

**Ph.D. Qualifying Examination
Research Proposal Guide**

Revised January 23, 2018

Important Dates & Deadlines:

Wednesday, 1/24/18: Begin Proposal Planning with Advisor/ Begin Writing Proposal

Wednesday, 2/7/18: Dissertation Committee List Due to DGS by Email

Wednesday, 3/14/18: Dissertation Proposal Hard Copies Due to First and Second Reader
for Initial Review

Monday, 4/16/18: Last Day to Submit Proposal to Dissertation Committee

Monday, 5/1/2018: Last Day to Complete Qualifying Exam

SECOND YEAR PH.D. QUALIFYING EXAMINATIONS

During the spring semester of the second year of study, each student must successfully complete a qualifying examination administered by his or her Dissertation Committee.

The Qualifying Examination consists of two components: a typewritten document describing the student's proposed research with experimental plan and an oral defense of the document. The written document consists of a proposal that includes the specific aims of the student's proposed research, the scientific background and significance of the proposed study, a summary of preliminary results, a detailed description of the experiments planned together with their rationale and expected outcomes, and a list of all references cited in the text. The Dissertation Proposal Guide provides a detailed set of instructions describing the preparation of the proposal. Proposals must conform to all stated guidelines, including page limits, to be acceptable for review.

Because the primary purpose of the Qualifying Examination is to test the student's competence in their general area of study, a satisfactory performance requires that the student demonstrate a comprehensive and in-depth knowledge of the concepts and methodologies of the disciplines comprising the major area of research interest. The student will also be expected to demonstrate an authoritative and up-to-date grasp of the literature in their area of specialization and to be able to discuss in detail the experimental design, rationale, and methodology used in their proposed research program.

Prior to the submission of the Dissertation Proposal to the Dissertation Committee, all proposals will be evaluated first by two faculty members. One of these faculty members will be the First Reader of the Dissertation Committee, the other a member of the student's Dissertation Committee. When both reviews are completed, the student will receive a written evaluation of their proposal from the First Reader, indicating the proposal's acceptability, detailing the overall strengths and weaknesses of the research plan, and outlining any revisions that may be required for the final draft.

A student whose Dissertation Proposal is deemed acceptable will distribute a copy of their proposal to each member of their Dissertation Committee and the Graduate Program Coordinator, and then schedule an oral presentation and defense of the Dissertation Proposal with their Dissertation Committee. A minimum of two weeks must elapse between the submission of the proposal and the exam. This Qualifying Examination should occur no later than the last day of classes in the spring semester.

A student whose written proposal is deemed unsatisfactory will be given an opportunity to address the deficiencies noted by the faculty reviewers and to submit an appropriately modified proposal. If the resubmitted proposal is accepted, the student will then be allowed to proceed to the Qualifying Examination.

A student whose overall performance in the Qualifying Examination has been judged unsatisfactory will not be admitted directly to doctoral candidacy. At the discretion of the Dissertation Committee, such a student may be offered the option of reexamination within a specified period of time. If the student is not offered reexamination, or if the student's performance is judged unsatisfactory on reexamination, she/he will be directed either to pursue a program leading to the Master of Science degree or to leave the Department.

It is the responsibility of the First Reader to provide to the Graduate Program Coordinator a written summary of the outcome of the Qualifying Examination and the recommendations of the Dissertation Committee. That report will become part of the student's permanent departmental file.

A. GENERAL INSTRUCTIONS

- **Read and follow the instructions carefully to avoid delays and misunderstandings.**
In preparing the proposal, use English and avoid jargon. For terms not universally known or for abbreviations, define the term the first time it is used, with the appropriate abbreviation in parentheses; the abbreviation may be used thereafter.
- **Observe type size and format specifications throughout the proposal, or the document will be returned without review.**
Prepare the proposal single sided, with uniform 1-inch margins at top, bottom and on each side. The type must be clear and readily legible, in standard size, which is 12 point. Line spacing is at the discretion of the proposer but cannot exceed 6 lines per inch. Established page limits (see below) must be followed. Use black letters that can be clearly copied. Do **not** use photo reduction. Prepare all graphs, diagrams, tables, and charts in black ink. Figures, charts, tables, figure legends, and footnotes may be smaller in size but must be readily legible.
- **Observe page limitations, or the proposal will be returned without review.**
The Project Description should be a detailed discussion of as described below, but must not exceed 15 single-spaced pages, including text plus all figures, charts, tables and diagrams. This page limitation does not include References Cited (see Specific Instructions).

