Preliminary (Qualifying) Exam in Biochemistry

Students are expected to schedule their Prelim Exam **at the end of G2** or **early in the Fall semester of G3**. Successful Prelim completion is a requirement of the Graduate School for "Advancement to Candidacy", the process by which a student is officially deemed a Candidate for a Ph.D. In the Department of Biochemistry, **the Prelim consists of two parts**: A Written Proposal and an Oral Exam. The Preliminary Exam is a Milestone event administered by the student's Graduate School-approved **Supervisory Committee**.

Prelim Exam Timeline (Late G2 / Early G3)

Dates	Events
At least 6 weeks prior to exam	Student schedules oral preliminary exam with their committee and informs DGSA of the date. Student submits written prelim exam proposal to DGSA for format check.
At least 4 weeks prior to exam	Student submits the format-approved Written Proposal to all Committee Members and on T3
1 week after initial proposal submission	Student requests feedback from the Prelim Committee Chair asking whether the Written Proposal is Accepted or Needs Revision.
At least 1 week prior to exam	Student submits revised Written Proposal to all Committee Members and on T3 (if necessary). Student sends a reminder to all Committee members informing them of the Date/Time/Place of the Exam.

Scheduling: Many students and faculty like to use When2Meet to find a consensus date and time for the Prelim. Students must be registered during the term in which they take the Preliminary Exam. During the Fall & Spring terms, students are allowed to schedule a Preliminary Exam on a date when classes are not in session (e.g., Fall Break, Spring Break, etc.). If scheduling a Prelim Exam during the *Summer term*: a Preliminary Exam may be scheduled **only** between the opening and closing dates of the Summer Session. You will see these dates on the Duke Academic Calendars. The student is responsible for scheduling the exam, reserving the meeting space, or setting up the virtual meeting (if appropriate), and informing the committee and the DGSA of the exam date so that the Preliminary Examination process can be initiated in T3.

IMPORTANT: ***All Committee members must be present to administer an Oral Exam.***
Changes to the Prelim Examination Committee: If a student requires a change to their Examination committee, the DGSA will need to be notified by email as soon as possible, but **at least 5 weeks prior to the Prelim Examination.** This email should include an updated Committee Nomination Form. Before any request is sent, the student should consult with her/his mentor and the faculty member(s) they are planning to remove/add. *All faculty on the committee must be current members of the* ***Graduate Faculty***. Students can verify membership using the following link.

If a last-minute emergency arises such that a Committee member is suddenly unable to attend, the Exam may proceed **pending the Expedited Approval of the revised Committee composition by the Graduate School Associate Dean.** Note: the committee must still have at least 4 members, including a Primary Biochemistry Faculty chair and a MAR.

Extension of the Preliminary Exam deadline beyond the end of the Spring Term of G3: Extensions must be approved by both the DGS and Associate Dean for Academic Affairs (Dr. Klingensmith). Students who have not completed their preliminary examination by the end of G4 will be withdrawn.

Written Prelim Proposal Submission Details & Approval Checklist

☐ **At least 6 weeks prior to the exam: Written Proposal Format Check.**

- Students submit the written proposal as a WORD file to the DGSA for **format approval.**
- Once approved, the student will receive a copy of the **Prelim Exam Written Evaluation Sheet** for the Written Proposal.

Non-adherence to the formatting guidelines will require a revision before the document is approved for submission to the Prelim Committee.

☐ **At least 4 weeks prior to the scheduled exam and with approval of the written format from the DGSA: Written Proposal Submission to Committee.**

- Students must upload the following **into T3**:
  - Written Proposal
  - Evaluation Sheet
  - CV
  - Professional Development Activities
- Additionally, students should distribute their Written Proposal with Evaluation Sheet **by email** directly to their committee members. The DGSA has a template you can use for this email.

☐ **1 week after submission of the Written Proposal to the Committee: Student Receives Written Proposal Approval or Requests for Revision.**

- Students should ask the Committee Chair for revision requests from committee members if they haven't received these already. Each Committee member either votes to Approve the document or Request Revisions.
- Approvals/Requests for Revisions will be assembled by the Prelim Committee Chair (see Written Evaluation Sheet), who will then contact the student with requested revisions.

