

IMMUNOLOGY GRADUATE PROGRAM STUDENT GUIDELINES THE UNIVERSITY OF IOWA

This handbook is for use by the Immunology Graduate Students. The document lists the program leadership, course requirements, laboratory rotation policies, Immunology Journal club and seminar, Comprehensive exam format and schedule, and Thesis committee guidelines.

I. Program leadership:

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|---|-----------------------|------------|----------|
| Program Director: | Dr. Gail Bishop | 2193B MERF | 335-7945 |
| | Dr. Gail Bishop | 2193B MERF | 335-7945 |
| Executive | Dr. Steven Varga | 3-532 BSB | 335-7784 |
| Committee | Dr. David Lubaroff | 3210 MERF | 335-8423 |
| Members: | Dr. Nicholas Zavazava | C51-F GH | 384-6577 |
| | Dr. John Harty | 3-530 BSB | 335-9720 |
| | Dr. John Colgan | 3270 CBRB | 335-9561 |
| Graduate Studies Committee Chair: | | | |
| | Dr. Stanley Perlman | 3-712 BSB | 335-8549 |
| Admissions Committee Chair: | | | |
| | Dr. Nicholas Zavazava | C51-F GH | 384-6577 |
| Comprehensive Exam Committee Co-Chairs: | | | |
| | Dr. David Lubaroff | 3210 MERF | 334-8423 |
| | Dr. Kevin Legge | 1036 ML | 335-6744 |
| Curriculum Committee Chair: | | | |
| | Dr. Morris Dailey | 364 MRC | 335-8184 |
| Seminar Committee Chair: | | | |
| | Dr. John Colgan | 3270A CBRB | 335-9561 |
| Program Administrator: | | | |
| | Paulette Scheler | 1188 ML | 335-7748 |

II. 2009 - 2010 Academic Calendar

Fall semester 2009:

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|----------------------|-------------|
| First day of classes | August 24 |
| Last day of classes | December 11 |
| Close of Finals week | December 18 |

Spring semester 2010:

| | |
|----------------------|------------|
| First day of classes | January 19 |
| Last day of classes | May 7 |
| Close of Finals week | May 14 |

Registration for Fall, Spring and Summer semesters are performed through the program office during the early registration period.

III. Guidance

The Graduate Studies Committee is charged with overseeing the progress of all graduate students at all stages of their training. Incoming first year students are assigned a primary advisor from the Graduate Studies Committee who will advise the student on courses, lab rotations, and all other aspects of their education. Soon after arriving on campus, the students will meet with either the chair of the Graduate Studies Committee or their assigned advisor to discuss their specific interests, course work, and laboratories for rotations. In addition, the Graduate Studies Committee may occasionally meet with students to discuss their academic progress. When a student completes rotations and enters a laboratory to perform thesis work, the faculty member in charge of the laboratory will assume the role of advisor. The Graduate Studies Committee will however, continue to oversee the students' academic and research progress. The Graduate Studies Committee is also available to the student for advice should problems or questions arise.

IV. Formal Course Work

Immunology graduate courses are offered not only to teach students the current concepts and paradigms within the field, but to emphasize the scientific approaches and methods used to attain this understanding.

NOTE: It is expected that the great majority of graduate students will follow the prescribed curriculum. However, it is recognized that circumstances may arise that require a student's course of study to be altered. Therefore, a student may ask the Graduate Studies Committee for permission to amend the curriculum requirements.

A. Required Courses:

Graduate Immunology 148:201 (3 sh – Spring year 1). This course emphasizes the purpose and design of experiments, and how their interpretation has led to current concepts in immunology. Sessions take the form of background presentation by the lecturer followed by analysis of primary research papers. Participation by students in the form of discussion and responding to questions is a key goal. Required of all first year students. 061:047 Survey of Immunology may be recommended in the Fall of year 1 by the Advisor if the student has not had sufficient background in immunology to do well in the Graduate Immunology course.

Biostatistics for Biomedical Research 156:204 (1 sh – Fall year 1).

Students will take 6 sh (modules) of the following. If undecided, 156:201, 202 and 203 are highly recommended.

