



JOHNS HOPKINS  
BLOOMBERG  
SCHOOL of PUBLIC HEALTH

*Department of Molecular Microbiology and Immunology*



DOCTOR OF PHILOSOPHY  
HANDBOOK  
(PhD)

**Student Guidebook**

*September 2011*

**DEPARTMENT OF MOLECULAR MICROBIOLOGY AND IMMUNOLOGY**  
**LOCATIONS AND PHONE NUMBERS OF FULL-TIME TEACHING FACULTY**

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This Guidebook, which supplements the School's *2011-12 Student Handbook*, is intended to summarize most of the School and Departmental requirements for your degree program. In addition, other practical information is included for your convenience.

The academic advisor assigned to you will assist you in the decision-making process during the initial phase of your studies.

## TABLE OF CONTENTS

LOCATIONS AND PHONE NUMBERS OF FULL-TIME TEACHING FACULTY	inside front cover
INTRODUCTION .....	3
STRUCTURE OF THE DEPARTMENT .....	3
Graduate Program Committee .....	3
Committee on Admissions and Financial Support.....	4
Graduate Officer .....	4
Graduate Student Organization.....	4
Facilities Committee .....	4
Appointments and Promotions Committee.....	5
REQUIREMENTS FOR FULL-TIME PHD DEGREE CANDIDATES .....	6
Advisor.....	6
Student Advising Committee.....	6-7
Laboratory Rotation .....	7-8
Research Forum & Lab Rotation report.....	8
Required Courses .....	8-10
Academic Performance & Academic Probation.....	10
PHD Comprehensive Written Examination.....	10
SUMMARY OF THE COMPREHENSIVE EXAMINATION PROCESS.....	11-14
Preliminary Oral Exam, Thesis/Dissertation Preparation/Final Seminar	
Final Oral Examination/Time Limitations/Vacation/Grievances/Animal Protocol .....	15-16
SUMMARY OF REQUIREMENTS FOR DEGREE CANDIDATES IN THE DEPARTMENT OF MOLECULAR MICROBIOLOGY AND IMMUNOLOGY.....	17
ADDITIONAL DEPARTMENTAL AND SCHOOL INFORMATION.....	18
Additional Course Information .....	18
Departmental Seminars .....	18
Administrative Personnel.....	18-19
Computer Accounts .....	19
MMI Fifth Floor Library.....	19
MMI Fifth Floor Conference Room .....	19
MMI Fifth Floor Student Computer Rooms .....	19
Departmental Mailboxes.....	19
School Mailboxes.....	19
Photocopying and Fax Facilities.....	19
MMI STANDING COMMITTEES FOR 2010-11 (w/revisions September, 2010) .....	inside back cover

## INTRODUCTION

The goal of the training programs in this Department is to provide a solid foundation in the biomedical sciences for a small group of carefully selected graduate and postgraduate students interested in addressing outstanding issues underlying infectious and immunologic diseases of public health importance. It aims to equip students with a diversity of disciplinary concepts and methodological tools to solve specific disease-related problems. This holistic approach requires a common core of knowledge of the populational, clinical, cellular and molecular aspects of disease.

## STRUCTURE OF THE DEPARTMENT

The administration of the Department is the task of the Chair, Dr. Diane E. Griffin, who has the overall responsibility for the educational and research programs in the Department. Major policies of the Department are adopted at monthly meetings of the full-time faculty. A representative of the Departmental student body attends the faculty meetings. A number of committees comprising intramural and extramural faculty and, in most instances, a student representative, voted for or volunteering at a meeting of the Departmental Student Association, carry on much of the business of the Department. The chair appoints the committees annually and membership rotates among the faculty. Each committee is responsible for some aspect of the Department's activities.

**1. Graduate Program Committee.** The overall responsibility for setting policy with respect to Departmental graduate students is vested in the Graduate Program Committee (GPC). The committee, with Dr. Gary Ketner currently serving as Chair, monitors the program of each graduate student, reviews the progress of each student on a semi-annual basis, and assures the maintenance of appropriate academic standards. The Graduate Program Committee meets on a regular basis and reports monthly at the Departmental faculty meeting, so that the entire faculty is kept informed of all policies and any specific problems that have occurred. The Graduate Program Committee

- a. is responsible for the review and evaluation of the graduate program;
- b. is responsible for monitoring and evaluating satisfactory academic progress of each student;
- c. develops general policies for the graduate program; for example, recommends requirements for intramural, extramural and part-time students;
- d. develops requirements for student advisement, coursework, and the comprehensive written examination;
- e. handles requests from students for exemptions from Departmental requirements.
- f. deals with policies regarding other aspects of student life in the Department.

The Graduate Program Committee also has overall responsibility for the Departmental curriculum. In this capacity, the Graduate Program Committee

- a. reviews content and organization of curriculum within the department
- b. approves new courses and changes to existing courses

Student Communication with the Graduate Program Committee: Because many of the matters that come before the Graduate Program Committee involve individual students and therefore are confidential, the GPC does not include a student member. However, the GPC welcomes comments, questions, and concerns from the departmental students. Students can communicate with the GPC in several ways. 1. Students may request that either the Student Coordinator or the departmental Graduate Officer present issues to the committee (both individuals attend each GPC meeting). 2. The President of the Graduate Student Organization, acting as

representative of the students, may request a meeting with the GPC to discuss a specific matter of concern to students. 3. Students may ask any departmental faculty member (for example their advisor, the departmental chair, or the chair of the GPC) to address the GPC on an issue or concern.

