

Sept 2010

### WRITTEN PROPOSITION AND ORAL PRELIMINARY EXAMINATION

In the MICaB preliminary examination, MICaB students must be able to: 1) develop, write and orally defend a hypothesis-driven research proposal that outlines a series of experimental approaches that will test the validity of the hypothesis; and 2) demonstrate knowledge of core information and concepts in the fields of microbiology, immunology and/or cancer biology.

For Ph.D. students, the written proposition must be submitted to the CGS no later than April 1 of the student's second year in the MICaB program. For M.D./Ph.D. students, the written proposition must be submitted to the CGS no later than April 1 of the student's first year in the Ph.D. phase of their training.

For Ph.D. students, the oral preliminary examination must be completed BEFORE the beginning of the fall semester of the student's third year in the MICaB program. For M.D./Ph.D. students, the oral examination must be completed BEFORE the beginning of the fall semester of the student's second year in the Ph.D. phase of their training.

### Guidelines for Preliminary Examination Committee

The MICaB program requires that the preliminary exam committee consist of 5 faculty members, NOT including the student's thesis advisor. The preliminary exam committee should consist primarily of faculty with relevant expertise in the student's focus area.

The Graduate School requires that one faculty member on the committee be an examiner from the student's "minor, related field or supporting program". To adhere to this requirement, at least one exam committee member should have their primary expertise outside the student's focus area. If possible, this committee member should have no affiliation with the MICaB program, but needs to be a faculty member of another graduate program. At minimum, this committee member can be a MICaB faculty member but must also have a graduate faculty appointment in another program.

The student's advisor may NOT be an official member of the preliminary exam committee, but may attend the oral exam. If the student's advisor attends the oral exam, he/she may not vote or ask questions during the oral exam. However, the advisor may clarify issues during and after the exam if asked by committee members. The student's advisor is not required to attend the oral exam.

Students should ask one of the MICaB exam committee members to serve as the chair of the committee.

The preliminary exam committee is not necessarily the same as the thesis committee. Following successful completion of the oral preliminary exam, the student's advisor becomes a member of the thesis committee. Students can change the membership of the committee as needed based on the development of the student's thesis research.

### Submission of Proposition Abstract and List of 5 Exam Committee Members to the CGS

The following should be submitted to the MICaB Program Coordinator no later than February 1:

- A list of 5 faculty members (not including the student's advisor) who have agreed to serve on the student's exam committee. This list should be constructed with the advice of the student's advisor. Students should meet briefly with prospective committee members to discuss their availability to serve on their committee. The Chair and the faculty member who will serve as the "minor/related field" examiner should be indicated.

In addition, the student should list any MICaB faculty members who were not willing or able to serve on the exam committee when first asked by the student. The rationale for providing this list is that the CGS will avoid asking these faculty members to serve on the exam committee if the CGS deems changes to the committee need to be made (see below).

- A short (<1 page) draft abstract of the written proposition. This can be a draft of the “Specific Aims” section of the proposition.
- Students must also indicate their focus area

The MICaB CGS will review the provisional exam committee and will either approve the committee or suggest one (or more) proposed member(s) be replaced by other MICaB faculty. One example of why a replacement would be suggested is that a proposed member is currently serving on more than 3 other MICaB preliminary exam committees. In any given year, a MICaB faculty member may serve on no more than 2-3 MICaB preliminary exam committees. Another example is that the committee lacks expertise in all of the focus areas identified by the student. This could occur if the student indicated her/his focus area spanned more than one of the three MICaB tracks yet did not include at least one faculty member from each of the chosen tracks on the provisional exam committee.

Once the MICaB CGS approves the membership of the exam committee, the Graduate School's Degree Program Form ([http://www.grad.umn.edu/current\\_students/forms/gs89a.pdf](http://www.grad.umn.edu/current_students/forms/gs89a.pdf)) is completed and submitted to the MICaB Program Coordinator.

