TBS PhD Student's Research Rotations, Thesis Committee Members, Prequalifying Exam and Qualifying Exam schedule.

Standard Rotation Dates

Rotation Begins	Rotation Ends	Evaluation Due
October 1	December 15	December 20
January 1	March 15	April 1
March 16	May 31	June 15
July 1	August 31	September 15

Research Rotation #1 (October 1-December 15, Fall first year in program):

Rotation Advisor(s):

Project Description:

Research Rotation #2 (Jan 1- March 15, Spring first year in program):

Rotation Advisor(s):

Project Description:

Research Rotation #3 (March 16 - May 31, Spring first year in program):

Rotation Advisor(s):

Project Description:

Note, under some circumstances, the third rotation may be waived.

• Selection of Thesis Committee Members and Prequalifying Exam Committee Meeting.

Six - twelve months before the Qualifying Exam (QE) - Define Thesis Committee Members. Student must define thesis committee members (minimum of four members) and hold a pre-qualifying exam committee meeting (4-6 months before anticipated exam date) to define parameters (specific aims) of the thesis proposal with input from committee members. One member of this committee must be an "outside member", that is, not considered core mentoring faculty for the Ph.D. Program in Translational Biomedical Science. One of the TBS Program Directors is a non-voting member of each TBS Ph.D. student's QE thesis committee and is not counted as one of the four thesis committee members; the selected program director needs to be included in the pre-qualifying exam committee meeting. A written draft of specific aims and preliminary data supporting feasibility of the project should be handed out to the committee at least one week prior to the scheduled pre-qualifying exam and also presented to the committee at the meeting to allow input based on the expertise of the committee members. An important outcome of the prequalifying exam thesis committee meeting is identifying whether all expertise needed to guide the student over the course of the project is represented by members of the thesis committee. This committee meeting also helps students prepare their NRSA individual predoctoral fellowship grant (F30/F31).

Date of Prequalifying Exam Thesis Committee meeting: _____

The prequalifying exam thesis committee meeting should occur sometime between May-July of the second year in the TBS PhD program—may occur earlier.

Thesis Committee Members

Student:			**Year Matriculated:**	
Faculty Name	**Title**	**Dept/University Affiliation**	**Role on Committee**	**Expertise**

• Scheduling the Qualifying Exam (QE) and Expectations.

Timeline to Qualifying Exam for SMD PhD programs is found at:
https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/education/graduate/trainee-handbook/academic-resources/documents/qualifying-exam-timeline.pdf

Minimum of 4 weeks before Qualifying Exam: Let your Graduate Coordinator know the date, time, place, and committee members, and give him/her abstract and title page. Additional forms available from the Graduate Coordinator will need to be completed.

At least 15 full working days (Holidays do not count as a working day!) before the Qualifying Exam: The paperwork for the QE must be finalized by the Program Coordinator, thus each TBS PhD student must work closely with the Program Coordinator to submit all required forms and documents to register the qualifying exam with the Office of Graduate Education.

Minimum of 2 weeks before Qualifying Exam: The dissertation proposal (hard copy) must be handed out to committee members at least two weeks (10 full working days; holidays do not count as a working day!) before the scheduled exam date. The proposal cannot be handed out unless the advisor(s) has/have signed the internal TBS program approval form (Advisor signoff form"—available from Katie Libby) and returned it to the Program Director. Electronic copies of the proposal in the form of a PDF file are welcome, but not required. (Student Responsibility).

One week before the exam: One of the current committee members is assigned as Chair of the Qualifying Exam by the Senior Associate Dean of Graduate Studies. The committee members are responsible for looking over the written proposal and notifying the Chair of the examination as soon as possible but no later than one week before the scheduled date of the exam whether or not the written proposal meets expectations of quality and content to go ahead with the qualifying exam as scheduled. If significant concerns are voiced about the written proposal, then the exam should be rescheduled for a future date so the student has time to revise the proposal to meet expectations for the written document. This does not imply failure on the part of the student but indicates that the thesis committee members needed to participate to a greater extent in mentoring the student through this process. The deficiencies in the written proposal need to be identified and provided to the student and the primary advisor in writing to guide the student in making the appropriate revisions. Note, the QE form and new date for the exam will need to be officially re-approved and re-registered as described above.