**2. Committee on Admissions and Financial Support.** This committee is charged with the responsibility of selecting the best-qualified students for admittance to the Department. It works closely with the Graduate Program Committee to assess the financial needs of new and continuing students and to assign the available financial support based on merit and need. Dr. Sean Prigge chairs this committee. The Committee on Admissions and Financial Support

- a. develops general requirements for admission to the Department and, in consultation with the Chair, decides the number of students to be admitted;
- b. evaluates student applications for admission to the Department as degree candidates or for regular and special student status;
- c. reviews requests from students for transfer to another degree program or to or from another Department;
- d. develops, with the concurrence of the Graduate Program Committee, a program of courses for regular special students who plan to re-apply for acceptance into a degree program in the Department;
- e. recommends eligible new and/or continuing predoctoral students for tuition and stipend scholarships.

**3. Graduate Officer.** A new Graduate Officer is selected by the students each year from among members of the Departmental faculty. His/her duties include establishing personal contact with individual students to ascertain good rapport among students, advisory committees and thesis advisors. The Graduate Officer serves as ombudsman to mediate any student problems that may arise. The Graduate Officer

- a. assists the Department Chair with respect to student affairs;
- b. provides information to the Graduate Program Committee for adequate evaluation of a student's progress;
- c. assists students in matters affecting their standing in the Department;
- d. keeps abreast of all regulations and requirements for Departmental students.

**4. Graduate Student Organization.** All MMI graduate students are members of the MMI Graduate Student Organization (GSO). The GSO generally meets at the annual departmental retreat to elect officers, and can meet at other times as often as the student's desire. Apart from the annual retreat meeting, GSO meetings and activities are organized by the students. Officers elected by the GSO who bear specific official responsibilities are a President, who can speak for students at GPC meetings, a representative to the School's Student Assembly, and Student Admissions Coordinators. Additional officers (Social Chair, Treasurer, etc.) can be chosen by the GSO if it wishes. In the past, activities sponsored by the GSO have included charity events, fundraisers, bowling parties, student birthday celebrations, etc.

**5. Facilities Committee.** The Facilities Committee, chaired by Dr. Alan Scott, supervises the operation and maintenance of commonly shared resources. The Facilities Committee

- a. monitors and administers common-use equipment and facilities. This involves the establishment of a budget for the administration of common-use facilities and equipment and for the purchase of common-use equipment;
- b. monitors common-use space, which includes, for example, the cold rooms, warm rooms, and areas where common-use equipment items are located;

- c. serves in an advisory capacity to the Department Chair on space needs. The committee members may also serve as site visitors in order to analyze space requirements to ensure the efficient use of space and to make recommendations for optimum utilization of available space to the Chair.

**6. Appointments and Promotions Committee.** This Committee, composed of full-time faculty at the level of Associate Professor and Professor ranks, advises the Department Chair on faculty promotion and tenure decisions and new appointments to the faculty.

The Department of Molecular Microbiology and Immunology follows the University's Policy Statements on Nondiscrimination of Students, Privacy Rights of Students, Alcohol Abuse and Drug-Free Workplace, Award of Degrees, Smoking, and Sexual Harassment as specified in the catalog.

## THE DEPARTMENTAL PHD PROGRAM AND REQUIREMENTS FOR PHD DEGREE STUDENTS

There are several levels of requirements for the completion of degree programs: those set by the school, those set by the department and those set by the thesis advisor. The degree requirements established by the School are contained in Policy and Procedure Memoranda available at:

[https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic\\_Programs\\_03\\_Doctor\\_Of\\_Philosophy\\_Degree.pdf](https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic_Programs_03_Doctor_Of_Philosophy_Degree.pdf) . School procedures information and forms can be found here:

<https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/DoctoralCandidateInfo/Pages/default.aspx>

The Departmental requirements for Molecular Microbiology and Immunology (MMI) are explained in this Student Guidebook. A student's thesis advisor generally will set requirements regarding the preparation for, and completion of, the thesis or dissertation project. A brief summary with an approximate timetable of the requirements of the school and of the department is included at the end of this section.

**Advisors.** Each new student is assigned an MMI faculty member as his/her academic advisor for the first year. The academic advisor assists the student in the selection of appropriate courses for the first year, acts as the student's source of information concerning school and departmental policies and procedures, helps the student with problems he/she may encounter, and is generally the faculty member in charge the student's first laboratory rotation. A student who wishes to change his/her academic advisor should contact the Student Coordinator, who will consult the GPC.

Selection of a thesis advisor takes place after completion of laboratory rotations (see below) and prior to the first term of the second year. After discussion with the prospective thesis advisor, the student should submit a completed Thesis Advisor Selection form (available on the departmental web site), signed by the prospective advisor, to the Student Coordinator for approval by the department Chair. Requests for extra time to determine a thesis advisor should be submitted to the Student Coordinator.

Approval of thesis advisor selection will take into account the interests of the student and the faculty member and the availability of resources in the faculty member's laboratory (e.g., funds, space, faculty time). Every effort will be made to accommodate a student's request to work with a specific faculty member for his/her thesis research. However, the department cannot guarantee that a student will be able to work in the laboratory that he/she selects as a first choice. In the event that a student's first choice cannot be met, an alternative will be arranged in consultation with the student.

Ph.D. students are actively discouraged from conducting their thesis research in laboratories outside of MMI (for example, at other institutions or in departments other than MMI). In unusual circumstances, waiver of this policy may be requested from the GPC. Requests must include compelling reasons why thesis research cannot be conducted within the department, assurance from the proposed extra-departmental thesis advisor that financial support will be provided, a detailed research plan and timetable, and an agreement by a member of the MMI faculty to act as co-advisor. In no case will MMI provide financial support for students conducting thesis research in other departments or institutions. This policy does **not** apply to field work conducted off-campus under the direction of an MMI faculty member.

