside of Pharmacology). **Note:** The primary faculty advisor (not the co-mentor) is the person responsible for: **1)** overseeing the student's training, **2)** fulfilling the above expectations of faculty advisors, and **3)** paying the student's stipend starting in Year 2. The co-mentor is not allowed to pay the student's stipend.

EXPECTATIONS FOR FACULTY PARTICIPATION IN PROGRAM ACTIVITIES

Participation in Program activities by all Pharmacology training faculty is key to the success of the Training Program. As a requirement for membership in the Pharmacology Graduate Program at Johns Hopkins School of Medicine, Program faculty must participate in the following activities:

GRADUATE STUDENT RECRUITING

REQUIREMENT: Program faculty must participate in graduate student recruiting by conducting at least 2 interviews per year, on average. Faculty with primary appointments in Pharmacology are expected to participate in at least 4 interviews per year, on average. Recruiting the very best students to our program demands a dedicated effort to evaluate prospective students and connect them with potential faculty mentors of interest. The admissions committee relies heavily upon the feedback obtained from faculty who participate in the interview process. Thus, it is essential that faculty members regularly participate in recruiting activities, including interviewing prospective students and attending the recruiting dinner when possible.

DOCTORATE BOARD ORAL EXAMS (DBO)

REQUIREMENT: Program faculty must participate in the DBO at least once every 3 years. This commitment will involve either service on one DBO committee that assesses two or three students consecutively (all in one morning or afternoon), or service on the committee responsible for writing DBO questions (see the new DBO format).

RESPONSIBLE CONDUCT OF RESEARCH (RCR)

REQUIREMENT: Program faculty must participate in a Responsible Conduct of Research (RCR) Program training activity at least once per year, on average. Responsible conduct of research involves the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research. Pharmacology students are required to receive training and undergo assessment in RCR in multiple formats and at multiple points throughout their training. The T32 training program is required to ensure that faculty mentors participate in training activities that reinforce and augment the RCR curricular material. Opportunities to participate in RCR training activities include the following:

- lead an RCR session at the annual retreat
- lead a journal club discussion in which RCR is emphasized
- participate in the Essential Grantsmanship course with your 2nd year student (required) in which RCR is emphasized
- lead required RCR activities at JHUSOM in which Pharmacology graduate students participate (for example, leading a session in the JHUSOM Research Integrity Colloquia series)

CAREER & PROFESSIONAL DEVELOPMENT (CPD)

REQUIREMENT: Program faculty must participate in a Career and/or Professional Development training activity at least once per year, on average. T32 training program faculty must participate in activities that promote trainee professional and career development such that students graduate with

the skills, credentials and experiences to transition into their chosen career paths. There are several opportunities to participate in CPD, including:

- annual retreat: serve as a poster or flash talk judge, or lead the flash talk workshop prior to retreat
- participate in the CPD plan for Pharmacology graduate students (e.g., a faculty member can lead a workshop on Establishing a Research Lab, in the OPTIONS Academic Research Community sponsored by the PDCO and attended by Pharmacology students)
- host Research in Progress (RIP) and provide feedback to student speakers
- involve your students when hosting a seminar speaker (see Departmental Seminars below)

RESEARCH IN PROGRESS (RIP)

REQUIREMENT: Program faculty members are required to host and provide feedback to presenters at least once every 2 years, on average. Students in the Pharmacology Department give an oral presentation at Research in Progress (RIP) in years 3-5. This requirement gives them an opportunity to sharpen their presentation skills, and to receive critical feedback from students, postdocs and faculty.

JOURNAL CLUB

REQUIREMENT: Program faculty must lead at least one journal club discussion every 3 years. ****Note: participation in journal club is not required if the faculty member is fulfilling RCR requirements another way AND already devotes substantial time to teaching Pharmacology graduate students (i.e. directing and/or teaching at least 2 lectures per year in required courses for Pharmacology students).** Journal club is intended to help students strengthen their ability to critically analyze the literature, enhance skills in experimental design and methods for enhancing rigor and reproducibility, and discuss responsible conduct of research in different contexts. Faculty participation in journal club sessions offers teaching opportunities for program faculty, the chance to interact with students and to meet requirements for engaging in RCR activities and training in methods to enhance rigor & reproducibility.

DEPARTMENTAL SEMINARS

REQUIREMENT: Primary faculty in Pharmacology are required to invite at least one speaker per year. **All other program faculty are strongly encouraged to participate in this activity.** Faculty-invited seminar speakers make up our departmental seminar series and provide an excellent opportunity to engage with scientists from other institutions and industry. Seminars offer opportunities for our students to hear about research from beyond the walls of JHU and to network with scientists who have taken a variety of career paths; Pharmacology students have lunch with seminar speakers as part of their career development plan. Program faculty are already strongly encouraged to invite speakers, to ensure a breadth of topics of interest to our students and faculty. **Program faculty who host seminar speakers can fulfill the CPD requirement by considering career development opportunities for our students when they invite a speaker:**

- invite Pharmacology alumni (past students or postdocs)
- get students involved: solicit names for speakers from your students, involve your students by asking them to help you host your speaker, schedule in a slot for your speaker to meet with your students, to discuss their career path, etc.

RETREAT

Our annual retreat is held on campus in the month of September. This event gives a chance to hear about research in Pharmacology labs and to meet new students, and presents multiple opportunities to fulfill faculty participation requirements (i.e. RCR and CPD requirements for the year can be completed

by participating in the retreat). In addition, to ensure some level of interaction between program faculty and students, attendance by Program faculty at the retreat is strongly encouraged.

POLICY ON PARTICIPATION

Faculty participation will be monitored from year to year. Faculty members who have not participated in program activities over the previous academic year will receive a reminder from the Director that their membership in the Program is dependent on participation in training activities. The faculty member will be given an additional year to engage and address deficiencies in participation. Failure to engage in the program activities over multiple years, in the absence of extenuating circumstances, will be grounds for removal from the Program.