PURPOSE

The UNC Graduate School requires a doctoral oral exam of all students. The purpose of this exam, as described in the Graduate School Handbook, is to:

- assess the extent and currency of the candidate's knowledge in a manner that is as comprehensive and searching as the best practices of that field require;
- discover any weaknesses in the candidate's knowledge that need to be remedied by additional courses or other instruction; and
- determine the candidate's fitness to continue work toward the doctorate.

The Graduate School also requires that dissertation committee members sign the Report of Approved Dissertation Project form.

The GMB oral exam combines both of these functions. Most importantly, it is used to determine whether the student can reasonably be expected to be successful in achieving a PhD in the Curriculum. The expectations for meeting this standard are described below. At the same time, the oral exam provides a forum for the dissertation committee to approve the feasibility of the project.

TIMING

The oral exam must be held before the end of December of the third year of graduate school. Failure to take the exam by this deadline will result in assignment of an IN (incomplete) grade. The IN grade must be removed by taking the oral exam. If this is not done by the end of the following semester, the grade automatically reverts to F* (administrative failure). Students with an F* are academically ineligible to continue in the PhD program. Requests for extensions to a later deadline will be considered on a case-by-case basis, but are expected to be rare and for unusual circumstances, such as illness or a change in advisors. To request an extension, a letter describing the reason for the request and the anticipated timeline for taking the exam must be submitted to the Director prior to the last week of classes for the fall semester. This letter should be co-signed by the student, the advisor(s), and the dissertation committee chair.

FORMAT OF THE ORAL EXAM

The oral exam has both written and oral components. The written component involves writing a grant proposal on the dissertation project, using the guidelines described below. The proposal is distributed to the committee members at least one week before the exam. Changes to this timing must be approved by the Chair of the dissertation committee. Students may distribute the proposal electronically, but should offer to deliver a printed copy if any committee member requests one.

The oral component takes place at a meeting of the dissertation committee. The Chair of the dissertation committee (not the advisor) runs this meeting. As in other dissertation committee meetings, the student will be asked to leave the room for a few minutes. During this time the advisor will give the committee a brief summary of the student’s progress. Strengths, weaknesses, and the quality of the written proposal should also be discussed. The student will then be invited back into the room. As with other dissertation committee meetings, the advisor(s) will then leave the room so the committee can have a discussion with the student.
When everyone is reassembled, the student begins an oral presentation of their proposal. Committee members (including the advisor) are expected to frequently question the student during the presentation. Questions can be specific to the proposal or they can broadly test the student’s knowledge of key topics the committee expects the student to have mastered. *Questions from the committee should not be answered by the advisor unless specifically addressed to him or her.*

**EXPECTATIONS**

To pass, the student is expected to excel in all aspects of the oral exam. The proposal should generally be of a quality that might reasonably be expected to be competitive for funding if it were submitted to an appropriate agency or funding source. This means the proposed aims and approaches are sufficiently developed and described. In general, the GMB oral exam is not based on the student having amassed a large amount of data or already made substantial progress on the project. However, judgments about feasibility may depend on preliminary data – *i.e.* the protein can be expressed and purified, there is a mutation in the gene, the necessary sequence data can be acquired, etc. It is not expected that the ability to do every proposed experiment will already have been demonstrated, but crucial reagents and methods should be shown to be in hand or able to be obtained.

The student should be able to demonstrate knowledge at two levels. First, the student should know general principles of genetics and molecular biology, as taught in core courses. This includes being conversant in the language of these fields. Second, the student should know the background relevant to the project. This includes not only the “facts”, but the experiments and data on which these are based. A common question is, “How is that known?” It is not expected that the student will know everything that has ever been done, but they must be able to competently demonstrate familiarity with the core literature. The student should also know what they don’t know, either because it’s not known or because it’s a gap in their knowledge that they should fill. The student is expected to convey the scientific importance of the thesis question and to understand and defend the rationale for the experimental approach that has been selected.

**DETERMINING THE OUTCOME**

After the presentation and questioning are finished the student will be asked to leave the room again. The Chair will lead a discussion of the student’s performance on the exam. The advisor may be present for this discussion and may be consulted by the rest of the committee; however, the advisor should not offer an opinion as to whether the student has passed and does not vote on the outcome. At the discretion of the Chair, the advisor may be asked to leave the room for part of the discussion and for the final vote.

The student passes if at least three members of the committee (excluding the advisor) agree on a pass. If two or more committee members (excluding the advisor) feel that the student has failed the exam, a fail will be issued (see below).

The committee may also elect to issue a “provisional pass” if it finds the student’s overall performance warrants a pass, but the exam uncovered a significant need for improvement in one or more areas. In the case of a provisional pass, the student will be required to do some additional work.
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before a pass is issued. Examples include re-writing all or part of the proposal, taking additional coursework, or doing more in-depth reading in a related field of study. Other assignments are possible; the committee should design an assignment that it feels is best suited to address the area(s) of weakness. This assignment should be completed within three months of the initial meeting, and may or may not require a second meeting. The provisional pass option has been designed by GMB to provide more flexibility to dissertation committees. It is not recognized by the Graduate School and is not indicated on the transcript or any University document. In the case of a provisional pass, the Chair does not sign the Report of Doctoral Oral Exam form until after the student has successfully completed the additional work and been issued a pass.

After the outcome has been agreed upon by the committee, the student will be invited back into the room and the Chair and committee will advise the student of the decision and discuss specific aspects of the students’ performance.