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|---------|--|------|------|
| 156:201 | Fundamentals of Gene Expression | Fall | 1 sh |
| 156:202 | Fundamentals of Protein Regulation | Fall | 1 sh |
| 156:203 | Fundamentals of Dynamic Cell Processes | Fall | 1 sh |

Molecular Biology

| | | | |
|---------|-----------------------|--------|------|
| 142:215 | Transcription, RNA | Spring | 1 sh |
| 142:216 | Chromatin and Disease | Spring | 1 sh |
| 142:217 | Mouse Models, Cancer | Spring | 1 sh |

Cell Biology

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|---------|----------------------------------|--------|------|
| 142:220 | Protein Processing | Fall | 1 sh |
| 142:221 | Subcellular Motility | Fall | 1 sh |
| 142:222 | Organelle Biogenesis | Fall | 1 sh |
| 142:225 | Growth Factor Receptor Signaling | Spring | 1 sh |
| 142:226 | Cell Cycle Control | Spring | 1 sh |
| 142:227 | Cell Fate Decisions | Spring | 1 sh |

These are 5-week 1-credit modules on various areas of cellular and molecular biology, taught for graduate-level students. *MSTP students are exempt from this requirement, but may elect to take any modules they wish. The MSTP students are not exempt from taking the 1 module of Biostatistics.*

Advanced Topics in Immunology; 148:221. (3 sh – Fall year 2). Graduate Immunology is a prerequisite, although MSTP students, who have taken MS1 Immunology, may elect to take Advanced Topics for credit in either year 1 or year 2. This course, taught during the Fall semester, is split into three sections with each section proctored by a different faculty member. The goal is for each instructor is to present the seminal papers in one area of immunologic expertise. This is done through the use of primary research papers and student presentations. Second year students are required to take this course for credit. Subsequently, students are required to attend an additional two sections as exemplars for younger students, and to enhance their knowledge of a wider variety of immunologic topics. These two sections need not be taken during the same semester, but can be spread out during the ensuing years. This will enable students to choose two areas which are of particular interest to them. While participating in these additional modules, advanced students will be asked to lead discussions, and demonstrate proper presentation and critique of papers.

Immunology Graduate Student Seminar; 148:211 (1 sh awarded during the fall semester of year one and the spring semesters of years one and two). During the Fall semester, these meetings will take the form of faculty research presentations to the first year students. These presentations will enable the incoming students to become familiar with each faculty member's research interests. During the Spring semester, all graduate students will attend, and will present their research data or journal articles under the supervision of a faculty member proctor. This exercise is designed to foster oral communication skills and collaboration among graduate students. Students who finish their graduate studies in less than four years may petition the Graduate Studies Committee to be excused from a fourth year of Immunology Graduate Student Seminar.

Principles of Scholarly Integrity; 650:270 (1 sh). This multi-disciplinary course will be jointly taught by members of the Immunology Graduate Program and other University of Iowa graduate programs. The course will cover ethical topics that may vary from year to year, including advisor-advisee relationships, plagiarism, authorship, and ethical treatment of human and nonhuman research subjects.

B. Elective Courses: (optional)

Any student would have the option to take additional approved electives, on a case-by-case basis, in consultation with the student's advisor and the Curriculum Committee. The following courses are suggested; others may be substituted with prior approval of the Graduate Studies Committee.

- Prokaryotic Molecular Biology 142:210 (3 sh).
- Cell Biology Modules 142:220, 142:221, 142:222 (1 sh).
- Cell Biology II Modules 142:225, 142:226, 142:227 (1 sh).
- General Histology for Graduate Students; 060:205 (4 sh).
- Electron Microscopy Techniques; 060:218 (3 sh).
- Graduate Pathogenic Bacteriology; 061:259 (5 sh).
- Graduate Microbial Physiology; 061:260 (3 sh).
- Graduate Introduction to Animal Viruses, 061:267 (3 sh) Fall
- Biology & Pathogenesis of Viruses; 061:268 (2 sh).
- Receptors and Signal Transduction; 071:209 (3 sh).
- Graduate Microbial Genetics; 061:270 (3 sh).
- Structure and Function and Biological Membranes; 072:241 (2 sh).
- Free Radicals in Biology & Medicine; 077:222 (4 sh).
- Human Molecular Genetics; 127:191 (3 sh).
- Pathogenesis of Major Human Diseases; 069:270 (3 sh).
- Translational Histopathology; 069:260 (3 sh)
- Integrated Topics in Infectious Disease 061:217 (1 sh)
- Introduction to Biostatistics 171:161 (3 sh)

Preclinical Medical School Curriculum. (6 sh)

Course of study will be approved and supervised by the Graduate Studies Committee until a thesis advisor and thesis committee have been chosen.