☐ **At least 1 week prior to the Oral Exam: Revised Written Proposal Due to Committee.**

- If the proposal Requires Revisions: The student should confer with the Committee Chair regarding the Committee's specific revision requests and, depending on the number of revisions, either:
  - Complete minor revisions in 2 weeks and submit a Revised Proposal to all Committee Members **by email and submit in T3** at least 1 week prior to the Oral Exam.
  - Take more time to prepare a revised Proposal if the requested revisions are extensive. In this case, the Oral Exam can be delayed/rescheduled, but *must be completed by February 1st* of G3.

Written Prelim Exam Formatting and General Information:

The **goals** of the written portion of the prelim exam are as follows:

1) To demonstrate proficiency in the student's field of interest with respect to understanding pertinent literature, applying appropriate techniques, posing incisive questions or hypotheses, and designing experiments to address them.

2) To familiarize the student with preparing a formal, peer-reviewed research grant proposal.

Role of the Thesis Advisor: The Thesis Advisor is encouraged to participate in the preparation and editing of the Written Proposal. Students are urged to ask their Advisor to read the Proposal and make suggestions to improve the document's style, language, and clarity prior to distributing to the committee. The Advisor may also help assure that the Proposal conforms to the format and style guidelines. Such participation will increase the probability that the proposal will be acceptable to the committee and minimize revisions.

The following **guidelines and requirements** will help students to write a clear, well-supported proposal that highlights their ability to identify and explain important problems and design approaches to solve them.

- The wording of the proposal should **originate from the student** and should not come from previously written proposals or manuscripts.

- Students must submit the written proposal to the DGSA for a **format check at least 6 weeks prior to their Prelim Exam date** (2 weeks prior to distribution to the Committee). Non-adherence to formatting guidelines will require revisions *before* the document is approved for submission to the Prelim Committee.

- After submitting to the committee, the faculty are likely to request specific **revisions to the written Prelim document**. The student has ~2 weeks to make revisions prior to resubmitting the Final Revised Written Prelim. If extensive revisions are required, the student can delay their Oral Exam (as long as it is completed by Feb 1st of G3).

Written Prelim Exam Section Requirements

- Use 11-point *Arial, Georgia, Helvetica or Palatino Linotype font, single space with at least 0.50-inch margins on ALL sides*.
- Figures, charts, tables, figure legends, and footnotes may be smaller in size but must be legible. Figures must include explanatory legends.
- Page limits: **17 pages total, *excluding references***, with specific page limits for each of the subsections listed below.

Section 1 (Page 1): Title, Summary, Narrative

A) Descriptive Title (200 characters max, including spaces and punctuation)

B) Project Summary/Abstract (30 lines, max)

- This is a **succinct description** of the proposed work and should be able to stand on its own, separate from the application. This section should be informative to other persons working in the same or related fields and understandable to a scientifically literate reader. Avoid using the first person.
- State the broad, **long-term objectives** and **specific aims** of the project. Describe the general **research design** and **methods** for achieving the stated goals. Be sure that the project summary reflects the key focus of the proposed project.

C) Project Narrative (~3 sentences)

- Describe how, in the short or long term, the research **would contribute to fundamental knowledge** about the nature and behavior of living systems **and/or** the **application of that knowledge** to enhance health, lengthen life, and reduce illness and disability.

Section 2 (Page 2): Specific Aims

- Introduce the **background** and **importance** of the research area. State concisely the **goals** of the proposed research and summarize the expected **outcome(s),** including the **impact** that the proposed research results will have on the involved research field(s).
- Succinctly list the **basis** and **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).

Section 3 (Page 3): List of Abbreviations

- List all abbreviations used in the proposal.

Section 4 (Pages 4 – 17 max): Research Strategy

A) Background and Significance (4 pages, max)

- Describe the background and foundational studies for the proposed research in this field. Include preliminary results, if any, that are pertinent to presenting the background

(data collected by others in the lab may be included with appropriate acknowledgement).