B. SPECIFIC INSTRUCTIONS *Sections of the Proposal*

- **Face Page** Include the following information:
 - **Title of Project** Do not exceed 56 characters, including the spaces between words and punctuation. Choose a title that is specifically descriptive, rather than general.
 - **Name of Principal Investigator**
 - **Date**
 - **List of Qualifying Examination Committee Members** (indicate First Reader).
- **Project Summary** The proposal must contain a summary of the proposed activity not more than one page in length. It should not be an abstract of the proposal, but rather a self-contained description of the activity that will take place during the research period. The summary should be written in the third person and include a statement of objectives, methods to be employed and the significance of the proposed activity to the advancement of knowledge. It should be informative to other persons working in the same or related fields and, insofar as possible, understandable to a scientifically or technically literate lay reader.
- **Table of Contents** Provide the page number for each category listed on the Table of Contents. Number pages consecutively at the bottom of each page throughout the application. Do not include unnumbered pages and do not use suffixes, such as 5a, 5b.
- **Project Description** The Project Description should include sufficient information needed for evaluation of the project, independent of any other document. Be specific and informative; avoid redundancies. The main body of the proposal should be a clear statement of the work to be undertaken and should outline the general plan of work, including the broad design of research activities and adequate description of experimental methods and procedures. Organize Items in the Project Description to answer these questions: (1) What do you intend to do? (2) Why is the work important? (3) How are you going to do the work? **Do not exceed 15 pages.** All sections of the proposal (except references), tables, graphs, figures, diagrams, and charts must be included within the 15-page limit. **The 15-page limit will be strictly enforced. Proposals that exceed this limit or do not conform to the type size limitations (see above) will be returned without review.**
- **Alternative formats for the Proposal** With consent of your advisor and first reader, alternative formats for the proposal permissible, though the same length requirements should be followed.

C. RECOMMENDED PAGE DISTRIBUTION

- **Specific Aims** List the broad, long-term objectives and what the research proposed is intended to accomplish. State the hypotheses to be tested. ***One page is recommended.***
- **Background and Significance** Briefly sketch the background leading to the present proposal, critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. State concisely the importance and scientific relevance of the research described in this application by relating the specific aims to the broad, long-term objectives. And broader significance to Biology and/or medicine. ***Two to three pages are recommended.***
- **Preliminary Studies** Describe or present data of any preliminary studies that suggested models/hypotheses presented in the specific aims or that support the feasibility of the proposed experimental approach (es). Cite the relationship of such studies to the experimental design of the proposed activities. Present only those studies that are relevant to the rationale and/or design of the proposed research. ***Two to three pages are recommended.***
- **Research Design and Methods** Describe the research design and the procedures 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. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. As part of this section, provide a tentative sequence or timetable for the project. ***Five to six pages are recommended.***
- **References Cited** List all references. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication. The references should be limited to relevant background citations and current literature. While there is no page limitation, it is important to select only those literature references pertinent to the proposed research.

NOTE:

Good technical writing is an extremely important part of scientific research. Whether you become involved in teaching, academic or industrial research, or government policy, your job will include writing technical documents, proposals, and reports. The success of your career will depend not only on the creativity of your research, but also on your ability to communicate your ideas and results. The Qualifying Exam provides you the opportunity to work on your scientific writing, and garner the help and suggestions of an experienced faculty committee. We look at the Qualifying Exam as a chance to help you grow and mature in your chosen field, and as an important step in ensuring your success as an investigator.

PH.D. QUALIFYING EXAMINATION PROPOSAL TIPS

Summary

- Browse examples of abstracts of funded proposals at NIH: <https://projectreporter.nih.gov/reporter.cfm>; <https://www.nsf.gov/awardsearch/>

Specific Aims

- Somewhat of a misnomer, since you DO NOT want just a specific list of experiments to perform.
- Need to convey critical scientific questions/rationale that prompt each set of experiments proposed.
- Often easily expressed as question.
- Best if expressed as hypothesis to test.
- Following each scientific question/hypothesis, cite experiment(s) that will answer/test.
- Format as actual listing/outline.
- Numbering/lettering of individual aims and experimental strategies should correspond to the numbering/lettering of subdivisions in Project Description.
- Debatable point: For this section & throughout, first person writing is more readable than passive voice.

Project Description

- State explicitly what you plan to/will do.
- Avoid conditional phrases, such as “We could...” or “Another experiment that could be done...”
- For techniques that are not commonly performed, be sure to provide sufficient details to convince reviewers that you will be able to carry out the proposed experiments.
- Avoid proposing significant bodies of work that would require making or acquiring any specific reagent.
- For example, if your entire proposal depends upon having a specific antibody reagent, and your first step is to generate that antibody, your review committee will be skeptical of your likelihood of success.
- Be sure to present predicted outcomes of experiments, together with their interpretation relative to your specific aims.
- If alternative outcomes are possible, consider each and describe your subsequent experimental direction given either outcome.
- Be sure to consider the possibility of experimental failure/malfunction.
- Present alternative experimental designs/methods to the same goal for technical approaches that might be problematic.
- Be realistic about what can be reasonably accomplished in the time proposed.