**Thesis Advisory Committees.** Each student should form a Thesis Advisory Committee within one year of beginning thesis research. Thesis Advisory Committees are intended to increase opportunities for students to obtain faculty advice and to permit periodic evaluation of the student's research progress. Student advisory committees consist of a minimum of three faculty members, two of whom must be full-time members of the department with rank of assistant professor or higher. Committee members are jointly selected by the student and the thesis advisor. Students are encouraged to take advantage of the breadth of expertise available at the university and nearby institutions by selecting advisory committee members from outside the department. Outside members should have academic rank equivalent to assistant professor or above.

Student advisory committees are expected to meet at least once a year to review and evaluate the student's progress in his/her thesis research project. Following each meeting, the committee will complete a Student Advisory Committee Report form (included in the Guidebook and available on the departmental web site) summarizing the student's progress and performance and indicating any problems that may have been identified. The form should be submitted to the departmental Student Coordinator. Reports will be reviewed annually by the GPC. It is the responsibility of the student and his/her faculty advisor to ensure that the annual review by the advisory committee takes place. Failure to hold the annual review may jeopardize financial support the student receives from the department or from the school

Thesis Advisory Committees are intended to offer advice and perspective. A student's thesis advisor retains final authority to approve or disapprove any committee action and/or recommendation relating to the student's coursework and research.

**Laboratory Rotations.** Doctoral students must rotate through three MMI laboratories. Rotation periods in a series of laboratories broaden a student's knowledge of laboratory techniques and skills, provide exposure to a variety of research areas, help in selecting a laboratory for thesis research, provide an opportunity for interaction with several faculty members, and develop the ability to carry out a research project. Supervisors for the required rotations must hold a primary full-time appointment in MMI.

During a laboratory rotation, a student is given a specific research problem of limited scope as his/her rotation exercise. Because of the limited time available, it is not expected that a student necessarily complete the assigned project. At the end of the laboratory rotation term, the student will give a short oral presentation on the project at the Research Forum in Molecular Microbiology and Immunology (see below) The rotation supervisor will submit a written evaluation of the student's performance to the Student Coordinator and will assign a grade of Pass or Fail. Students are encouraged to discuss expectations (time and effort spent, etc.) with the rotation supervisor early in the rotation.

Each laboratory rotation lasts about 11 weeks. Rotation starting and ending dates are listed in the table below. Because laboratory rotations do not correspond to standard academic terms, **students should register for the Laboratory Rotations course (260.851) during the first, third, and fourth terms.**

Rotation Period	Dates	Register in term
First	8/25/11-11/23/11	1
Second	11/28/11-02/24/12	3
Third	2/27/12-5/25/12	4
<b>2011-2012 MMI Laboratory Rotation Schedule</b>		

The first rotation generally will be conducted in the laboratory of the student's academic advisor, who is assigned by the GPC. The selection of laboratories for subsequent rotations is the responsibility of the student. Students (with the assistance of their academic advisor) should identify potential laboratories for their rotations and consult with the faculty members in charge of these laboratories to arrange a rotation for a particular academic term. To assist students in identifying the research interests of the faculty, each faculty member has prepared a short summary of his/her ongoing projects which can be found on their official school web pages: <http://www.jhsph.edu/dept/MMI/Faculty/index.html>

Students may conduct rotations in addition to the three required in order to explore other laboratories or to learn particular laboratory techniques or skills. These extra rotations may be conducted in departmental laboratories or in labs outside MMI. Because PhD students generally must conduct thesis research in a

laboratory within the Department, **rotations outside the Department should not be considered a means for identifying potential thesis research laboratories.**

It is expected that substantial time will be spent in the laboratory during each rotation. In the case of questions on this point, seek the advice of your rotation mentor, the Graduate Office, GPC chair or MMI faculty member. Note that for registration purposes, laboratory rotations are used to 'top off' credits to the required level of 22 (see below). Therefore, there is no strict correspondence between credits and hours spent in the lab. Because students do not register for Laboratory Rotations in Term 2, Special Studies/Research is used for the same purpose.

**Research Forum and Laboratory Rotation Reports.** Ph.D. students must present reports after each of their laboratory rotations and periodically during their research work. These oral reports will be delivered during weekly Departmental Research Forum. Rotation reports are 20 minutes long and research reports are 30 minutes long. Presentation dates are assigned by the Student Coordinator; rotation reports generally will be scheduled within one to three weeks of the completion of the rotation.

In preparing a rotation report, students should keep in mind that it is most important to provide sufficient background and a sufficiently good explanation of the experimental rationale to make the rotation project and its objectives understandable by a diverse audience. As noted above, it is not required that students successfully complete their assigned rotation project, and many rotation reports cannot include firm conclusions. This is not a shortcoming if the presentation is clear, intelligible, and presents good analyses of any difficulties encountered.

#### Suggested organization of Rotation and Research Reports

1. *Introduction* - Present the background and rationale of the work and outline the working hypothesis.
2. *Experimental Design* - Describe the overall experimental approach. Do not present the minor details of experimental protocol. Explain how the study will provide evidence for or against the working hypothesis outlined in the introduction.
3. *Results/Discussion* - Results should be presented in an organized, meaningful and comprehensible manner. They should be compared with reports from the literature (if any) and be analyzed in the context of the working hypothesis.
4. *Summary/Conclusion* - Provide a short summary of the results and give an indication of future research directions.

An evaluation form (included in the Guidebook and available on the departmental web site) will be completed by two students and two faculty and returned to the student to provide constructive comments to improve future presentations.

#### **Required Courses.**

**First Year:** The Department requires that all Ph.D. students take the following courses in the first year. These courses must be passed with a grade of A or B; students not meeting that standard must repeat the relevant course(s) and pass with an A or B. Students may repeat a required course only once. Students must register for 22 credits each term. In general, classroom/seminar credits will not total 22; in that case, students should register for **260.851 Laboratory Rotation** (Terms 1, 3, and 4) or **260.840 Special Studies/Research** (Term 2) to make up the difference. (See Laboratory Rotations, above).

