

PRELIMINARY EXAMINATION

The student must pass the preliminary examination before achieving candidacy. Generally, the preliminary examination is to be completed by the end of the student's second year (see page 1, Timetable). Preliminary examination guidelines follow:

A. Timeline and Checkpoints

The format for the Immunology preliminary exam will be new for 2016. Students will be assigned 2 primary literature articles to read and understand. Students can work together to read and study the articles. Each student will be expected to explain the rationale, background information, hypothesis, experimental design, results and conclusions of the studies. They will be quizzed on this during the oral examination. In addition, students will be asked questions related to general Immunology knowledge. Students should work independently to design a specific aims page related to the data or a concept presented in the primary literature articles. The specific aims page should be 1 page in NIH-style format. Students should provide rationale, hypothesis and 2 specific aims which encompass work that would be a logical next step. Students will defend this proposed project as part of the oral examination as well.

	Time Line
Primary Papers Assigned	By December 21
Specific Aims Page Due	February 1
Oral Exam	Scheduled between February 15-March 15 depending on committee availability

B. Composition of Individual Exam Committees

The Preliminary Exam Committee consists of 10-12 faculty members who serve as potential examiners for a two-year period. Individual Exam Committees consist of 3 faculty who are selected by the Program Director. If possible the same committee will examine more than one student.

C. Timeline for MSTP Students

MSTP students entering the Immunology Program are considered to be at the same level as students entering the Program after 1 year in PIBS. It is encouraged that MSTP students take their prelims in their first year of PhD training alongside the PhD class. Mentors should be aware that tuition support for pre-candidates is more costly than for candidates, especially for non-Michigan resident students. Therefore, we strongly recommend that the preliminary exam be completed in the spring of the student's 2nd year.

D. Oral Exam

1. Focus

The oral exam tests the student's ability to reason analytically and to develop ideas and defend them in front of others. Thus, the emphasis is on hypothesis testing and experimental design, as well as general knowledge in the field of Immunology. The student should be familiar, however, with the key past experiments performed that led to the hypothesis and the important basic concepts of the approaches to be used. The committee members will expect students to be familiar enough with each technique proposed to understand its theoretical basis, as well as its appropriateness and limitations in addressing the hypothesis being tested.

However, detailed knowledge of such things as buffer ingredients and incubation times are less important, unless they are vital to the interpretation of the results. For example, if one proposes to use ELISPOT technology to measure cytokine levels, one should know how the assay works, whether the necessary starting materials are available, whether ELISPOT is the best approach to address the

question being asked, and the limitations of using ELISPOT measurements. One does not need to know things like the exact ions needed for the ELISPOT buffers or the incubation time of a particular step (unless it is a critical parameter for the assay in question). In contrast, if one were studying ion channels, one would be expected to know the ion concentrations in the buffers to be used to measure ion transport.

2. Format

At the start of the examination the student will be asked to leave the room for a few minutes while the examining committee has a chance to discuss the student's record, how they wish the examination to proceed, and to bring up any potential problems. The student will then be asked questions on the primary literature papers for approximately 40 minutes. Clean copies of the papers will be provided to the student in the room. Following this, the student will defend the specific aims proposal. This presentation should focus on the hypothesis, specific aims, and the significance of the proposal. Emphasis should be on the experimental approaches to be taken to address the hypothesis. The members of the committee may ask for points of clarification during the student's presentation, but should allow the student to complete his/her overview prior to in-depth questioning. **While questions will likely center around the proposal, questions pertaining to general knowledge of the field of Immunology should be anticipated by the student. Hence, the student should have a good grasp of immunology in general.** It is highly recommended that the student be familiar with all topics listed in the Immunology Review Outline, which is provided by the program. Approximately 30 minutes of the 2 hour exam will be devoted toward questioning of the student's understanding of immunologic principles. When all committee members have had the opportunity to ask all the questions they wish, the student will be asked to leave the room while the committee reaches a consensus opinion.

