

The Ph.D. [Program in Immunology and Microbial Pathogenesis \(IMP\)](#) is designed to take a multidisciplinary approach to the field by providing the student with a strong basic knowledge of immunology, microbiology, biochemistry, cell biology, and molecular biology, with additional exposure to other areas of related interest. The ultimate goal of this program is to provide aspiring students with the background, training and experience necessary to launch careers as independent scientific investigators.

Program Directors:

Chris Snyder, PhD 215-503-2543 christopher.snyder@jefferson.edu, 730 BLSB
Fabienne Paumet, PhD 215-503-8567 fabienne.paumet@jefferson.edu, 750 BLSB

IMP Ph.D. Program Committee:

David Abraham, PhD; Gudrun Debes, DVM; Claudio Giraud, PhD; Luis Sigal, DVM, PhD; Sangwon Kim, PhD; Fabienne Paumet, PhD (Chair); and Christopher Snyder, PhD (Chair)

Program Coordinator:

Danielle Park 215-503-0164 danielle.park@jefferson.edu M-46 JAH

General PhD Requirements: The PhD degree earned through the IMP Program requires the student to complete all degree requirements of both the Program and the Jefferson College of Graduate Studies (JCLS). JCLS requirements are described in the JCLS catalog and, in greater detail, in the "Guide to the PhD Degree and Thesis Manual" available at <https://www.jefferson.edu/university/biomedical-sciences/student-resources/policies-guidelines.html> An IMP specific synopsis of these requirements follows in this handbook.

Credit Requirements: A minimum of 180 credits beyond the bachelor's degree are required. 54 of these credits must be from a combination of required and elective coursework, including seminar/journal club. At least 18 of these credits must be from outside the major Program (i.e. not IMP). The remaining credits are dissertation research credits. Full time enrollment in the Fall Semester is 20 credits, Winter and Spring combined is 30 credits, and Summer Semester is 10 credits.

Transfer of Credits: A student may be able to receive transfer credits up to a maximum of 18 credits for graduate level courses taken at another institution per policy described in the JCLS Catalog. Check with the Program Directors or the Training Programs Office for more details regarding credit transfers.

Guidelines for Good Standing:

1. Maintain a B average in coursework, and rotations.
2. Performance in core courses – GC 550, IMP 505 A and B, IMP 530, IMP 600
 - a. A grade less than a B- in any core course could be grounds for dismissal. If this takes place, the IMP Ph.D. Program Committee will meet with the student. The final decision rests with IMP Ph.D. Program Committee.
3. A grade less than B- in any advanced course triggers a meeting with the IMP Ph.D. Program Committee, and could be grounds for dismissal from the Program after review of circumstances and overall performance.
4. Student must demonstrate progress toward a 1st author paper by the end of year 2 or earlier.
5. Committee meeting every 6 months is mandatory.

Course Calendar

60 credits total	Fall (15 wks)	Winter (4 wks)	Spring (16 wks)	Summer (16 wks)
Year 2	IMP 530 (Infection and Immunity-3 credits) Sigal/Paumet		GC730 (Grant writing-1 credit) Philp	GC 675 (Cancer Immunology-2 credits) Snook
			NS 740 (statistics-2 credits) Chervoneva	Comprehensive examination
	IMP 712 (Journal club- 1 credit) Kim		IMP 722 (Journal club-1 credit) Kim	IMP 732 (Journal club-1 credit) Kim
	IMP710 (Seminar – 1 credit) Sigal/Schnell		IMP720 (Seminar – 1 credit) Sigal/Schnell	IMP730 (Seminar – 1 credit) Sigal/Schnell
	IMP910 (Thesis research – variable credits) Snyder/Paumet	IMP940 (Thesis research – variable credits) Snyder/Paumet	IMP920 (Thesis research – variable credits) Snyder/Paumet	IMP930 (Thesis research – variable credits) Snyder/Paumet

60 credits total	Fall (15 wks)	Winter (4 wks)	Spring (16 wks)	Summer (16 wks)
Year 3	IMP 712 (Journal club- 1 credit) Kim		IMP 722 (Journal club-1 credit) Kim	IMP 732 (Journal club-1 credit) Kim
	IMP710 (Seminar – 1 credit) Sigal/Schnell		IMP720 (Seminar – 1 credit) Sigal/Schnell	IMP730 (Seminar – 1 credit) Sigal/Schnell
	IMP910 (Thesis research– variable credits) Snyder/Paumet	IMP940 (Thesis research- variable credits) Snyder/Paumet	IMP920 (Thesis research– variable credits) Snyder/Paumet	IMP930 (Thesis research – variable credits) Snyder/Paumet

Presentation of Scientific Information

The student must register for Journal Club each semester, beginning in Spring of year 1 through the end of year 3. For students in year 4 and beyond participation is voluntary and encouraged.

