GUIDELINES FOR THE CANDIDACY EXAMINATION
Biochemistry Ph.D. Program
University of Maryland, College Park

This document provides guidelines for preparing a candidacy proposal and instructions for the oral examination before your Dissertation Advisory Committee.

I. Selecting the Dissertation Advisory Committee *By October 15th of the second year*

Students select a Dissertation Advisory Committee by October 15 of the second year. The Dissertation Advisory Committee is comprised of the research advisor, three Biochemistry/Chemistry faculty members and a Dean's representative from outside the Department. No more than one of the four Departmental members can be an Affiliate member of the department. The Dean's representative is required only at the Ph.D. dissertation defense but must be notified of earlier meetings and may choose to participate at any time. The committee must be approved by the Director of the Biochemistry Graduate Program before it becomes final and before beginning to schedule the candidacy examination. Failure to select a committee or to comply with the above instructions will compromise a student's good standing in the program and may lead to expulsion from the program. The official Candidacy Committee Nomination Form can be found in the "Forms" list at

http://www.chem.umd.edu/graduateprogram/phdinbiochemistry/

II. Setting the date for the Candidacy Examination *By March 28th of the second year*

Students are responsible for contacting members of their committee in a timely fashion to schedule the candidacy exam. Although not required, the presence of the Dean's representative at the candidacy exam is strongly encouraged. **The oral candidacy exam should be taken before May 31 of the second year.** Students are also responsible for notifying (by email) the Biochemistry Program Director of the date of the candidacy exam. Failure to take the candidacy exam before May 31 may compromise a student's good standing in the program and may lead to expulsion from the program.

III. Criteria for Admission to the Candidacy Examination

The Candidacy Examination, upon successful completion, advances the student to candidacy for the degree of Ph.D. in Biochemistry. To be eligible to take the Candidacy Examination, the student must meet ALL of the following criteria:

1. Satisfactory completion of the core courses (BCHM671, BCHM675, and BCHM 661+662) with a minimum grade of B– in each and every course.
2. Satisfactory completion of the rotation course (BCHM 699) with a minimum grade of B. Acceptance into a laboratory for Ph.D. research.
3. An average grade of B for ALL courses taken, i.e. a GPA ≥ 3.
4. Compliance with the criteria for selection of the committee members and for scheduling the candidacy exam as described in sections I and II.

IV. Candidacy Examination

By May 31 of the second year

The candidacy exam is designed to help you develop the critical written and oral skills necessary to become a successful Ph.D. scientist. The exams also enable your dissertation advisory committee to assess your research progress and potential. The candidacy examination consists of two parts, a **written document** and an **oral defense**. The major objectives for the candidacy exam are to determine:

1. if you can communicate in writing and orally to your committee the significance of your research and that you understand the objectives and implications
2. if you have chosen a research plan that is likely to return results in a reasonable time
3. if you have the background knowledge and understanding necessary to carry out the proposed research

A. Instructions for the Candidacy Paper

The paper must be the original work of the student, as the student is primarily responsible for the success of the project. **Plagiarism in the paper is grounds for immediate dismissal from the program and disciplinary action by the University.** Students are strongly encouraged to discuss the project with their advisor and with knowledgeable students and post-docs. You are also encouraged to ask student colleagues or the Graduate School Writing Center to proofread and critique the document. The advisor may assist with the overall organization of the paper and edit the paper to improve the clarity of the writing. However, **the scientific content of the paper must be created by you and you alone**.

The paper must be organized into subsections as described below, and each should be clearly identified by a title. The proposal should be a maximum of 25 pages double-spaced, excluding the references and any appendices. Most proposals will be ~20 pages.