C. Minimum Number of Credits for the Ph.D. degree - 72

It is anticipated that most students will complete classroom work (except for Immunology Graduate Student Seminar and two additional modules in Advanced Topics) by the end of the 3rd semester. Other credits required by the Graduate College for the Ph.D. can be fulfilled by research laboratory course credits. The minimum number of credits required for the Ph.D. degree (coursework plus laboratory) is 72.

D. Grade Requirements:

Immunology Graduate Program students must maintain a 3.0 grade point average, as set down in the rules of the Graduate College. A composite GPA of less than 3.0 will lead to academic probation. In addition, Immunology Graduate Program students must earn at least a B⁻ in Graduate Immunology. Immunology Graduate Program students who fail to earn a B⁻ or better will be required to retake the course(s). A deficiency in Graduate Immunology must be corrected before the student is allowed to take his or her comprehensive exam. Failure to correct the deficiency in one year will result in the student being required to leave the program.

V. Laboratory Rotations:

Prior to selecting a laboratory for dissertation work, students are expected to perform three laboratory rotations with each rotation being approximately 10 weeks in duration. During the first semester, a student should become acquainted with the research interests of the faculty members in the Program. This learning process will be facilitated by faculty presentations in Immunology Graduate Student Seminar during the Fall semester. Students are also encouraged to meet with specific faculty to discuss their research programs. Students can then make an informed decision about their laboratory rotations, with the aid of their advisor and the Graduate Studies Committee.. At the latest, students should begin their first rotation within the first few weeks of graduate study (generally no later than Sept. 15 for Autumn semester entrants). MSTP students and students with M.S. degrees (which include a research-based thesis), may be excused from one rotation. Students having difficulty choosing a laboratory for dissertation work may perform a fourth rotation. The rotations are graded as either "Satisfactory" or "Unsatisfactory". This grade is based upon a number of criteria including attendance and work habits. It is important to note that when not in classes or seminars, the students are expected to spend the remaining portion of the day in the laboratory. Without a strong commitment to the rotation project, it is difficult to fulfill the purpose and aims of the rotation. A "satisfactory" grade is required in each of the laboratory rotations. If a "satisfactory" grade is not obtained in one of the rotations, an additional rotation will be assigned. Failure to obtain a "satisfactory" grade in the extra rotation will result in the student being placed on academic probation. After each rotation, an evaluation by the faculty member of the student and by the student of the faculty member will be submitted to the Graduate Studies Committee.

VI. Immunology Journal Club and Seminar:

The Immunology program oversees a weekly journal club and seminar series. At present, the journal club is held on Tuesday mornings (subject to change) with the Immunology seminar given at 4:00 pm on Wednesday. At journal club, a recent research paper, handed out in advance, is presented and analyzed at length. The journal club is attended by students, post-doctoral fellows, and faculty, and is an excellent opportunity for students to strengthen both their analytical and communication skills. During the academic year, papers are based upon topics relevant to the upcoming Wednesday seminar. After their initial 2 semesters in the program, Immunology program

students must present papers in Journal Club at least 2/3 semesters each year. During the school year, the weekly Immunology seminar features a number of well-known Immunologists from around the country, as well as Immunology program faculty. During the summer months, the senior students and post-doctoral fellows are scheduled to present their work. *Although journal club and seminar are not part of the formal curriculum, students are expected to attend. Faculty evaluators will provide student presenters with useful feedback on their presentations. Both of these meetings are considered key educational vehicles for the students.*

VII. Teaching Requirements:

All incoming students will have a one-semester teaching requirement. A variety of courses are available in several Departments, and the Program leadership will place students in courses based upon interest, expertise, and scheduling.