3. Evaluation

The committee can decide to pass the student unconditionally, to fail the student unconditionally, or something in between. The committee may allow a student to retake the examination with the same problem, with a different problem, or rewrite all or part of the written proposal. In addition, the committee may also recommend other remedies for a less than satisfactory performance (e.g., assign additional class work). For example, should a student perform poorly on the general immunology portion of their exam, the committee will likely recommend that the student take IMMUNO 440. The committee and student should remember that the oral examination is primarily a learning experience and that students who are asked to retake the examination usually improve immensely the second time. If there is a serious question as to whether the student should pass, it is recommended that the student be asked to retake the examination. A student will be dismissed from the Immunology Program if he or she fails either the written or oral portion of the examination a second time.

4. Summary

After the examination, the chair of the individual student's committee will advise the Student Services Coordinator and the Program Director of the results. Upon successful completion of the exam, and assuming all other requirements are met, the Program Director will approve the student's Advancement to Candidacy form, which will be electronically sent to Rackham.

SELECTION OF DISSERTATION RESEARCH TOPIC

Students and their respective mentors are expected to design research projects related directly to questions in basic or applied immunology. There may be instances where an Immunology Program mentor also serves as a faculty member in other Programs/Departments as well. Research directions in the laboratories of these particular mentors may include scientific projects unrelated in scope to basic or applied immunology. For this reason, students who are concerned that their planned project might not meet the topic requirement should discuss the matter early on with the Program Director, who may at his or her discretion refer the question to the Graduate Student Affairs Committee for resolution. The responsibility for choosing a dissertation research topic rests jointly with the mentor and student, and it should be their priority to see that a project(s) is selected that meets the topic requirement.

DISSERTATION COMMITTEE

The dissertation committee guides the research project of the student. This committee will supervise dissertation activities and will serve as a resource throughout the period of research and writing. The committee also reviews the thesis progress. Frequent interactions with these committee members are designed to assess efforts toward thesis research as well as forge informal collaborations that mature throughout the student's future professional career. It is required that the committee meet within six months after the student passes the qualifying exam, and at least once each year thereafter until the defense.

Upon a student's satisfactory completion of the preliminary examination, the student and mentor should provide to the Program's Graduate Student Affairs Committee, via the Immunology Program's Student Services Coordinator, a **paragraph describing the thesis proposal. The description must include a title as well as a central hypothesis or question to be addressed.** The student should also provide a list of potential faculty members to serve on the student's dissertation committee along with a brief explanation of why each committee member was selected (e.g. expertise on topic). The dissertation committee is to be comprised of at least 5 members, including the chair. At least 3, and preferably more, members must be Immunology Program faculty. The proposed members should be tenured-track faculty chosen by the mentor in consultation with the student and they should reflect appropriate expertise in the areas covered by the dissertation research. A student may select an Immunology Program Research Professor (i.e., Research Professor, Research Associate Professor, and Research Assistant Professor) to serve as their co-Chair, but only if the other co-Chair is a tenured-track Immunology Program faculty member. If a committee member is not affiliated with a Ph.D. granting program, a copy of his/her CV should be submitted for consideration. The Graduate Student Affairs Committee will review the list and contact the mentor, via the Immunology Program's Student Services Coordinator, about the proposed selections. Mentors are encouraged to review the Rackham Graduate School policy on "Guidelines for Dissertation Committee Service", which can be obtained through Rackham's website: (<http://www.rackham.umich.edu/downloads/oard/forms/disscommitteeguidelines.pdf>). The Graduate Student Affairs Committee may choose to edit the dissertation committee members to ensure appropriate expertise and rigor on the committee.

Students should be sure to email their committee a copy of the data they'll be presenting at least three working days in advance of the committee meeting. Not at their first committee meeting, but in subsequent meetings, they should also include in the email to their committee a brief self-assessment of the progress they've made since the last meeting. Students and their mentors are responsible for ensuring that their Ph.D. progress report is completed, signed by the student and each member of their committee, and returned to the Immunology Student Services Representative within 7 days after the meeting.