Starting in their second year, after completion of the Comprehensive Examination, each student will present his or her progress once a year in the "Research in Progress" section of the Microbiology & Immunology Seminar series that occurs on a weekly basis and in which pre- and postdoctoral trainees participate. Students register for Seminar (IMP 710, 720, 730) each semester until defense.

Laboratory Research Rotations: During the first year of study, graduate students are required to rotate through at least two different laboratories (three are strongly recommended). The purpose of laboratory rotations is threefold:

- 1) to expose the student to various experimental approaches to laboratory research problems dealing with different aspects of biomedical research,
- 2) to help the student select a dissertation research advisor, and

3) to assist the faculty in evaluating the student's strengths and areas needing further attention. The student arranges his or her research rotations in consultation with the Program Directors based on the student's own interests and the willingness of a faculty member to serve as rotation mentor. The student is expected to spend all available working hours when not attending classes engaged in **research-related activities** during each of these rotations.

All IMP rotations will be completed in Fall, Winter, Spring, and Summer; an early start in the summer prior to matriculation is an option that is encouraged and can be arranged.

At the end of each rotation, the student is required to submit a brief written report summarizing the rationale of the experiments conducted, the methodologies, results, and a brief discussion. The faculty member in whose laboratory the rotation has occurred then makes a written evaluation of the student's performance for each rotation.

Evaluation at End of the First Year: The IMP Ph.D. Program Committee will evaluate the performance of students in the Program at the end of the Summer semester. The criteria for evaluation will be the student's course grades, lab rotation evaluations, and participation and presentations in Journal Club. Students deficient in any of these areas will be brought before the Committee to discuss problems and possible ways to remedy the situation. Students with overall poor performance and judged unable to rectify the situation will be asked to leave the Program at this time.

Thesis Advisor and Research Advisory Committee: The Program Directors will be the student's advisors during the first year and will meet with the student in order to establish the student's academic program and ascertain the nature of the student's research interests. Subsequent meetings will occur at the end of the first and second semesters in order to review academic progress and the development of research interests.

Permanent thesis advisor: The Thesis Advisor is selected on the basis of the student's academic accomplishments and research interests in consultation with the Program Directors after the completion of three laboratory rotations.

Research Advisory Committee (Thesis Committee): This Committee is selected by the student and permanent thesis advisor, in consultation with the IMP Ph.D. Program Committee. This committee needs to be formed before December 31 of the second academic year, with the first committee meeting completed by March 31 of the second academic year. The Research Advisory Committee shall consist of the permanent thesis advisor and at least three other members of the graduate faculty; two of them should be members of the IMP Program. One member can be from outside of the Program (or a faculty from another institution with the appropriate credentials). The Program Directors are ex-officio members of all student Advisory Committees and, as such, should be notified of the date and time of each meeting. Each student must have at least two Committee meetings per academic year. **It is the responsibility of the student to arrange Committee meetings and procure forms for recording minutes. Meeting forms are available on the JCLS webpage under "student resources → policies & guidelines" at the following web address: <https://www.jefferson.edu/academics/colleges-schools-institutes/life-sciences/student-resources/policies-guidelines.html>, or from Danielle Park. There is one form for the committee chairperson and a second form for each individual member (including the chairperson).** All forms should be returned to the Training Programs Office for inclusion in the student's file and distribution to the JCLS Dean. Either the student or thesis advisor may call committee meetings at any time.

If a student desires to change a permanent thesis advisor, or a thesis advisor desires to be relieved of responsibility to a student, the matter will be brought before the Graduate Studies Committee for consideration.

Comprehensive Examination: A student in good academic standing officially becomes a candidate for the degree of Doctor of Philosophy after passing the Comprehensive Examination. The main purpose of this examination is to determine the student's readiness to conduct independent scientific research. Additionally, the exam will identify weaknesses in the student's progress at the time of the exam. Students

who cannot pass this exam to the satisfaction of the Examination Committee will not be recommended for continued study in the Ph.D. program.