**TERM 1:**

Introduction to Online Learning: <a href="http://distance.jhsph.edu/iol/">http://distance.jhsph.edu/iol/</a>	(non-credit)
260.611 Principles of Immunology I	(4 units)
260.623 Fundamental Virology	(4 units)
260.822 Seminars in Research in Molecular Microbiology and Immunology	(1 unit)
260.821 Research Forum Molecular Microbiology and Immunology	(1 unit)
260.852 Molecular Biology Literature	(2 units)
260.801 Topics in Immunology	(2 units)
260.851 Laboratory Rotation	(8 units)

**TERM 2:**

260.612 Principles of Immunology II	(4 units)
260.652 Principles of Public Health Ecology	(4 units)
260.627 Pathogenesis of Bacterial Infections	(4 units)
260.822 Seminars in Research in Molecular Microbiology and Immunology	(1 unit)
260.821 Research Forum in Molecular Microbiology and Immunology	(1 unit)
260.802 Topics in Immunology	(2 units)
260.840 Special Studies/Research	(6 units)

**TERM 3:**

260.635 Biology of Parasitism	(4 units)
260.935 Biology of Parasitism Laboratory	(3 units)
260.822 Seminars in Research in Molecular Microbiology and Immunology	(1 unit)
260.821 Research Forum in Molecular Microbiology and Immunology	(1 unit)
260.625 Scientific Method Applied to Grant Writing (Pass/Fail)	(2 units)
260.851 Laboratory Rotation and elective courses	(12 units)

**TERM 4:**

260.822 Seminars in Research in Molecular Microbiology and Immunology	(1 unit)
260.821 Research Forum in Molecular Microbiology and Immunology	(1 unit)
260.851 Laboratory Rotation and elective courses	(20 units)

PhD students are strongly advised to take at least one departmental advanced course during each of the third and fourth terms of their first year. The specific courses taken should be chosen after discussion between the student and his/her advisor. Generally, these courses will include at least one in the area in which the student expects to conduct his/her thesis research.

**Second Year:** PhD students must also complete three of the eight courses of the BCMB *Foundations of Biology* program offered at the School of Medicine. ME 260.709 Molecular Biology and Genomics and ME 110.728 Cell Structure and Dynamics are required. The student is free to choose the third course. Please note that the dates of the academic terms at the School of Medicine are different from the School of Public Health. Please reference their website: [www.hopkinsmedicine.org/som/students/academics/GradCourses.html](http://www.hopkinsmedicine.org/som/students/academics/GradCourses.html)

ME 100.710 Biochemical and Biophysical Principles  
**ME 260.709 Molecular Biology and Genomics**  
ME 260.708 Genetics  
**ME 110.728 Cell Structure and Dynamics**  
ME 330.709 Organic Mechanisms in Biology  
ME 360.728 Pathways and Regulations  
ME 800.707 Computational Biology and Bioinformatics

Students who take the above School of Medicine courses must also take **Core Research Literature (Core Discussion) 120.852** for Pass/Fail. These courses are taken in the second year. The courses listed above must be passed with a grade of B or better. Students not meeting that standard for the two REQUIRED courses (ME 260.709 and ME 110.728) must repeat that course and pass with an A or B. Students not meeting that standard for the third course they chose to take must repeat that course or a fourth course of their choice and pass with an A or B.

PhD students must also take a course in **statistics**. The recommended course is 140.615 Statistics for Laboratory Scientists I, although other courses may be substituted after consultation with your advisor. Alternative courses include: 140.611/612 (Statistical Reasoning in Public Health 1 & 2) and 140.621/622 (Statistical Methods in Public Health 1 & 2.) The statistics course(s) generally will be taken in the second year.

All Departmental students must register for and attend Seminars in **Molecular Microbiology and Immunology (260.822)** and **Research Forum in Molecular Microbiology and Immunology (260.821)** in **each term**. These courses are graded Pass/Fail.

PhD students must complete **Responsible Conduct of Research (550.600, 1st term)** or **Research Ethics and Integrity (306.665, 3rd term)** and **Public Health Perspectives on Doctoral Research (550.865, 2nd term)**. These courses are usually taken during the second year.

Recommended course: 260.813 Survival Skills for Academia in the Lab Sciences (2 units, 2<sup>nd</sup> term)

**Note:** Under certain circumstances, Public Health Perspectives can be waived by students with an MPH degree from a domestic institution within the last ten years or students who have taken graduate-level courses in the five CEPH core areas that are biostatistics, epidemiology, social and behavioral sciences, environmental health sciences, and health systems administration. Waivers can be obtained from the instructor, *and need to be approved early in the student's PhD studies*.

The School also requires Ph.D. students to complete a minimum of 18 credits in formal courses outside his/her own department with no fewer than nine of these credits taken in the Bloomberg School of Public Health. All 18 credits must be taken for grade (Pass/Fail is not acceptable). Credits earned for Molecular Biology and Genomics, Cell Structure and Dynamics, the third choice of the BCMB program courses, and Current Research Literature, count toward the required credits outside of MMI. Credits for Research Ethics and Public Health Perspectives on Doctoral Research are counted as separate School Requirements and are not included in the 18-credit requirement.

Students who are supported on training grants shared with other departments in the schools of Public Health or Medicine may be required to take additional courses. Details are available from the departmental Student Coordinator.

Second year and later PhD students should register for a total of 22 credits per term, including classroom courses (if any), 1 credit for Research Forum, 1 credit for Seminar, and Thesis Research (260.820). PhD

students must also register for summer term: 12 credits thesis research plus 4 credits special studies for a total of 16 credits.

