Interdisciplinary Program in Biomedical Sciences - Qualifying Examination

Effective Summer 2009

The qualifying examination consists of a written and an oral component. The written component is an NIH-type predoctoral grant proposal (F31 Research Training Plan) describing the student's proposed dissertation research project, evaluated by the student's Supervisory Committee. The oral component consists of an examination of the student's general knowledge in his or her chosen area of research as defined by the written proposal, conducted by and Examination Committee, consisting of the Supervisory Committee plus the Advanced Program Director.

I. Scheduling

Administration of qualifying examination is the responsibility of the student's Advanced Program and the student's Supervisory Committee. Qualifying exams are traditionally taken at the end of the second year of graduate study, after most advanced course work has been completed, and are recommended to be taken during the summer semester. Qualifying examinations must be scheduled by September 1 and must be completed no later than November 1 of the third year of graduate studies. Students will not be allowed to register for the spring semester of the third year without having taken the qualifying examination.

Copies of the written proposal will be distributed to members of the student's Supervisory Committee and the Advanced Program Director at least ten working days before the scheduled examination. Students are responsible for scheduling a time and location of their exam that is suitable to their Supervisory Committee. The advanced program secretary should be notified of the oral exam at least ten days prior to the exam and given a copy of the proposal for the students' file. The student should schedule 2.5-3 hours for the oral qualifying examination.

The advanced program secretary will distribute these instructions to the student and to all examination committee members when the examination is scheduled, and again when the written proposal (see below) is submitted to the examination committee.

II. Examination Committee

The examining committee will consist of the student's Supervisory Committee who MUST ALL BE PRESENT at the exam. The Committee Chair (and Co-Chair) and external member must be physically present. Other committee members may be present electronically phone or video conference per Graduate School policy, subject to approval by the Advanced Program director. The Supervisory Committee will elect or appoint from its ranks an examination chairperson other than the student's mentor to moderate the examination. The Advanced Program director or his/her designated representative will also be present for the oral examination. The Advanced Program director will participate in all aspects of the examination including the final evaluation of the student's performance. The chair of the Supervisory Committee (the mentor) will be present during the oral examination and may ask questions, but will be asked not to intervene on the student's behalf.

III. Written Proposal (based on NIH instructions for F31 Individual Fellowship)

III.A. Format Specifications

Use an Arial, Helvetica, Palatino Linotype or Georgia typeface, a black font color, and a font size of 11 points or larger. A Symbol font may be used to insert Greek letters or special characters. For figures, figure legends and tables, a smaller type size is acceptable but it must be in black ink, readily legible, and follow the font typeface requirement. Use one-half inch margins (top, bottom, left, and right). The document must be single-spaced.

Formatted subheadings and double spacing between paragraphs are encouraged, as they make the document easier to read.

III.B. Page Limitations

The Research Training Plan (Sections 2-5 below) must not exceed ten pages total, including figures and tables. The NIH Biosketch and Literature Cited do not count in the ten page limit.

III.C. Content

1. NIH Biosketch
2. Specific Aims: List the broad, long-term objectives and the goal of the specific research proposed, *e.g.*, to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology. Students are encouraged to develop when possible, in collaboration with their mentor, some specific aims that go beyond the scope of funded research grants. (1 page limit)
3. Background and Significance: Briefly sketch the background leading to the present application, critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. State concisely the importance and health relevance of the research described. (3 pages)
4. Preliminary Studies/Progress Report: Use this section to provide an account of progress to date on the specific aims described in section 1. (2-3 page)
5. Research Design and Methods: Describe the research design conceptual or clinical framework, procedures, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted. Describe any new methodology and its advantage over existing methodologies. Describe any novel concepts, approaches, tools, or technologies for the proposed studies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. (3-4 pages)
6. Literature Cited

IV. Oral examination

IV.A . Format and Content

There is no public seminar. The oral examination tests the student's general knowledge in his or her chosen area of research, as defined by the written proposal. Importantly, the oral examination is NOT intended specifically as a defense of the written research proposal, but rather uses the proposal as a springboard to define the content of the exam.

The student should prepare an oral presentation of the written proposal which, if presented uninterrupted, would require 20-30 minutes. The student will deliver this oral presentation to the examination committee, during which the committee members will interrupt frequently, questioning the student on all aspects of the proposal, focusing in particular on general background knowledge underpinning both the theory and the technical execution of the proposal. The student may also be examined both on the importance and feasibility of the proposed research, and on the suitability of the proposed experiments to answer the questions posed, however this aspect of the examination is secondary to the assessment of the student's general knowledge of biomedical science. The student can expect extensive excursions into topics from proposed experiments. For example, the use of hybridoma technology in an experiment would certainly invite questions concerning immunoglobulin gene structure, HAT-media selection, and purine metabolism. The student and the committee should expect to devote approximately two hours to the examination. The interruption of the student's

presentation by the committee will often prevent the student from completing the oral presentation, however the process should reveal the student's competence in her or his chosen area of research.

The next regular supervisory committee meeting (*e.g.*, in the following semester) will focus on the Specific Aims to be pursued and a proposed timeline for the dissertation project, including goals to be met by the next supervisory committee meeting.

IV.B. Evaluation

At the end of the examination, the student is asked to leave the room, and the examination chairperson asks for comments from all present regarding the student's general knowledge of the research area as defined by the written proposal. Substantial agreement among the examining committee will determine whether the student has passed the oral examination. The student will then return to the room and the committee will inform the student of their decision.

Possible outcomes of the qualifying exam include the following:

1. Pass - Student is admitted to candidacy for the Ph.D. degree.

2. Conditional Pass - Student is admitted to candidacy for the Ph.D. degree, but is required to remediate an area of weakness identified by the exam committee (*e.g.*, by taking and passing a specific course with a B or better).

3. Fail with Option for Reexamination - The student will be allowed to repeat the exam after remedial work specified by the exam committee. At least one term of additional preparation is required by the Graduate School before re-examination, *i.e.*, the qualifying exam may not be repeated during the same semester.

4. Fail - A re-examination will not be recommended by the Supervisory Committee, and the student will not be allowed to complete the Ph.D. program. The Supervisory Committee may recommend completion of a M.S. degree. A student who fails the examination may petition for re-examination per Graduate School policy.