VIII. Other Immunology Events:

In addition to classes, journal club and seminar, a number of other events are available for graduate students. A Program highlight is informal dinners scheduled with most of the visiting scientists who present in the Immunology seminar series. Typically, this dinner is held at a faculty member's home, and is attended by only students, postdoctoral fellows, and the visiting speaker. These dinners are designed for the benefit of the students, and are an excellent opportunity to personally meet outstanding scientists, and "pick their brains" on contemporary issues. Aside from Immunology journal club and seminar, a number of other meetings are available. These include focused or topic-oriented journal clubs, seminars in other departments (e.g. - Microbiology or Physiology seminar series), and Ph.D. dissertation defense seminars. Collectively, these events are not only key for one's education, but are important in getting to know all of the other immunologists on campus, and fostering scientific collaborations.

IX. Comprehensive Examination

A. Overview:

The purpose of the comprehensive exam is to evaluate whether students are prepared to continue on to the research and dissertation phases of the Ph.D. program. Participation in this process also teaches skills essential for research and teaching. The comprehensive exam offers the student the opportunity to build these skills with constructive criticism from senior scientists. Two essential skills that will be evaluated are:

1. The ability to interpret the literature, identify research problems and think creatively on an immunology topic outside the narrow confines of the student's dissertation project.
2. The ability to communicate clearly with other scientists orally and in writing.

Each student taking the Comprehensive examination in a given cycle will prepare a single abstract of an original research proposal, to be submitted to the examining committee according to the schedule outlined below. The abstract must describe a proposal that does not overlap in major approach or topic with the student's dissertation research. The abstract will have one inch margins and 12 point type. The student must not consult with his/her dissertation advisor during this process, except to ask an opinion about potential overlap of a topic.

The examination committee for the student will then determine a) if the abstract topic is non-overlapping with the dissertation research and b) if the abstract is scientifically sound, and could potentially serve as the basis for a defensible research proposal. Three outcomes are possible.

- 1) The abstract is judged acceptable; the student may begin work on the written proposal.
- 2) The topic of the abstract is acceptable, and the committee believes that the abstract could potentially lead to a defensible proposal, but first requires revision. If the needed revisions are substantial, part or all of the examining committee will convene a meeting with the student, to discuss the nature of the revision needed. The student will receive a written summary of the deficiencies in the abstract and the revisions required. A revised abstract will be due 2 weeks after this summary is sent to the student. The student will have one opportunity to revise the abstract so it forms a suitable basis for the written proposal.
- 3) The abstract is judged fatally flawed. The student will be informed in writing of the basis for the committee's decision, and will be instructed to prepare a new abstract on a different research topic. The second abstract will be due 4 weeks after this notification. If the second abstract cannot be revised to a level of acceptability, the student will be considered to have failed the first attempt at the Comprehensive examination, and must wait a minimum of 4 months before a second attempt.

After the abstract is accepted, the student will be given 4 weeks to complete and submit the written comprehensive exam proposal. The oral defense will be scheduled approximately 2 weeks after the exam is submitted, depending on availability of the committee members. The comprehensive exam will be written in the form of an NIH style pilot grant proposal based on the abstract and instructions from the Comprehensive Exam Committee. The proposal will be limited to 25 double-spaced pages or less, with one inch margins and 12 point type. References and figures will not count in the 25 page limit, but together cannot constitute more than five pages. Students are permitted to review successful past abstracts and proposals as examples while they prepare their own documents.

Comprehensive exam abstracts and proposals should be the result of the student's own ideas. Students may discuss their abstracts and proposals with other students and postdocs. They are allowed to consult faculty only for questions regarding specific techniques. Primary advisors should excuse themselves from any administrative committee deliberations (other than the Dissertation Committee) which directly concern their students. Administrative committees will communicate directly with students. Advisors should not act as an intermediary in this process. If an Advisor feels compelled to raise a concern about a decision by an administrative committee, he/she should contact the Program Director.

The Comprehensive Exam Committee will hear the student's defense, which will be a brief oral presentation of the background, specific aims, and experimental approach. The student may use visual aids, such as PowerPoint slides or transparencies, which are specifically related to the presentation of their proposal. However, no additional reference material will be allowed in the room during the defense. The student's presentation will be followed by questions from the Comprehensive Exam Committee on the content of the oral defense and of the written proposal. All proposals submitted by the required deadline will be defended orally if they are readable. The Comprehensive Exam Committee, at its discretion, can direct a student to write a new proposal if the proposal submitted is significantly substandard.