**Academic Performance and Academic Probation.** Doctoral students are required to maintain a 3.0 grade point average and, as noted above, complete required courses with a grade of B or better. Students who do not comply with these and other academic requirements may be placed on Academic Probation by the Graduate Program Committee. Formal notification of Academic Probation generally will be accompanied by conditions that the student must fulfill in order to be returned to good academic standing. Students who fail to meet those conditions may be dismissed from the program.

### **PhD Comprehensive Written Examination**

The School requires a departmentally-administered written comprehensive examination for students in doctoral degree programs. The comprehensive examination is intended to test competency in areas of study required by the student's home department. In MMI, the written comprehensive exam takes the form of a grant proposal written by the student on a topic selected in consultation with his/her academic advisor. The student's written proposal is evaluated by a committee of three MMI faculty and also is defended orally. The comprehensive examination is intended to test the student's grasp of basic factual material necessary for Ph.D. level research in molecular microbiology and immunology and his/her ability to integrate the information obtained in the several disciplines of departmental interest. The examination also tests each student's ability to identify important scientific problems and to formulate hypotheses and plausible experimental approaches to testing those hypotheses.

### **Summary of the Comprehensive Examination process.** (See timetable, below)

- Each student selects a general area for the comprehensive examination proposal from a list prepared by the Graduate Program Committee and published by the Student Coordinator. A specific topic in that general area is then chosen in consultation with the student's academic advisor.
- A letter stating the specific topic and the experimental system (usually a microorganism) to be used in the proposal, countersigned by the academic advisor, is provided to the Student Coordinator. The specific topic may not be similar to that used in the grant writing course, the student's likely thesis topic, nor a topic used by any student for the comprehensive examination in the previous year. (A list of previous topics is available from the Student Coordinator.)
- The GPC appoints a proposal review committee of three MMI faculty members. The student's academic advisor serves as the Chair of the committee.
- Each student furnishes to his/her advisor a document of about one page stating the proposal's hypothesis and specific aims. The student's proposal review committee comments on the suitability of hypothesis and specific aims to the student *via* the advisor. If necessary, the advisor assists the student in revision of hypothesis and aims.
- Copies of the finished written proposal are distributed to each committee member and to the Student Coordinator by the date specified below.
- An oral exam is conducted. The student must arrange the date and time of the oral examination.

## MMI Ph.D. Comprehensive Examination Timetable

Steps	Dates	Who is responsible?
General topics posted	3/12/2012	GPC
Letter stating specific topic due to Student Coordinator	4/13/2012	Student
Proposal Review Committee appointed	4/20/2012	GPC
Hypothesis and Specific Aims (one page) due	4/27/2012	Student
Committee response to student	5/11/2012	Advisor/Committee
Final proposal due	6/22/2012	Student
Oral examinations completed	7/20/2012	Student/Committee

**Hypothesis selection.** The following guidelines should be used in formulating the hypothesis.

- The hypothesis may be relevant to the research interests of the student, but should NOT be closely related to the student's prior rotation projects, likely thesis research topic if known, topics used for proposals written for courses, or topics used for the exam by students in the previous year.
- The hypothesis should address unanswered questions in the selected field.
- The hypothesis should be amenable to formulation of specific aims which are testable with existing methodology and technology.

**Written proposal.** The written proposal must include the **Project Summary, Specific Aims, Research Strategy** (including Significance, Innovation, and Approach) and **Bibliography** components of an NIH RO1 grant application. The administrative pages, (biosketches, experimental subjects, budgets, etc.) of an RO1 should not be included. A summary of the relevant NIH RO1 instructions will be available from the Student Coordinator at the time that topics are published. For the full instructions, see [http://grants.nih.gov/grants/funding/424/SF424\\_RR\\_Guide\\_General\\_Adobe\\_VerB.pdf](http://grants.nih.gov/grants/funding/424/SF424_RR_Guide_General_Adobe_VerB.pdf).

The total length of the proposal excluding references **can be up to 10 pages**, Arial 11pt. font, single spaced. Figures are included in the page limit. The required components of the proposal and suggested lengths are:

Project Summary: No longer than 30 lines of text.

Specific Aims (including the Hypothesis): 1/2 - 1 page

Research Strategy

    Significance: 1-3 pages

    Innovation: 1/2 page

    Approach: 5-8 pages

References: No limit

**Scoring of written proposals.** The Specific Aims, Significance, Innovation, and Approach components of proposals will be scored independently by each member of the committee using the Scoring Form (p15) prior to the oral defense. These forms will be turned in to the Student Coordinator after the Oral defense. Points will be awarded to individual components of the written proposal according to the scale below: Note that the Project Summary and Bibliography must be present, but are not scored.

PROJECT SUMMARY - Required, not scored

SPECIFIC AIMS - 10 Points maximum

Summarize important issues in a paragraph

Clearly state hypothesis

State and justify specific aims in the context of the hypothesis

SIGNIFICANCE - 30 Points maximum

Critical review of the literature and current state of knowledge

Identification of gaps in current knowledge

Definition of issues to be addressed by the proposal

Statement of significance of the issues addressed

INNOVATION - 10 Points maximum

How the application challenges and seeks to shift current research paradigms.

Describe novel theoretical concepts, approaches or methodologies

Explain refinements, improvements, or new applications of approaches, methodologies, or instrumentation.

APPROACH - 50 Points maximum

Clear explanation of rationale and experimental design

Justification of feasibility of proposed experiments

Controls must be included and justified

Statistics (if appropriate) must be presented

Pitfalls and alternate approaches should be discussed.