FAILURE AND RE-EXAM

Students who fail the oral exam may take it a second time. A minimum of three months must separate the first and second attempts. Students who fail the exam twice become ineligible for further graduate work. The Graduate School may permit a student a third and final opportunity to take the exam. Such requests are made at the discretion of the Director of Graduate Studies and the GMB Executive Committee after consultation with the advisor and dissertation committee.

RESPONSIBILITIES OF STUDENT

- Schedule a meeting for the exam. This includes finding a date that works for each of your dissertation committee members, finding a room in which to hold the exam, and notifying the Student Services Specialist of the date and time.
- Prepare a written proposal on your thesis project, similar in format to the NIH NRSA F31 grant proposal. Formatting and length instructions are included at the end of this document.
  o The student is encouraged to seek feedback from colleagues to help revise the proposal. Ideally, the advisor(s) will have minimal input into the writing of the proposal; however, if the proposal has already been submitted to a funding agency, it is understood that the advisor is likely to have had considerable input. If possible, it is preferable that a version that was written primarily by the student be submitted for the oral exam.
  o While the proposal should include preliminary data, the primary emphasis should be on the next 2-3 years of the project. This should include significance, rationale for undertaking the study, experimental design (including alternatives if technical difficulties are encountered), predicted or possible outcomes, and interpretation.
  o It is important for both the student and the committee to understand that the proposal is not a contract. The goals of the proposal may evolve over the course of the student’s graduate experience. It is not uncommon for the final dissertation to be a completely different project.
- Distribute the proposal to the dissertation committee at least one full week prior to the exam, or earlier if specified in advance by the Chair of the committee. If the deadline is not met the
Chair may elect to cancel the exam. In such cases the student will be subject to any applicable disciplinary action or penalties associated with failure to take the exam according to specified guidelines.

- Obtain a copy of the Doctoral Exam Report Form and the Report of Doctoral Committee Composition and Approved Dissertation Project Form from the Student Services Specialist or the GMB website. These forms must be signed by the committee Chair and committee members, then returned to the Student Services Specialist.
- Prepare a presentation to be given at the oral exam committee meeting. The presentation should be prepared to run 30-40 minutes. The actual presentation time will likely be much longer, since the committee will be interrupting with questions. It is common for oral exams to last two hours or more.

**RESPONSIBILITIES OF ADVISOR(S)**

- Ensure that students adhere to the current Curriculum in Genetics and Molecular Biology policy regarding timing of the doctoral exam. Failure to adhere to GMB policies may result in future students being ineligible for training grant support.
- Anticipate that students will need time to prepare for the exam and this necessity may temporarily reduce their research hours.
- Abide by the instructions of the Chair during the meeting. This may include being asked to allow the student to answer questions and/or being asked to leave the room during committee discussion.

**RESPONSIBILITIES OF DISSERTATION COMMITTEE CHAIR**

- Run the exam meeting. In the case of the oral exam, ensure that questions are directed to and answered by the student rather than the advisor.
- Ensure that the exam is sufficiently rigorous, but fair
- After the exam, lead discussion about performance of the student and solicit opinions as to whether the student passed or failed. Strengths and weaknesses should be discussed.
- Convey the committee’s decision and information about strengths and weaknesses to the student. This may be done in the presence or absence of the advisor, at the discretion of the Chair. The decision should also be discussed with the advisor.

**RESPONSIBILITIES OF OTHER DISSERTATION COMMITTEE MEMBERS**

- Read proposals carefully and provide feedback to the student, preferably in written form.
- During the exam, direct questions about background knowledge, rationale, feasibility of the project or methods, etc. directly to the student. In some circumstances, committee members may wish to ask questions of the advisor. In such cases it should be made clear to whom the question is addressed.
FORMAT OF THE WRITTEN PROPOSAL

Formatting rules for Ruth L. Kirschstein National Research Service Award predoctoral fellowships should be used. In brief, these are:

- 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; the font size requirement still applies.
- Use at least one-half inch margins (top, bottom, left, and right) for all pages. **Important exception:** Please do include page numbers (these are not allowed on NRSA applications because they are generated by the application system).
- Figures and tables should be embedded in the text. You may use a smaller type size for legends, but it must be in a black font color, readily legible, and follow the font typeface requirement. Color can be used in figures; however, all text must be in black.

Prepare only the following sections of the proposal (i.e., not the numerous NIH form pages):

**Specific Aims.** Limited to a single page. NIH instructions say: “State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.

List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm, address a critical barrier to progress in the field, or develop new technology.

References are not made in the Specific Aims section. Statements of fact made in this section should be elaborated on and referenced in the Research Strategy section.

**Research Strategy.** Limited to six pages, including figures and diagrams, but not including the list of references. This section should be divided into the following sub-sections, each labeled:

(a) **Significance.** Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses. Explain how the proposed project will improve scientific knowledge. Describe how the concepts, methods, or technologies that drive this field will be changed if the proposed aims are achieved.

(b) **Preliminary studies.** Summarize any preliminary studies. Note that this deviates from the NIH instructions, which use part (b) for Innovation. If you prefer, you can put preliminary studies under each Specific Aim in the Approach section.

(c) **Approach.** The first two parts below are usually done for each individual Specific Aim.

- Describe the overall strategy, methodology, and analyses to be used to accomplish the Specific Aims. Include how the data will be collected, analyzed, and interpreted.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- Include a discussion of anticipated timeframe and priorities.

**References Cited.** There is no page limit for this section. Include a full list of references cited, including titles. Author lists may be abbreviated with references with a large number of authors.