**Chemical Biology Ph.D. Path**

**2nd Year Preliminary Research Report & Oral Defense Instructions**

**Overview**

The research report and oral defense emphasize that Ph.D. research and a successful thesis remain the prime requirements for a doctoral degree, and they ensure that thesis research is vigorously pursued early on. Thus, approval for further study will be given only if the fulfillment of these requirements demonstrates continuous, conscientious and intensive research effort. Successful results are impressive, but hard work that still has not yielded positive conclusions are acceptable and expected.

Preparing this report is an excellent opportunity to assess your own progress; accurate self-assessment is crucial for professional success. This is a time for you to demonstrate: 1) that you have mastered the intellectual background for your research, 2) that you understand the significance of your efforts and goals, and 3) that you are committed to pursuing a research-based Ph.D. degree in Chemistry.

**Page Limitations and Content Requirements**

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| **Section** | **Page Limit** | **Content** |
|  |  |  |
| I. Project Overview | \*\*Limited to space provided on form included in this document | Stand-alone, succinct, and accurate description of proposed work |
| II. Biographical Sketch | 2 pages; \*\*use form included in this document | See Instructions on form |
| III. Research Plan | 11 pages total (1 page Specific Aims and 10 pages of proposed Plan)  Use 11 pt. font (Arial or Georgia), single spacing with 1” margins. | Text plus all figures and tables  See instructions at end of this document. *Note*, references are not included in the 11-page limit |

**IMPORTANT DATES & GUIDELINES**

* **Research Report Deadline:** Turned in to thesis advisor and program coordinator on or before **31 January** of second year
* **Closed Oral Defense:** Performed on or before **31 March** of second year
* **Students are responsible for scheduling their defense with their thesis committee members.**
* The research report should be distributed by the student to the participating committee members no later than 5 p.m. CST seven (7) days prior to the scheduled oral defense date in both an electronic format and hard copy. **Failure to meet this deadline may result in exam failure and is at the discretion of the committee.**

**Chemical Biology Ph.D. Program 2nd Year Preliminary Exam**

Name (Last, First, Middle Initial):

Proposal Title:

Advisor:

**Project Overview:** State the project’s broad, long-term objectives and specific aims, making reference to the significance of the project. Describe concisely the research design and methods for achieving these goals. Describe the rationale and techniques you will use to pursue these goals. **Do not exceed the space provided in this box.**

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| **BIOGRAPHICAL SKETCH**  Provide the following information about yourself.  **DO NOT EXCEED TWO PAGES.** | | | | |
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| NAME | | POSITION TITLE | | |
| eRA COMMONS USER NAME (credential, e.g., agency login) | |
| EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)* | | | | |
| INSTITUTION AND LOCATION | DEGREE  *(if applicable)* | | MM/YY | FIELD OF STUDY |
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1. **Personal Statement**
2. Provide a brief summary of the proposed project and, importantly, why you have the appropriate skills, background, and resources to realize the project.
3. Keep this to a 1/3 of a page maximum in length.
4. **Employment**

For each, list from left to right: time period (year-year), position title, institution/company, location.

1. **Professional Memberships**

ACS, AAAS, FASEB, ASM, etc.

1. **Awards**

From left to right: year, award title, institution or organization, location.

1. **Fellowships**

For each, list from left to right: time period (year-year), fellowship title, institution, location.

1. **Publications/Presentations** 
   1. List all of your publications.
   2. Note if manuscripts are “pending publication” or “in preparation” or “submitted.”
   3. List also any pertinent presentations at national and regional scientific meetings.

**WRITTEN RESEARCH REPORT FORMAT**

The written report allows faculty members on your thesis committee to evaluate your research progress, your familiarity with the literature and concepts on which your research is based, and your vision of future directions for your research.

The report is loosely modeled after an NIH Exploratory/Developmental Research Grant Award (R21). Using this model will give you experience with a conventional format for acquiring funding in your future career.

1. **Specific Aims: *1 page***
   1. Motivate and state the underlying objectives of the proposed research
   2. Succinctly list the specific Aims of the research proposed that are designed to, e.g., 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 a new technology. Having 3-4 Aims is typical. If useful, have sub-Aims under these Aims to highlight the techniques you will use to realize the Aim (i.e., 1a, 1b, etc).
   3. Summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the field(s) involved.
2. **Research Plan: *10 pages – use the following subtitles for demarcating subsections***
   1. Significance: *1-2 pages* – *Touch on the bulk of these points (you don’t have to address each explicitly as a separate point)* 
      1. Explain importance of problem or barrier to progress in the field.
      2. Explain how the project will improve knowledge, technical capability, and/or clinical practice in one or more fields.
      3. Describe how the concepts, methods, technologies, etc. will be changed if proposed aims are achieved.
      4. State concisely the importance and relevance of the research described in this presentation by relating the specific aims to broad, long-term objectives
   2. Innovation: *½ page* – *Touch on the bulk of these points (you don’t have to address each explicitly as a separate point)* 
      1. Explain how the application challenges and shifts current research paradigms.
      2. Describe any novel theoretical concepts, approaches, instrumentation, methodologies that will be used, and describe their advantages over those currently employed.
      3. Explain any refinements, improvements, or new applications of concepts, technologies, etc.
   3. Preliminary Studies and Results: *2-3 pages*

In addition to this stand-alone section, the student integrate/point out preliminary results THROUGHOUT the report where relevant. Such citations may be more fully developed in the stand-alone section, if necessary.

* 1. Research Approach: *4-5 pages*
     1. Describe overall strategy, methodology, and analyses that will accomplish the specific aims of the project.
     2. Include how data will be collected, analyzed, and interpreted
     3. Discuss potential problems and alternative strategies
     4. Timeline expectations (i.e., prove an estimate at the end of this section as to how much time will be required for each Aim to be achieved, and when you estimate initiating each Aim (in parallel or sequentially, etc.)
  2. Future Outlook:  *½-1 page*

In this section, provide a concise summary of where the results of your proposed project could lead in the future, and highlight any applications that are particularly exciting and explain why so.

* 1. References

All in-text citations must have a full reference; no references should be included if not cited in text. Use the reference style from the journal *ACS Chemical Biology* (example: Ng, W.-L., and Bassler, B. L. (2009) Bacterial quorum-sensing network architectures, *Annu. Rev. Genet.* *43*, 197-222.) *Note,* references do not count toward 11-page limit for the report.

**ORAL DEFENSE FORMAT**

You will make a formal, 25–30 minute presentation on your research progress to your thesis committee with graphics (PowerPoint, no overheads please). The thesis committee members will ask questions and discuss your research progress and thesis proposal; be prepared for some questioning to occur throughout talk. The meeting will be closed and typically take 55–60 min total.

Your thesis committee will evaluate your progress, with a primary focus on the following four areas:

1. Knowledge of the scientific literature in your research area
2. Ability to apply information learned in courses to research problems
3. Demonstrated progress to date in Ph.D. research
4. Demonstrated understanding of the scientific method through a coherent explanation of the objectives, goals, and approach for the Ph.D. research yet to be completed.

Bring the “Faculty Evaluation Form” for the committee to fill out during and after your defense to give you feedback on your performance. Download the form from the Chemical Biology Ph.D. Program website: <http://chembio.chem.wisc.edu/phd/exam>