BIBLIOGRAPHY - Required, not scored

**Pass/Fail criteria - Written proposal.** A score of 70% of the possible points must be achieved on each scored component of the written proposal, calculated as the average of the scores of individual committee members. Students receiving fewer than 70% of the possible points on two or more components of the written proposal will have failed the written examination. Students receiving fewer than 70% on one component will be allowed to rewrite that component. If a score of 70% is not obtained after rewriting the relevant section, the student will have failed the examination. If a student has not passed after two attempts, he/she may be dismissed from the PhD program.

**Oral defense.** The defense will consist of a brief (10-15 minute) summary of the proposal, followed by questions from the committee. Students are strongly encouraged to use PowerPoint or similar software in presenting their summary. **During the exam, questions will address topics both related to and outside the area of the proposal** to assess the student's breadth of understanding of material presented in required coursework, departmental seminars, and research forum. The defense will be one to two hours long.

**Scoring of oral defense.** After the defense, the committee will meet in private in to determine a defense outcome. The following framework should be used in evaluating the oral defense:

20% of emphasis: Summary.

30% of emphasis: Discussion of questions posed by committee specific to proposal, including

1. Demonstration of knowledge of concepts and terms used in proposal
2. Explanation of why this topic was honed from subject matter
3. Demonstration of understanding of experimental design and what it tests

50% of emphasis: Discussion of questions extending beyond immediate subject areas to other fields in microbiology and immunology. (Remember, this is a Comprehensive Exam.)

**Outcome of oral defense.** The outcome of the oral defense will be reported to the Student Coordinator by the Chair of the committee by a notation on his/her Scoring Form. Possible outcomes are Pass, Conditional Pass, or Fail. The committee will impose specific conditions upon students who receive a Conditional Pass and will specify a timetable and mechanism for satisfying the condition. Students who fail the oral defense must repeat the defense within a time frame specified by the committee. If a student has not passed after two attempts, he/she may be dismissed from the PhD program. Note that the outcomes of the written and oral elements of the Comprehensive Exam need not be the same.

Examining committees may, at their discretion, discuss scores with the student after the examination. However, students will be informed of the official outcome of the exam by a letter from the GPC.

**Discussions with others.** This is an examination, and the **written proposal** must be the student's own work. However, students should expect to receive their committee's comments on their Specific Aims (see above). Additionally, students are encouraged to seek help in identifying the questions to be addressed by the proposal, and to discuss their original ideas, concepts, experimental approaches, techniques, etc. with advisors, faculty and colleagues at whatever length. The GPC suggests that students hold at least three substantive meetings with their advisors: prior to topic selection, before finalization of specific aims, and during preparation of the exam.

However, that others cannot offer critiques, comments, or editorial help on your written exam drafts.

**Grant Writing Course.** To assist students in both the mechanical and scientific aspects of proposal preparation, a course in Grant Writing (260.625, 2 credits) is offered 3rd term.

**Scoring Form - MMI Ph.D. Comprehensive Exam**

Student: \_\_\_\_\_

Examiner: \_\_\_\_\_

Date: \_\_\_\_\_

**Part A: Written Proposal**

	<u>SCORE</u>	<u>(Passing score)</u>
PROJECT SUMMARY	(Not scored)	
SPECIFIC AIMS - 10 Points maximum	_____	(7)
SIGNIFICANCE - 30 Points maximum	_____	(21)
INNOVATION - 10 Points maximum	_____	(7)
APPROACH - 50 Points maximum	_____	(35)
BIBLIOGRAPHY	(Not scored)	

**Part B: Oral Defense (To be filled out by Committee Chair only)**

Outcome (Pass, Conditional Pass, Fail) \_\_\_\_\_

Condition (if applicable):

**Each committee member should score the written proposal before the oral defense and bring his/her grade sheet to the oral. Please return all scoring sheets to the Student Coordinator after the oral defense.**

## **Preliminary Oral Examination for Doctoral Students**

The purpose of this examination, required and administered by the University for PhD candidates, is to determine whether the student has the ability and knowledge to undertake thesis research. It is taken after the student has fulfilled all departmental requirements including the comprehensive examination. The Preliminary Oral Examination must be taken within 24 months of matriculation. Examiners will be concerned with the student's reasoning ability; depth and breadth of knowledge; and ability to develop and conduct research leading to a completed thesis or dissertation.

Students may prepare a short talk (10 min) on their research to serve as an introduction to the examination. A written research proposal can also be prepared if desired. However, a written proposal or a defined thesis project is not required for the examination **nor will the examination be confined to topics related to a proposal**. If a proposal is written it should describe the student's anticipated thesis research, including enough background information to put the proposed research in context, a statement of the objectives of the research, and an outline of the experimental approach to be used. Preliminary data collected by the student also can be included. The proposal should be concise (no more than 5 pages). As noted above, **the examination is not intended to be a defense of a specific proposal, and may range widely over unrelated topics**.

Examining committee members and alternates will be selected by the academic advisor in accordance with rules determined by the university. The student is responsible for arranging a time and place for the examination. Current regulations and examining committee appointment forms can be obtained from the Student Coordinator or the Registrar's office.

Instructions for scheduling the preliminary oral examination can be found here:

<https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/DoctoralCandidateInfo/Documents/PhD%20and%20ScD%20Oral%20Exam%20Form.pdf>

## **Thesis/Dissertation Preparation**

Details on the format of the written dissertation (e.g., quality of paper, margins, illustrations, etc.) are available from the Registrar's office and at <http://library.jhu.edu/services/cbo/guidelines.html>

Additional guidelines regarding completion of degree requirements can be found here:

<https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/DoctoralCandidateInfo/Pages/default.aspx>

## **Final Seminar Presentation**

At the conclusion of their thesis/dissertation research, students are required to present their work at a formal seminar that is advertised throughout the University. The final doctoral seminar is usually scheduled in conjunction with the thesis defense described below.