- Explain the importance of the problem, and/or critical barriers to progress that the proposed project addresses. Describe how the project will improve scientific understanding, clinical knowledge, and/or technical capability in one or more broad fields.
- Describe how the research proposal is innovative. Explain how concepts, methods, or technologies that drive this field will be changed if the proposed aims are achieved.

B) Approach (10 pages, max)

This section should include:

- An **overarching hypothesis or goal**
- A **hypothesis or goal for each Specific Aim**
- **Objectives/Sub-aims within each Specific Aim** that will be used to examine the hypothesis/hypotheses or accomplish specific scientific goals.
- A description of the **Methods, Approaches, and/or Techniques** to be used in each Aim. Include how the data will be collected, analyzed, and interpreted. Include **preliminary studies**, if any, that are pertinent to the feasibility and/or progress towards the objectives/aims (data collected by others in the lab may be included with appropriate acknowledgement). If the project is in the early stages of development, describe the strategy to **establish feasibility**, and address the **management of any high-risk aspects** of the proposed work. Briefly outline plans for the **statistical analyses** of the data (including power calculations prior to experimental design), whenever appropriate.
- A discussion for each Aim and **how the data/results will be interpreted, limitations of the approaches/methods**, **possible problems, and alternative approaches** that would be tried if the initial approaches do not work.

Section 5 (no page limit): References

- List **all** authors for each reference unless the number of authors exceeds 10, in which case "*et al.*" may be used. Include full **titles** in citations.
- While there is not a page limitation, it is important to be selective and only include the most **appropriate** and **current** literature references pertinent to the proposed research.

Oral Prelim Exam Format

After the committee has approved the Written Proposal portion of the Prelim Exam, or the student has submitted a Revised Proposal to the Committee, the student will meet with the committee for an Oral Examination. **The Student's Prelim Committee, Revised Prelim Proposal, Updated CV, Prelim Date, Time, and Location (including virtual link, if used) *must* be entered in T3 prior to this Oral Exam.**

Please Note: *To prepare for the Prelim, students are encouraged to arrange "mock" oral exams with members of their lab and other graduate students.*

Presentation and Examination Questions: During the first ~30 minutes of the exam, the student presents an uninterrupted presentation focusing primarily on their research background, project objectives and preliminary data supporting the project. The student's thesis advisor(s) will then be asked to leave, as they are not present during the second part of the exam. The student is then asked questions by the Prelim Committee. The range of questions in this Oral Exam are in the general area of biochemistry and are related to but are not restricted to the student's proposal.

Recommendation by the Prelim Committee: At the end of the exam, the student will leave the room while the Committee discusses the results. The mentor may be asked to join the committee for consultation. At this time, each Committee member will evaluate the Prelim in T3 indicating whether the student Passes or Fails, generating the Final Preliminary Exam Evaluation document which will be approved by the DGS and forwarded to the Graduate School. The DGSA cannot submit the official Report of the Doctoral Preliminary Examination form to the DGS for his/her signature and transmission to the Graduate School until all evaluations are completed.

Evaluation: The student is informed of the Committee's decision and advice at the exam's conclusion. The T3 evaluation and comments should be discussed by the student and their research advisor.

Re-taking the Preliminary Exam

A student who fails their preliminary examination may apply, **with the consent of all the members of the their Prelim Exam Committee and the Dean of the Graduate School,** for the privilege of a re-examination.

Graduate School Prelim Re-examination Requirements:

- ☐ Re-exam must occur no earlier than 3 months and no later than 6 months after the original exam date.
- ☐ Exam must be held by the end of the Spring Semester of G3 unless specifically requested and approved by the Dean.
- ☐ All members of the student's original Prelim Committee must serve on the re-examination committee.
- ☐ Successful completion of the second examination requires the affirmative vote of all Committee members. Failure on the second examination will render a student ineligible to continue pursuing their Ph.D. degree at Duke University.