

# BIOCHEMISTRY AND MOLECULAR BIOLOGY QUALIFYING EXAMINATION GUIDELINES

## Purpose of the Exam

To qualify for admission to Candidacy, PhD students in the Department of Biochemistry and Molecular Biology must pass a Written and Oral examination administered by their Dissertation Advisory Committee. The objective of the Qualifier exam is to determine whether a student understands the principles of biochemistry and molecular biology, can read and comprehend relevant literature, and can construct convincing hypotheses and a cogent experimental plan. All of these are essential to a successful career in science and will be considered in grading the exam. After passing the Qualifier exam, the student is certified as a Candidate for the PhD degree. Admission to Candidacy must occur at least one year prior to completing all requirements for the PhD.

## Detailed Instructions

The Written and Oral components of the Qualifier exam should be completed by October 15th of the third year. An extension may be granted by the Director of Graduate Training with the recommendation of the mentor. If a Student does not complete the Qualifier exam by the deadline or receive an extension, they will be placed on academic probation. Students should set a proposal defense date with their Dissertation Advisory Committee and the Director of Graduate Training well in advance to avoid scheduling conflicts.

### **Written Exam**

Prior to the proposal defense, students will write two documents that will be examined by their Dissertation Advisory Committee. Both documents will be submitted to the Student's Committee at least two weeks before the proposal date to give them adequate time to review.

1. Students will write a fully referenced literature review approximately 2,000-3,000 words in length, which provides additional background for the research proposal and may serve as a template for the first chapter of the student's dissertation.
2. Students will also write a research proposal based on their proposed dissertation project, using an NIH-style format (see below). Although extensive preliminary data is not required, a strong premise that supports the rationale for the research project is essential.

0.5-inch margins  
11-point font (Arial recommended)  
Single-spaced text

Sections (page limit):

Title	
Specific Aims	(1 page)
Research Strategy	(6 pages total, including figures)
Significance	
Innovation	
Approach	
Literature Cited	(no limit)

### **Oral Exam**

The student presents their dissertation proposal as a public seminar, followed by a closed oral defense before the student's Dissertation Advisory Committee and Director of Graduate Training. During the oral defense, the Committee will examine the student's knowledge of both the proposed research project and fundamental concepts of biochemistry and molecular biology.

### **Grading of Exams**

The written research proposal is scored by each member of the Dissertation Advisory Committee, with an average score of 70% or above required to pass. The literature review is scored pass/fail, and a passing grade is required by at least 4 members of the Committee. The Oral exam is evaluated according to the Oral Examination Rubric, which covers three major areas: quality of presentation, cognitive skills, and response to questions. To ensure the exams are administered fairly and consistently, the Director of Graduate Training attends each student's exam.

If either the written proposal or review fall just short of passing, but have no major deficiencies, the Committee may award a conditional pass. In this case, the Student will have one opportunity to revise the document and return it to the Committee for re-evaluation within 1 week. If 1 week is not sufficient to revise the document, then a failing grade should be awarded. After passing, the Committee may request minor revisions to the proposal or review, which should be completed within two weeks.

In the case of failure to pass any component of the Qualifier exam, the student may be permitted to retake the failed component(s) of the exam once, no less than one month and no more than one year from the time the decision was made. The time allotted prior to re-examination depends on how far the grade is from passing and will be decided by the Committee. Failure of the second examination will result in the termination of the student's PhD program.

### **Ethical Conduct and Mentor Involvement**

The purpose of the exam is to determine a student's readiness to be admitted to candidacy for the PhD degree. As such, the proposal should express the ideas of the student in their own words. Although students are expected to discuss the project and specific aims with their mentor, the mentor should not edit or correct the written research proposal prior to submission for review by the Committee. It is assumed that, in preparation for candidacy, students understand the definition of plagiarism, a form of fraud. Some examples of plagiarism include failing to acknowledge or cite sources for ideas and concepts, presenting sections of a grant proposal as your own, and having someone else heavily edit or re-write your document. Changing a few words, but essentially copying the words and ideas of another, is still plagiarism, even when appropriately referenced. If, in the opinion of the faculty who grade the exam, a student's formulation of the proposal prevents proper evaluation of their skills, the student will be given a failing grade and may be subject to disciplinary action by the College of Graduate Studies.