## **Final Oral Examination for Doctoral Candidates (Thesis defense)**

The examination is a defense of the dissertation. Examining committee appointment forms are available from the Registrar or Student Coordinator. Policies governing the conduct of the examination are available from the Registrar's office and online ([https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic\\_Programs\\_03\\_Doctor\\_Of\\_Philosophy\\_Degree.pdf](https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic_Programs_03_Doctor_Of_Philosophy_Degree.pdf)).

## **Time Limitations**

University policy specifies that not more than seven calendar years may elapse between the date of matriculation and fulfillment of all requirements for the doctoral degree programs. Students needing an extension of the time limitation in their degree programs must obtain the approval of the Graduate Program Committee and the School's Committee on Academic Standards.

## **Miscellaneous program policies**

**Academic Ethics and Responsible Conduct of Research.** MMI requires students to adhere rigorously to the School's standards for Academic Ethics and Responsible Conduct of Research in all activities. Violations of these standards are grounds for dismissal from the program. Policies are detailed in Policy and Procedures Memoranda (PPMs) "Students 01 Academic Ethics" and (for research, including student research) "Faculty 07 Scientific Misconduct". PPMs can be accessed at <https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/Pages/default.aspx>.

A lecture introducing students to these topics will be presented during the first term. Time and location will be announced by the Student Coordinator. Attendance is required. Each student is also required to complete the online module on Academic Ethics (<http://commprojects.jhsph.edu/academics/AcademicEthics.cfm>) within two terms of matriculation. Additionally, students are required to complete Responsible Conduct of Research (550.600, 1st term) or Research Ethics and Integrity (306.665, 3rd term) in their second year (see **Required courses**, above).

**Criteria for dismissal from the Doctoral Program.** Students may be dismissed from the MMI Doctoral program for reasons that include (but are not limited to) failure to satisfy conditions specified for removal from academic probation, failure to maintain an adequate GPA, failure to pass required courses with a grade of B or better, failure of the Departmental Comprehensive Examination or Preliminary Oral Examination, failure to make satisfactory progress in thesis research, violations of academic or professional ethics, and failure to adhere to School time limitations.

**Department Retreat.** In the Fall of each academic year, the MMI faculty and students attend a 2 day retreat at a location away from campus. The retreat is held over a weekend and includes faculty presentations and student posters on research currently be conducted in the department. The retreat ends with a key note talk from an investigator outside of MMI. The retreat provides students with an important opportunity to meet faculty and discuss possible rotation and thesis projects. The retreat also provides students with the chance to meet faculty and students and learn more about research being conducted in the department. Attending the retreat, including talks and poster sessions is mandatory for PhD and ScM students and optional for MHS students. The retreat is free for students. Costs are paid by the Department.

**Vacation/Holiday Policy.** Graduate student holiday and vacation schedules traditionally have been flexible and determined by individual laboratory policy. Guidelines which reflect the department's expectations are outlined below. These guidelines are not intended to eliminate flexibility in the scheduling of holidays and vacation, and do not replace any conditions that might be imposed by fellowships/funding agencies. These guidelines also do not restrict legitimate academic or research activities conducted off campus, such as attendance at scientific meetings and field work. Students are generally entitled to the following holidays and vacation time:

University holidays

Spring break

The period between last day of 2nd term and the first day of winter intersession

A two-week vacation in the second and subsequent years as scheduled by arrangement with the advisor.

Graduate students are expected to be present during winter intersession and summer term or as required by their experimental protocols.

**Grievances.** Students who believe that they have legitimate grievances with their advisor, other faculty, or other students are encouraged to discuss the problems with their advisor (if appropriate), the Graduate Program Officer, the Chair of the GPC, or the Chair of the department. Advice also can be sought from any Departmental

faculty member. Students who wish to pursue grievances at the school level should see [https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Students\\_07\\_Student\\_Grievance\\_Procedure.pdf](https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Students_07_Student_Grievance_Procedure.pdf)

**Animal experiments and protocols; radiation licenses; pathogen, and recombinant DNA registrations.** Any student who participates in animal experiments must be added to the appropriate animal protocol before beginning work. Changes to animal protocols (including addition of personnel) are the responsibility of the Principle Investigator (PI) of the protocol. Students also must complete online animal research training and must enroll in the Animal Exposure Surveillance Program prior to beginning work. If your thesis or rotation project involves animals, please discuss these matters with your advisor.

Students must also be added to radiation licenses, pathogen and recombinant DNA registrations by the PI as required. In general, training in procedures is required for work with these agents. The PI will make information available to students in his lab.

**SUMMARY OF REQUIREMENTS FOR DEGREE CANDIDATES IN THE DEPARTMENT OF MOLECULAR MICROBIOLOGY AND IMMUNOLOGY**

The chart below lists the combined School and Departmental degree requirements:

REQUIREMENT	DEGREE PROGRAM		
	PhD	ScM	MHS
Comprehensive written exam	+	+	None
Preliminary orals	+	None	None
Dissertation/thesis/essay	+	+	+
Final orals	+	None	None
Seminar presentations	+	+	+

## ADDITIONAL DEPARTMENTAL AND SCHOOL INFORMATION

**Additional Course Information.** Many university-wide courses can be used to fulfill specific requirements. Consult the catalogs of the various university divisions available for viewing in the Office of the Registrar.

1. Bloomberg School of Public Health catalog -- see interdepartmental programs.
2. School of Medicine catalog.
3. School of Arts and Sciences (Homewood Campus) catalog.

**Departmental Seminars.** A weekly Departmental Seminar is held at 12:00 pm on Thursdays during the academic year and **all students are required to attend.** Research Forum is held at 12:00 pm on Mondays and **all students are required to attend.**

Students are encouraged to participate in Journal Clubs in Immunology, Molecular Parasitology, Programmed Cell Death, Vector Biology and Virology, which are scheduled at various times throughout the week.