The outcome of the comprehensive examination will fall into one of the three following categories:

1. The student passes and will be permitted to continue to work toward the Ph.D.
2. The student passes with reservation and will be given an opportunity to eliminate the reservation according to specific instructions from the examining committee.
3. The student fails

It is anticipated that most students will take their comprehensive exam in the second semester of their second year. MSTP students who joined the dissertation laboratory at the beginning of the first year of graduate study may begin the Comprehensive Exam process in September of the second year of graduate study. If the first attempt is failed, a student may begin the examination process again no sooner than 4 months after the first exam is taken, according to the regulations of the Graduate College. If a student fails to pass after two attempts, the student will not be permitted to remain as a Ph.D. candidate.

Failure to take the Comprehensive Exam by the end of the fifth semester will, unless a specific exception is granted by the Graduate Studies Committee, result in a grade of "Incomplete" for the student's research for that semester. Exceptions must be fully explained and justified in a letter to the Chairperson of the Graduate Studies Committee. This letter will also be made part of the student's file. If the grade of "Incomplete" is not removed by the end of the next full semester, it will be changed automatically to an "F" and the student will be required to leave the program.

B. Spring Comprehensive Exam Schedule:

A typical Ph.D. student who spends Year 1 in the Program performing required coursework and 3 laboratory rotations will begin the Comprehensive Exam process in February of the second year of graduate study.

February 15: Deadline for abstract submission.

March 1: Deadline to notify students if the abstract is acceptable (with or without modification) by the Comprehensive Exam Committee.

March 15: Deadline for submission of revised abstract, if appropriate.

March 29: Deadline for submission of new abstract, if first abstract was judged fatally flawed.

April 15: Deadline for the committee to notify the student of whether the second abstract is acceptable, and if revisions are needed.

May 1: Deadline for submission of revised second abstract.

Note: As soon as an abstract has been accepted, the Program Office will contact the committee members to schedule a meeting. The student will be given 4 weeks to complete and submit the NIH style grant proposal following notification of acceptance of the abstract. The proposal must be turned into the Program Office for distribution to the committee.

C. Autumn Comprehensive Exam Schedule :

A MSTP student who joined the dissertation laboratory at the beginning of the first year of graduate study may begin the Comprehensive Exam process in September of the second year of graduate study.

September 15: Deadline for submitting an abstract.

October 1: Deadline to notify students if the abstract is acceptable (with or without modification) by the Comprehensive Exam Committee.

October 15: Deadline for submission of revised second abstract.

November 1: Deadline for submission of new abstract, if first abstract was judged fatally flawed.

November 15: Deadline for the committee to notify the student of whether the second abstract is acceptable, and if revisions are needed. If the abstract is not acceptable, the Comprehensive Exam Committee may ask the student to expeditiously prepare another abstract, or may ask the student to defer his or her comprehensive exam until the Spring Semester.

Note: As soon as an abstract has been accepted, the Program Office will contact the committee members to schedule a meeting. The student will be given 4 weeks to complete and submit the NIH style grant proposal following notification of acceptance of the abstract. The proposal must be turned into the Program Office for distribution to the committee.

NOTE: The guidelines listed above are purposely written to promote uniform schedules and uniform treatment of graduate students. However, exceptions are to be made in the case of illness, family crisis, or other serious circumstances that may interfere with a student's ability to follow the schedule outlined above.

IX. Dissertation Research:

By or before the beginning of the third semester (usually the fall semester of the second year), the student should choose a laboratory in which to do research. The faculty member from that laboratory will serve as the student's research advisor. If the research advisor selected by the student has not mentored a student through successful completion of the Ph.D. degree, the student and advisor must additionally select a Mentor of Record. Any Immunology Program faculty member who has mentored a student who achieved the Ph.D. degree is eligible to serve as Mentor of Record. The research advisor must submit the name(s) of the suggested Mentor of Record for final approval by the Graduate Studies Committee. The Mentor of Record should be selected as soon as possible after the student has chosen the research advisor. The Mentor of Record will serve as the chairperson of the student's dissertation committee. Together the student and the student's research advisor will select a Dissertation committee for the student prior to completion of the third semester of graduate study and submit these selections to the Graduate Studies Committee for approval. The Dissertation committee will consist of five members, including the student's research advisor. At least one member of the committee will be from outside the Immunology Graduate Program. This faculty member must have an appointment in a Ph.D.-granting program/department. Unless the student has a Mentor of Record, the Dissertation Committee will elect a chairperson (who will not be the research advisor).

