

QUALIFYING EXAMINATION AND ADMISSION TO CANDIDACY

By the end of the sixth term of residency (spring term of the second year), the student will take an oral examination to assess mastery of the field of biochemistry and to evaluate research progress. Students will receive a Candidacy package with instructions from the Option Manager. **Note: The course requirements must be completed before the student can advance to Candidacy.**

The student is responsible for finding a date, time, and location for the exam. A Candidacy Examination Committee will be assembled by the student in consultation with their thesis advisor. The committee should consist of the student's thesis advisor and three or four BMB faculty members (faculty outside of the BMB option may also be members of the committee) and is chaired by a faculty member other than the student's advisor. Once the exam is confirmed with all committee members, the student will schedule their exam through REGIS.

As part of this examination, each student will submit:

- A written research report summarizing the progress in their research. Please plan a presentation length of approximately 20 minutes.
- An original research proposition in a field outside the student's chosen field of research. The committee chair should be contacted early in the winter term to discuss the idea for the outside proposal in order to ensure that the topic itself is acceptable. An oral presentation is not required but the student will be expected to defend the material.

Suggested guidelines for the exam are:

- An oral presentation of 15 to 20 minutes with 10 to 15 slides.
- Written proposals: 20 to 25 pages for your research proposal and approximately 15 pages for your out-of-field proposal.

At the time of the proposal defense, the candidacy exam form will be completed by the Exam Committee indicating whether or not the student had demonstrated the capacity to do research. This evaluation will include, but will not be restricted to, consideration of the following:

- The motivation to think about complex problems, and devise creative approaches to solving them
- The motivation to find out what is going wrong with experiments when they don't work and to fix them
- Patience
- Perseverance in the face of difficulty and frustration
- The motivation to work hard
- A commitment to science as a high priority in life
- The capacity to become engaged in a problem
- The capacity to identify the most important aspect of a problem and the discipline to maintain experimental focus on the issue

GUIDELINES FOR EVALUATING DEFENSE OF THE RESEARCH PROPOSITION

The point of this exercise is to encourage the student, in collaboration with his/her adviser, to think through as deeply as possible the series of experiments that would form the basis of a thesis research project. The following criteria are suggested to provide the students with an indication of what is expected of them and to guide faculty in evaluating both the research proposal and the out of field proposal for the qualifying exam in the second year:

- Has the student clearly defined the problem to be addressed?
- Has the student clearly explained the significance of the problem?
- Has the student become sufficiently familiar with the relevant field of research? Can he/she put the problem in context?
- Are the experimental questions to be asked laid out in a logical manner? Is their rationale clearly presented? Are the experiments and their controls adequately described?
- Has the student considered various possible outcomes of the experiments, and their interpretations?
- Has the student considered contingencies in case the experiments do not work (or yield uninterpretable results)?
- Based on his/her preliminary data, does the student have a feeling for the practicality of the experiments and their possible technical problems?
- (Relevant only to the research proposal).
- Does the student have a rough timetable for the proposed project?
- (Relevant only to the research proposal).

During the oral examination, the student can expect to be asked questions about general topics in biochemistry in addition to questions about the proposals.

The thesis advisory committee is encouraged to provide the student with constructive suggestions for the proposed project. In this way, the committee initiates an important ongoing role in helping to guide the student's research, not simply in evaluating the end product. However, the committee is also encouraged to base their evaluation as much as possible on the student's ability to formulate a scientific problem and to pose it in experimental terms, and to avoid biases that reflect their value judgments about the proposed research.