#### The Written Proposition

The written proposition is a NIH-style research grant proposal. *The proposition must be hypothesis-driven and can focus on an unsolved problem within the area of the student's thesis research.* However, students may develop a proposal that is distinct from their thesis research. The hypothesis in the proposition must not be trivial and must go beyond present knowledge, but not to the extent that it is indefinable, unpredictable or unfeasible by present methodology. In addition to a stated hypothesis with alternatives, the proposition must contain a brief review of the literature pertinent to the specific question, a detailed description of experiments designed to test the hypothesis, a discussion and interpretation of the anticipated results, and a concise statement of the significance of the project. *Refurbished class assignments are not allowed.*

**Fellowship Applications:** Fellowship applications submitted before the written preliminary examination deadline are encouraged. However in this case the preliminary examination proposal must be on a different topic than that submitted for the fellowship.

If the student is planning on writing and submitting an external fellowship application after their written preliminary examination, it is strongly recommended that the written preliminary examination topic be different from that of the fellowship application. The rationale for this strong recommendation is to ensure the written preliminary examination is entirely the student's own work, and is not a collaborative effort between the student and advisor, as an external fellowship application would be.

However, a student may still prepare an external fellowship application that is based on the written proposition, if the student so desires. In this case, the student and advisor must inform the MICaB CGS if this is their intent, and that they are aware of the MICaB program's policy regarding external fellowship applications based on the written preliminary examination. This policy states that the student cannot seek any assistance from anyone on the external fellowship application until after the student has officially PASSED both the written and oral

preliminary examinations. Therefore, it is essential for the student to plan well in advance, keeping the fellowship application deadlines in mind.

### Format of the Written Proposition

#### *General Considerations:*

- Font: Arial 11 pt
- Line spacing: single (not “exactly”)
- Margins: 1-inch top, bottom, left, right
- Text alignment: Left aligned (the right margin is “ragged”)
- Page numbers: With the exception of the face page, each page is sequentially numbered in the center of the footer. The footer is spaced 0.5” from the bottom edge of the document.
- Name: Right align your name in the header (last, first, middle initial) on each page except the first page (which has no header). The header is spaced 0.5” from the top edge of the document.
- Figures/Tables: Embed each figure and table in the text and include a brief legend (figures) or descriptive title (tables). Number figures and tables.

#### *Face page = first page*

- Title < 80 characters, including the spaces between words and punctuation. Choose a title that is specifically descriptive, rather than general.
- Your name goes below the title
- List your committee members below your name and indicate each one’s role (i.e., Chair, Major Field, Minor Field).

#### *Research Plan:*

- Should be 10 pages or less, without references. It includes:
  - o Specific Aims – 1 page or less
  - o Background and Significance – 2 pages or less
  - o Preliminary Data – not required but may be included (see below)
  - o Research Design and Methods
- The amount of space dedicated to each section is up to you, as long as you adhere to the total 10-page limit for the Research Plan

#### *References:*

- No page limit but be judicious
- Format – include authors’ names and full title of the article.
  - o Example: Kaech, S.M., E.J. Wherry, and R. Ahmed. 2002. Effector and memory T-cell differentiation: implications for vaccine development. *Nature Reviews Immunol.* 2:251.
  - o If the number of authors exceeds six, list only the first author followed by et al.

#### *Submission and Due Date*

- Submit the following to the MICaB Program Coordinator NO LATER THAN APRIL 1.
  - o An electronic copy of the proposition in a single PDF file (by E-mail to the MICaB Program Coordinator).
- If April 1 falls on a weekend or holiday, the written proposition is due on the next workday. Propositions may be submitted prior to the due date. Late submissions will not be reviewed and the student will be excused from the program.

### General Considerations about the Written Proposition

**Students must develop and write the written proposition independently. The student’s advisor or other faculty members may not read or edit the written proposition prior to submission.** Students may consult broadly and generally with other students, members of the

student's laboratory, and other faculty (including the student's advisor and members of the exam committee) when developing background materials and the general concepts for the written proposition.