The Dissertation Committee will meet with the student at least once each year to review the plan of study and to receive a written report of research progress prepared by the student. The first of these meetings must be held within one year of passing the Comprehensive exam. All subsequent annual reports and Dissertation committee meetings must be completed within one month of the anniversary date of the student's passing the Comprehensive exam. The purpose of this yearly meeting is to determine whether the student's progress has been appropriate to allow for enrollment in the academic year beginning the following Fall semester. The written report will then be forwarded to the Graduate Studies Committee, and will be made part of the student's record. If the annual written report is not received within 60 days of this anniversary date, the student will receive an "incomplete" for that semester's research (148:231 Research in Immunology). If the student has not submitted a satisfactory report within the next 60 days, the grade will be changed automatically to an F and the student will be required to leave the program. Students with a Mentor of Record must hold meetings between the advisor, student, and Mentor of Record at least once between each annual Dissertation Committee meeting. The Mentor of Record will file a progress report following such meetings.

Each year which follows successful completion of the comprehensive examination, students will present their research to the members of the immunology community at the University of Iowa by

giving a research seminar to be scheduled by the seminar committee in consultation with the dissertation committee.

The student or any member of the Dissertation Committee may, with reasonable notice, request a meeting, at other times of the year, in which the student and the Committee members would participate. This is especially encouraged during the latter stages of the student's dissertation work.

The Dissertation Committee will be responsible for administering the final examination, or dissertation defense.

Students are guaranteed stipend and tuition support for 6 years, provided they display satisfactory performance in fulfilling all academic requirements, as well as in the progress of their dissertation research. Support after 6 years is not guaranteed, but the student and mentor may petition the Program to continue support, if satisfactory progress is being made.

It is expected that the dissertation project be of sufficient breadth, depth, and novelty to result in first-author research publications in high quality peer-reviewed journals. *A minimum of one such paper must be published or in press prior to the completion of the Ph.D., and the student will not be permitted to schedule a dissertation defense until it has been demonstrated that this requirement has been met.* This policy pertains to all students who entered the program in 2002 to the present.

X. The Ph.D. Dissertation

To be awarded the Ph.D. degree, a candidate must satisfactorily defend the Ph.D. dissertation.

The procedure to be followed by the student regarding the Ph.D. dissertation is as follows:

1. The student's completed or nearly completed research should be presented orally to members of the Dissertation committee for consideration. If the Dissertation committee considers progress to be adequate, the student will be advised to write the dissertation. The style of the dissertation will conform to that presented in the CBE Style Manual.
2. When a draft of the dissertation has been approved by the student's research advisor, a copy will be distributed to each member of the Dissertation committee at least two weeks before the date of the final defense.
3. This draft of the Dissertation must conform to the rules of the Graduate College office and must be presented to said office according to their schedule for that semester.
4. The student will present a public seminar on the dissertation work. All graduate students and faculty in the program will be encouraged to attend. The seminar will be followed by a defense of the dissertation before the student's Dissertation committee. A final draft of the Dissertation will then be prepared incorporating revisions suggested by the committee, and approved by the advisor and the committee.
5. Final corrected copies of the Dissertation must be submitted to the Graduate College office at least ten days before the graduation date.
6. Expenses for typing the dissertation, any illustrative material, and copies of the dissertation, are the responsibility of the student.
7. In addition to the copies required by the Graduate College, the student will present one final copy of the Dissertation to the Program for the permanent library file, and at least one copy to the advisor.

XI. Vacations

Successful graduate education in the sciences does not begin and end with the usual academic calendar, but rather is a full-time occupation. Reasonable vacation periods are certainly appropriate, but long or repeated absences are generally not permitted. Vacations or any other planned absences should be discussed in advance with the individual in whose laboratory a student is rotating or working.