

GUIDELINES FOR THE PRELIMINARY EXAMINATIONS
For Ph.D. Students in the
Molecular, Cellular and Systemic Physiology Graduate Program

General Information

Preliminary examinations for doctoral students consist of a set of written exams covering the student's research area and course work, a research proposal in the area of the dissertation research project, and an oral defense of the proposal. In most cases, the written exams are taken in early August after completion of the second year of study. After passing the written exams, the student will have one month to write the research proposal. The student's Advisory Committee will evaluate the research proposal and if it is found acceptable, the oral defense of the proposal will be scheduled with the Advisory Committee.

Written Examination

The student's Advisory Committee, which consists of at least five graduate faculty members (including one from outside the department), will prepare the written examinations. The written examinations should test the student's knowledge, analytical skills, and synthesis through a combination of question types, including essay, interpretation of research data, and designing experiments. The emphasis of the exams should be on topics related to the student's research area but may also include topics covered in the student's course work in molecular, cellular and systemic physiology. The Advisory Committee should meet and discuss topic areas for examination and types of questions. Each member should write and submit one or two questions to the Graduate Program Committee (GPC). The GPC will review the questions for consistency and uniformity across exams given from year to year and will assemble the exam. The GPC will be responsible for scheduling and proctoring of the exam.

The written exams will be given over two-three days and the student will be given three hours to answer each committee members' question(s). Each member of the Advisory Committee will grade the student's answer to their question(s) and send the results to the GPC. The criterion for a "pass" will be at 80% in terms of completeness and accuracy. The GPC will meet and determine if the combined scores are at 80% or above and passing. The student will be notified of their "pass/fail" status within 10 days of taking the written exams. In the event that they do not pass, the student may request one re-examination only. If the student obtains an overall pass, but one or more individual exam scores are below 70%, the GPC in consultation with the Advisory Committee may require the student to retake the individual exams. Failure to pass the written exams on the second attempt will result in consideration for dismissal by the GPC.

Research Proposal

After passing the written exams the student will be asked to prepare a research proposal. The proposal will be based on the student's own research. Some of the proposed experiments may be similar to experiments proposed by the research advisor in grants, but they must be written in the student's own words. The majority of the proposal should represent the student's independent ideas and approaches, and these may or may not

be carried out in the final dissertation project. The student should propose studies that have not yet been completed. Completed studies may be used as preliminary data. The proposal should be written with minimal help of the advisor, but this does not exclude discussions with the advisor or other faculty on proposal content or experimentation.

The proposal should be written in concordance with the guidelines for an R01 application to NIH. It should be single-spaced type, excluding the abstract, specific aims and references. Font size should be at least 11-point Arial, Georgia, Helvetica or Palatino Linotype (excluding figure legends) and margins at least 0.5 inches. Detailed guidelines available at (<https://grants.nih.gov/grants/how-to-apply-application-guide.html#inst>) and examples at (<https://www.niaid.nih.gov/grants-contracts/sample-applications#r01>). You may also check “The Grant Application Writer’s Workbook” out from the Department of Physiology office.

The research proposal must include the following sections:

Project Summary/Abstract (30 lines or less)

Specific Aims (testing a hypothesis - 1 page limit)

Research Strategy (12 page limit)

Significance

Scientific Premise

Relevant Literature in Support of Scientific Premise

Preliminary Data in Support of Scientific Premise

Significance of the Expected Research Contribution

Innovation

Approach

Each Aim:

Introduction

Research Design

Expected Outcomes

Potential Problems & Alternative Strategies

Timeline and Benchmarks for Success

Future Directions

Budget and Justification (including commodities and contractual costs, not including salaries, 1 page limit)

Rigor and Reproducibility (no page limit)

References (no page limit)

The student will be allowed one month to complete the proposal, after which time it should be submitted to the Advisory Committee for comments and feedback. The Advisory Committee will be given one week to read the proposal and decide if the proposal is acceptable. In some situations, a longer period may be necessary if one or more members of the committee are traveling or otherwise unavailable. If the research proposal is not acceptable, the committee may give the student up to two additional weeks to correct deficiencies. After the proposal or revised proposal is found acceptable, the student will be responsible for scheduling a time within two weeks for the oral defense of the research proposal. A notice of the date and location of oral defense should be sent

to the GPC and the Department of Physiology faculty. A final copy of the research proposal with the signed cover sheet should be submitted to the GPC for filing.

Oral Defense

The oral defense will begin with a presentation of approximately 20-25 minutes, covering the background, preliminary studies, and specific aims of the proposal, followed by questions from the Advisory Committee. The questions will focus on the proposal ascertaining the student's knowledge of the research area, understanding of methodologies and experimental design, ability to defend their ideas and to process information added during questioning, etc. Deficiencies noted on the written exams may also be reassessed during the oral exam. Faculty in the Department of Physiology may attend the oral exam and ask questions they deem appropriate. The oral defense is expected to last about 2 hours but is likely to extend beyond that and should be scheduled for a 3-hour session.

Immediately after the oral defense is over, the Advisory Committee will meet in private to decide on whether the student has passed the preliminary examinations. Forms evaluating the preliminary exams (written exams, research proposal, and oral defense) should be filled out at this time. The Advisory Committee will notify the student of the results immediately following their decision. In the event the student does not pass the oral defense, he/she may request another examination, which must be given within 30 days. Failure to pass on the second attempt will constitute failure of the entire preliminary examination and the matter will be referred to the GPC for a dismissal hearing.