#### *SPECIFIC AIMS*

- Begin with one or two brief paragraphs of background and introduction of the issues to be addressed.
- State the hypothesis and specific aims, followed by an outline of the experimental plan.

#### *BACKGROUND AND SIGNIFICANCE*

- The proposition must contain a review of literature pertinent to the specific question(s). This provides the intellectual framework and rationale for the proposition. It should provide the reviewer with a clear understanding of the current state of the field, the important questions that remain unanswered, why these questions are important, and which one(s) will be addressed.

#### *PRELIMINARY DATA*

- Data relevant to the proposition should be embedded as figures/tables in the text. To conserve space, wrap the text around the figures/tables.
- If the proposition is on an area of research based on a review of the literature, and there is no relevant preliminary data, state so. This will not be counted against the student.

#### *RESEARCH DESIGN AND METHODS*

- The proposition must include descriptions of experiments designed to test the hypothesis in sufficient detail to allow the reviewer to assess their feasibility and applicability, a discussion and interpretation of the anticipated results and potential pitfalls, and should conclude with a concise statement of the significance of the project. Insight and creativity in solving the problem will be an important basis for evaluation, as well as the ability to present a focused plan. Arguably, the most common criticism of these propositions is a lack of focus.

#### Evaluation of the Written Proposition

The proposition is distributed to all members of the exam committee. Each member of the exam committee, with the exception of the minor field examiner, will prepare a written critique. *Examiners will be asked to comment specifically on the creativity, originality and validity of the proposition and of the experimental approaches proposed to test the postulated hypothesis as well as on the quality of the presentation.* Both positive and negative points will be highlighted.

Each examiner will indicate whether the proposition is acceptable, needs revision or is unacceptable.

- **ACCEPTABLE:** If all examiners rate the proposition as acceptable, the student may schedule the oral preliminary examination (see below).
- **NEEDS REVISION:** It is the policy of the MICaB program to return the written proposition if **any** member of the exam committee votes for revision.
  - o After receiving the comments from the exam committee, students should meet individually with each committee member who requests changes so that there is a clear understanding of the concerns and how to adequately address them.
  - o **The student's thesis advisor is NOT allowed to comment or help with the revision.**
  - o The revised proposal should be prepared as follows:
    - o Include no more than a 3-page introduction to the revised proposal that presents a point-by-point response to the criticisms, and a summary of the

- changes that have been made. These introductory pages do not count towards the 10-page limit (i.e., revision plus rebuttal may be up to 13 pages long).
  - o Clearly mark the changes in the proposal by appropriate bracketing, indenting, or changing of typography, unless the changes are so extensive as to include most of the text. This exception should be explained in the Introduction.
  - o Students have only ONE opportunity to revise their proposition (see evaluation below).
  - o The revised proposition is due 4 weeks after the initial evaluation is returned to the student.
- **UNACCEPTABLE.** If **any** member of the exam committee judges a proposition to be unacceptable, then the student must develop a **new** proposition.
  - o Students should follow the same guidelines that were used to prepare the initial proposition (see above).
  - o As before, the proposition should state a hypothesis about an unsolved problem within the area of the student's thesis research. This hypothesis must not be trivial and must go beyond present knowledge, but not to the extent that it is indefinable, unpredictable or unfeasible using present methodology. In addition to a stated hypothesis with alternatives, the proposition must contain a brief review of the literature pertinent to the specific question, a detailed description of experiments designed to test the hypothesis, a discussion and interpretation of the anticipated results, and a concise statement of the significance of the project. Insight and creativity in solving the problem will be an important basis of evaluation.
  - o Students are urged to consult with exam committee members as the new proposition is developed.
  - o Students have only ONE opportunity to develop a new proposition (see evaluation below).
  - o The new proposition is due 4 weeks after the evaluation of the initial proposition is returned.