1. The exam will be scheduled before June 30 of the second academic year. Any requests for a change in this schedule will be evaluated for approval by the IMP program committee.
2. An Examining Committee is convened by the IMP Ph.D. Program Directors. The student's thesis advisor will not be part of the Examining Committee but may participate in discussions regarding the student before the examination.
3. At least two weeks prior to the exam the student is expected to distribute a hardcopy of the written grant proposal (F31 format) to the members of the Immunology and Microbial Pathogenesis Examining Committee. In addition, an e-copy can be emailed, as per the request of examining committee members. This proposal, which forms the basis for the subsequent oral examination should be based on the student's anticipated thesis project. The Proposal should conform to the following guidelines:
 - a. **Fonts and margins:** minimum margin of 0.5", single-spaced with Arial or Helvetica font, no smaller than 11 pt in the text.
 - b. **Required Sections:**
 - i. Abstract/summary (no more than 500 words)
 - ii. Specific Aims (1 page maximum),
 - iii. Research Approach (6 pages maximum) containing i) Significance, ii) Innovation iii), Background, iv) Preliminary data and v) Research plan for each specific aim. **The research plan for each specific aim should contain a discussion of anticipated and other possible results, interpretations of possible outcomes, pitfalls and alternative approaches, and future directions.**
 - iv. Cited references (no page limit).
4. The student is expected to write the proposal entirely on his or her own, but it is strongly suggested that he/she consults with colleagues (e.g. other students, postdocs and faculty) regarding the content of the proposal. The student's thesis advisor can read the proposal once and give general advice on the strength and weaknesses but should not be involved in the writing of the proposal (e.g. providing previous grants on the same topic or editing).
5. The oral examination is scheduled for a minimum of two-hour period. During this time, the committee will evaluate the student on multiple components including: **1)** basic/ fundamental knowledge including materials covered in GC550 and IM505A, **2)** their ability to state clearly the hypotheses to be tested, **3)** in depth knowledge of background information and logic to support the significance of their hypotheses, **4)** the rationale and technical details of the experimental design, **5)** alternative approaches and interpretations based on hypothetical results, **6)** caveats and limitations of each experimental and technical approach discussed, **7)** the written document as a whole, and **8)** the oral presentation.
6. There are 3 possible outcomes of the examination, each of which will be determined by a **unanimous vote** of the Examination Committee:
 - a. **Pass:** If the members of the Examination Committee agree that the student has satisfied the 8 required components during the oral examination, the student will receive a grade of "pass" and be passed on to candidacy for the Ph.D.
 - b. **Conditional Pass:** Inadequate performance in up to 3 of the 8 sections described above will result in a "conditional pass". In this case, the student will be asked to revise the written document to address the inadequacies, or repeat the oral defense as appropriate. The Examination Committee will provide the student with a critique and outline the needed improvement(s). One of the committee members will be assigned to support the student and address any concerns or questions. The student has until **September 1st** after the initial oral examination to complete and distribute the revised proposal to the members of the Examining Committee, unless an extension is expressly authorized by the Examination Committee. Dependent on the required improvement of the first examination, the Committee will reevaluate the proposal and/or the student's performance in an oral examination.
 - i. If the majority of the Examining Committee agrees, the student is passed on to candidacy for the Ph.D.

- ii. If the student is unable to satisfactorily improve the proposal or their oral exam, the potential for remediation and the format of any needed remediation exam, will be determined by the Examination Committee in consultation with the IMP PhD Program Committee. Failure to improve to the satisfaction of the Examination Committee and the IMP Program Committee will result in the student no longer being considered as a candidate for the Ph.D.
- c. **Fail:** Inadequate performance in any 4 or more components of the initial exam will result in a failure. In the case of failure, the format of a re-exam will be determined by the Examination Committee in consultation with the IMP PhD Program Committee and the student's thesis advisor. As above, the student will be provided with a critique and the needed improvements. One of the committee members will be assigned to support the student and address any concerns or questions. The student has until **September 1st** after the initial oral examination to complete the re-exam, unless an extension is expressly authorized by the IMP PhD Program Committee.
 - i. If the majority of the Examining Committee agrees that the student passed the re-exam, the student will be passed on to candidacy for the Ph.D.
 - ii. If however, the student is unable to satisfactorily improve, the student will no longer be considered for candidacy for the Ph.D.

Readiness to Write the Thesis: Before the student begins writing, the Research Advisor, Research Advisory Committee, and candidate must reach a consensus on the content of the thesis and the format – either traditional or manuscript. JCLS is notified by use of the Chairperson's report (see above). At this time the student and committee will also designate the format of the thesis. By the time of the thesis defense, the research work performed by the student must have reached a stage of completion such that **at least one paper, representing work to which the student has been a primary contributor (first author), has been published or accepted for publication in a respected peer-reviewed journal.**

Final Examination (Defense) Committee: This committee is composed of the Research Advisory Committee, the Program Directors, and the JCLS Dean's Representative. This committee is chaired by the Program Directors (or his or her designate) who is the JCLS Dean's designate.