Cover Page (1 page) that contains:

- Title of the proposed research
- Candidate's name
- Abstract of the proposed research (200 words maximum)
- Date and location of the oral examination
- List of the dissertation committee members
- A signed certification line acknowledging adherence to the University's honor pledge: "I adhere to the University of Maryland honor pledge in its entirety"

Introduction (maximum 6 pages) that:

- States the current state of knowledge relevant to the proposed research
- Provides information on the significance of the project
- Briefly describes the general approaches to be used in the project

N.B.: the introduction should not be a comprehensive literature survey, but it should provide the essential background for the project.

Specific Aims (1 page) that includes:

- An initial brief narrative (200 words maximum) describing the significance, the long-term goal, and the hypothesis guiding the project.
- Lists the specific aims (between 2-4 aims) of the project.
- Each aim should consist of only ONE sentence. Use a brief paragraph under each aim if more details are needed.

Preliminary Results (maximum 7 pages):

- Describes the work performed by the student relevant to the proposed project
- Should not include an overly detailed description of the experiments. Details will be reported in the APPENDIX as "Materials and Methods"
- Should be described in the context of the specific aims

Research Plan (maximum 10 pages) describes how the research will be carried out and how each specific aim will be addressed. It contains:

- A description of the experimental design and of specific methods to be employed.
- An explanation, when possible, why one approach or method will be used in preference to others.
- A detailed discussion of the way in which the data will be collected, analyzed and interpreted.
- A discussion of the expected results and their implications for the specific aims.
- A discussion of potential difficulties and limitations and how these will be overcome or mitigated. A brief description of alternative experiments may be provided.
- Precautions with respect to any hazardous procedures or materials.
- A timetable of the work plan clearly stating the time of conclusion of each specific aim and the expected graduation date.

References

- Provide a complete reference list in the standard format of the journal Biochemistry, using EndNote or some other reference manager program.
- Full titles for each reference must be given.
- You should be able to state why each paper is in the reference list.

Appendix

- This includes the "Material and Methods" section for the preliminary results.
- It may also include additional preliminary results that could not be included due to space limitations. These results are expected to be not as crucial as those described in the preliminary results section.

When do you need to submit the candidacy paper? A printed copy of the candidacy paper must be given to each member of the committee at least 7 days prior to the scheduled examination.

B. Instructions for the Candidacy Oral Examination

1. **Oral presentation.** You should present a 20-30 minute overview of your proposed research. The student should consult with his/her advisor for appropriate presentation content and length. You are strongly encouraged to practice in front of knowledgeable students and post-docs. The oral presentation should include:
    - Introduction to the research problem or hypothesis (maximum 10 minutes)
    - Motivation for the proposed research
    - Key results or progress
    - Future research plans (at least 15 minutes)

2. **Oral examination.** Your committee will ask you questions about the paper and any general issues or concepts that relate to your project. Your committee will ask about what you have already done and what you plan to do. You are expected to demonstrate a sound grasp of both the practical and theoretical aspects of your research project, and a good command of the relevant literature. You may also be asked questions on general knowledge in biochemistry. It is important that you demonstrate to your committee that you understand why you are involved in your project and how you plan to carry it out successfully.

V. Evaluation Criteria

A copy of the evaluation form is available on the **Ph. D. in Biochemistry** web page. The essence of the candidacy examination is that you must show a strong background in biochemistry and on your project and a thorough understanding of the research approaches you are proposing. These are the evaluation criteria for the examination:

- Quality of the written manuscript
- Quality of the experimental design and ability to defend the research plan
- Quality of the oral presentation
- Knowledge of background material
- General knowledge in biochemistry
- Effort and laboratory performance

In the event that a student does not pass the candidacy exam, the candidate may be allowed to repeat the exam by the end of the fifth semester of study, or the candidate may be given the opportunity to complete a M.S. degree with or without thesis by the end of the fifth semester of study, or the candidate may be expelled from the program.

The experience of advancing to candidacy is intended to be difficult but rewarding. The ability to think deeply and communicate clearly is the essence of Ph.D. training.

The latest version of this document should always be available at:
http://www.chem.umd.edu/graduateprogram/phdinbiochemistry