#### Evaluation of Revised and New Propositions

All revised and new propositions are evaluated as either acceptable or unacceptable. If all examiners judge the revised or new proposition to be acceptable, then the oral preliminary examination may be scheduled.

If there is disagreement among the committee regarding the revised or new proposition (i.e., one or more "unacceptable"), then the committee (including the student's advisor) will meet to discuss the proposition. The committee's recommendation at this stage (either "acceptable" or "unacceptable") will be forwarded to the CGS, which will have final approval. If the overall decision on the proposition is "acceptable", then the student will be allowed to proceed to the oral preliminary examination. *As outlined in the MICaB Policies and Practices, students will be excused from the program if the overall decision on the new proposition is "unacceptable".*

#### Scheduling the Oral Preliminary Examination

All members of the exam committee should attend the oral preliminary examination.

Students should plan to reserve a room for 3 hours. Oral examinations typically last 2-2.5 hours so 3 hours should be more than sufficient. Notify the MICaB Program Coordinator by E-mail of the date, time and location of the oral examination.

Once the exam has been scheduled, submit the Doctoral Preliminary Oral Examination Scheduling Form (<http://www.grad.umn.edu/current%5Fstudents/prelimschedule/>) to the

Graduate School.

For Ph.D. students, the oral preliminary examination must be completed BEFORE the beginning of the fall semester of the student's third year in the MICaB program. For M.D./Ph.D. students, the oral examination must be completed BEFORE the beginning of the fall semester of the student's second year in the Ph.D. phase of their training.

#### Format of the Oral Preliminary Examination

The purpose of the oral preliminary examination is: 1) to test the student's ability to present and defend the written proposition; and 2) to test the breadth of the student's knowledge of fundamental key concepts in microbiology, immunology and cancer biology.

In addition to the written proposition, the exam committee will have a copy of the proposal degree form (which lists the courses taken by the student), and course syllabi and reading lists for the MICaB required courses (8002, 8003 and/or 8004, 8012).

The oral preliminary exam will have the following format:

- The student will be asked to leave the room before the exam begins. At this time, the chair of the exam committee will review the ground rules of the exam with other committee members.
- At the beginning of the exam, the student will give a short oral presentation introducing the written proposal to the committee. Students may wish to state the hypothesis and aims and provide a model slide. Preliminary data are not required. This presentation can be a maximum of 10 minutes in length. No computer (i.e., PowerPoint, Keynote, etc.) presentations will be permitted, but an overhead projector or whiteboard may be used. Committee members will NOT be allowed to ask questions during the student's presentation.
- Following the presentation, committee members will ask questions about the written proposition or topics related to the written proposition. Then the committee will have from 1 hour and 50 minutes to 2 hours and 20 minutes to question the student, for a total of 2 to 2.5 hours. In general, the first portion of the examination will be used for questioning the student about their proposal and the latter portion of the exam used for questioning general knowledge, with the timing of these portions left to the discretion of the committee. The chair of the committee is responsible for adhering to the oral preliminary examination format.

#### Evaluation of the Oral Preliminary Examination

Following the exam, the student is excused from the room and each committee casts a vote of "PASS", "PASS WITH RESERVATIONS" or "FAIL". Following discussion, an overall evaluation of "PASS", "PASS WITH RESERVATIONS" or "FAIL" is given.

- PASS: The student has passed the oral preliminary examination.
- PASS WITH RESERVATIONS: The student has passed the oral preliminary examination, but the committee has some concerns that must be addressed to remove the reservations. The committee will outline what must be accomplished in order to lift the reservation.
- FAIL: The student has failed the oral preliminary examination. The oral preliminary examination may be taken a second time only with unanimous approval of the committee and the same committee members must give the exam.

The signed Preliminary Oral Examination Report form should be submitted to the Graduate School within one working day of completion of the oral preliminary exam.