**Administrative Personnel.** The departmental offices are located in Rooms E5132, E5001, E5005, E5006 and E5008. Eleven staff members serve the needs of the faculty and students.

**Debbie Bradley** (Room E5132) serves as Department Administrator. She directs all aspects of finances, budgets, permanent equipment, and space requirements for the department and has overall responsibility for the administration of the department and the Malaria Institute. This includes the pre- and post-award grant administration, HR/payroll, equipment and facilities.

**Gail O'Connor** (Room E5008) serves as Sr. Academic Program Coordinator. She handles all aspects of students' academic careers, tuition, medical and dental insurance and admissions. She attends meetings of several departmental committees concerned with students and academic programs.

**Nancy Lance** (Room E5132) serves as Sr. Human Resources Coordinator. She handles all HR/payroll related issues for faculty, staff, post-docs and students.

**Thom Hitzelberger** (Room E5132) serves as Budget Specialist and is responsible for reviewing the accuracy of invoices and preparing fiscal documents required to pay vendors for goods and services. He also catalogs and is responsible for the purchasing of departmental equipment. He handles the mail distribution for the department, and distributes the salary and stipend checks to members of the department. In addition, he serves as "key operator" for the departmental photocopier, printers, and fax machine and also reconciles monthly budget statements.

**Meredith Piplani** (Room E5136) serves as Financial Manager for the Department of MMI. She is responsible for monitoring the finances of the Department as well as the Malaria Institute. She provides financial support and guidance to the finance staff, students and faculty who are submitting grant applications.

**Joan Evans** (Room E5001) serves as Research Service Analyst. She is responsible for the development and preparation of research grants and contracts. She provides support and guidance to faculty who are submitting applications or renewals for grants and is responsible for updating the faculty's "other support" for NIH grant applications.

**Joseph Troilo** (Room E5006) serves as Research Service Analyst. He is responsible for the development and preparation of research grants and contracts for the faculty of the Malaria Institute. He

provides support and guidance to faculty who are submitting applications or renewals for grants and is responsible for updating the faculty's "other support" for NIH grant applications. Joe also reconciles monthly budget statements.

**Konstantin Milman** (Room E5005) serves as Web/Systems Specialist for the Department. He is responsible for the maintenance of two web sites (MMI & MRI). He provides PC/MAC support for faculty, staff and students.

**Leonid Shats** (Room W5713) has oversight of Departmental equipment. Leonid provides instruction in use of the Departmental microscopes, performs some routine maintenance, and repairs or arranges repairs of Departmental equipment. Repair requests are submitted online through the MMI web site.

**Chad Barnwell** (Room E5006) serves as Budget Analyst and is responsible for reviewing the accuracy of invoices and preparing fiscal documents required to pay vendors for goods and services for the Malaria Institute. Chad also provides support and guidance to faculty who are submitting applications or renewals for grants and is responsible for updating the faculty's "other support" for NIH grant applications.

**Ellen Dicks** (Room E5132) serves as Administrative Coordinator to the Department Chair. She is responsible for maintaining Dr. Griffin's daily schedule, arranging her appointments, meetings and travel. She is the coordinator of the MMI Research Seminar Series.

**Computer Accounts.** See "Information Systems" in the School's *Student Handbook*. All full-time students will be issued an email account at orientation.

**Financial Aid.** Masters students are not generally supported by Departmental funds. Sc.M. students are eligible for a second-year scholarship from the School after all Departmental requirements except the thesis are fulfilled. This scholarship reduces tuition by 75%. Contact the Student Coordinator for details.

**Student/Faculty Forum.** Informal meetings are held periodically to facilitate communication between students and faculty. Its purpose is primarily to exchange views and to initiate policy changes. A topic relevant to students is discussed; for example, required courses, finding a post-doc. The Graduate Officer welcomes suggestions for discussion topics. This forum also provides an opportunity to inquire about degree requirements and for meeting informally with faculty and students. Refreshments are served.

**MMI Fifth Floor Conference Rooms.** These rooms are available for journal club meetings, student or faculty committee meetings, special seminars, and group study sessions. There is a calendar available on each door to reserve a conference room.

**MMI Fifth Floor Student Computer Room.** This room (E5003) is available to all MMI students. Several computers, scanners, and laser printers are available for your use. Please contact Konstantin Milman to have him link your laptop to the printers in E5003.

**Departmental Mailboxes.** All students in the Department are issued mail-slots located in Room E5131. These slots are used for telephone messages, Departmental and School correspondence and announcements, as well as for any mail addressed to students in care of the Department. **It is important for students to check their mailboxes frequently.** Mail is distributed twice a day, once in the morning and once in the afternoon.

**Student Lockers.** Student lockers are available and can be reserved during orientation each August. For more information, contact the Student Coordinator.

**School Mailboxes.** Since the Department provides mail-slots for its students, no School mailboxes will be issued.

**Photocopying and Faxing.** To use the Departmental photocopier in Room E5033, students must have their badge activated. Please see Thom Hitzelberger to have your badge activated. Only work authorized by the Department, e.g., course-related copying, may be charged.

The Departmental fax machine is located in Room E5003; the number is 410-955-0105.

**Departmental web site** (<http://jhmmi.jhsph.edu/>). A great deal of information, many forms, and interactive functions such as repair requests and equipment scheduling are available on the Departmental web site. Some functions require login with your e-mail user name and password.

**Student Assistance Program (JHSAP)** This program provides support to students in dealing with the pressures and problems they encounter during their academic careers. SAP services are private and confidential, in accordance with state/federal laws and University policies. There is no cost to a student for utilizing SAP services. For more information please call 443-287-7000 or visit the website at <http://www.jhsap.org/>

**Personal information.** Please report changes in home address, phone numbers, etc. to the Student Coordinator.