Scheduling the Seminar and Defense: The student will be responsible for scheduling the date and time of the defense. The student will also contact the Training Programs Office to reserve a room and AV equipment for the public seminar and private defense. **Please note however, that the defense cannot be scheduled unless the student has one first author paper at least accepted prior to the defense date. The Program Directors must be notified of this paper citation before requesting the necessary letter to JCLS (see below).**

Letter from the Program Directors: At least one month before the planned Defense, the students will contact the Training Programs Office to generate an official letter from the Program Directors to the JCLS Dean. The following information is necessary for this letter:

1. Program Directors notified of publication as described above.
2. Outside review completed.
3. Date, time, location of Public Seminar and Thesis Defense
4. Thesis title
5. Student's name as it should appear on the diploma
6. Members of the Final Examination Committee; addresses for any outside the University
7. The date on which the student stipend payment will stop (this information is for JCLS Financial Office use only; it will not appear on other defense documents)

Distribution of Thesis Prior to Defense: At least three weeks before the Thesis Defense, the PhD candidate will deliver one copy of the thesis draft to the Dean's Office, one copy to the student's Program Director, and one copy to each of the Final Examination Committee members.

Thesis Defense: The IMP program follows the JCLS guidelines and policies for the thesis defense. Please see the "[Guide to the Ph.D. Degree and Thesis Manual](#)" available on the [JCLS policies and](#)

[guidelines website](#) for information about the thesis defense. This manual contains the JCLS requirements for the successful completion of the PhD degree from the time you matriculate until you complete your degree. These are minimal requirements that are supplemented and expanded by IMP Program specific requirements and instructions.

Highlights from the PhD Thesis Manual that are important to your progress:

- **page 6:** Formation of the Research Committee
 - JCLS minimum - research advisor and 2 graduate faculty; formed in consultation with the advisor and the Program Directors
 - Chairman of committee – a member other than the thesis advisor
 - **IMP** – permanent thesis advisor and at least three other members of the graduate faculty; two of them should be members of the IMP program. One member can be from outside of the Program (or a faculty from another institution with the appropriate credentials). The Program Directors are ‘ex-officio’ members of each student’s committee and should be notified of date and time of each meeting but will not necessarily attend each meeting
 - **IMP** – the student forms the Research Committee before the end of the semester in which the thesis advisor is selected
- **page 6-7:** Monitoring Progress
 - 2 committee meetings per year, each year of research activity (Mandatory)
 - Use forms for reporting results: report from each committee member plus chairperson’s report – both available IMP Blackboard site
 - **IMP** – return all forms to Training Programs Office, M-63 JAH for required distribution
 - Yearly meeting with Program Directors
 - Semi-Annual Report to JCLS from student
- **page 7:** Thesis Proposal, May be part of Comprehensive Exam
- **page 8:** Comprehensive Examination
 - **IMP** – initial exam will be scheduled before June 30 of the second year of study.
- **page 9:** Readiness to write
 - Determined by Research Committee; JCLS notified by use of Chairperson’s report
 - Designate format of thesis: Traditional or Manuscript
- **page 10-12:** Final Examination Committee and Defense of Thesis
 - Candidate must present an open seminar of thesis work followed by a private defense before his/her Examining Committee
 - By the time of the thesis defense, the research work performed by the student should have reached a stage of completion such that **at least one paper**, representing work to which the student has been a primary contributor (**first author**), **has been published or accepted** for publication in a respected peer-reviewed journal.
 - Committee Membership: Research Advisory Committee; Program Directors; Dean’s Representative
 - Arrange defense date at least one month prior to planned defense
 - **IMP** – notify Training Program Office of date and time in order to arrange room and AV equipment for open seminar
 - One month prior to defense request letter from Program Directors to JCLS denoting readiness to defend
 - **IMP** – contact Training Programs Office to request this letter; 3-0164 or Danielle.park@jefferson.edu
- **page 13:** Format of Thesis – Model 1, Traditional
- **page 22:** Format of Thesis – Model 2, Manuscript

[Application for Graduation and PhD Degree Completion Checklist](#)

[Student Personal Counseling Center](#)

833 Chestnut Street, Suite 230

215-955-HELP (4357); (215) 503-2817