What to expect the day of the orals qualifying examination (~2 hr exam): The current format is to have the student give a 15-20-min presentation (PowerPoint) to the thesis committee (this is NOT a public seminar) of their research proposal to introduce the background and gaps in the field to support the rationale for the proposed specific aims. An overview of the aims and approach should be given; but details about the methods of approach are usually part of the exam question/answering session so slides prepared with such details may be held in reserve to be presented during the exam to help explain details pertinent to the Research Strategy. (Make sure the presentation is well rehearsed ahead of time and not too long!).

The thesis committee members should ask questions that test the students general knowledge of subject matter learned from course work (e.g., Statistics, Clinical Trial Design, Ethics, Survey Design, Epidemiology, Computer Science, Molecular Basis of Diseases, Microbiology, Immunology, Population Sciences, Biochemistry, or Cell Biology, among others), important basic knowledge about the disease and co-morbidities found in the patient population under study, as well as specific questions about the design of the proposed research and possibilities of how the outcome of the study would lead to the next study. It is perfectly fine to ask the student how to design a related study that is not part of the thesis project so the committee members can assess the depth and breadth of the student's knowledge in performing research in their field. **It is important to remember to include questions on how the proposed research can be translated to patient care.** Usually the committee members take turns of 10-15 minutes each to ask the student questions starting often times with the outside member and ending with the advisor. The advisor, of course, cannot answer questions, but if the advisor thinks the question posed could be re-phrased in terminology more understandable to the student, that is acceptable.

Following the oral examination, the QE Committee will meet in closed session to evaluate the student's overall performance (including the oral examination, academic record, and "wet" or "dry" laboratory or performance). The committee will vote on the following options: 1) student may pass; 2) student may fail; or 3) student may pass contingent upon meeting some further requirement set by QE Committee (e.g., the student may be required to rewrite the proposal and obtain committee approval of the revised proposal, to repeat the oral examination, and/or to take further course work to remedy some deficiency in her or his background).

The Chair of the QE Committee will notify the Senior Associate Dean for Graduate Education in writing that the student has passed, failed, or received a contingent pass of the QE. If the student has passed, the student will advance to the status of Candidate for the Ph.D. degree. This status is required by University regulations.

If the student receives a pass contingent on meeting some further requirement, the Chair of the QE Committee will inform the student of this in writing. A copy of this letter will be placed in the student's program file and a copy will be sent to the Senior Associate Dean for Graduate Studies. When the requirement has been satisfied, the student must send written documentation of this to the Program Director (to be placed in the student's program file) and to the Senior Associate Dean for Graduate Education. If no documentation is received by the Program Director stating that the student has met the additional requirement(s), the student's Ph.D. thesis for scheduling the defense will not be approved. If the student fails, a second QE may be taken after a period of five calendar months. If a student does not satisfactorily pass the second QE, he/she will be dismissed from the program.

- **Format of the QE Written Proposal.**

Date of Qualifying Exam Thesis Committee meeting: _____

Qualifying Exam should be completed by Oct 1 in the beginning of the third year of graduate studies.

The purpose of the Qualifying Exam is to evaluate whether a student is qualified and competent to continue studies toward a PhD in Translational Biomedical Science. This determination involves evaluation of the potential of a student for independent thought, her or his approach to investigating a significant scientific problem in a sound manner and his or her general knowledge in applicable areas of study. The qualifying examination cannot be taken until the student has completed at least 30 credit hours of courses, seminars and research, which normally occurs after the third semester of full-time graduate studies.

There are two major goals of the Qualifying Examination. First, the preparation stage of the examination encourages the student to research and organize the background knowledge that serves as the basis for the research proposal and to devise a series of experiments that will investigate a significant and novel problem in the student's field of interest. The preparation stage culminates in a written Thesis/Dissertation Proposal.

The second goal of the qualifying exam is an assessment of the student's basic knowledge in the chosen field of study. This assessment occurs during a closed meeting with the Qualifying Examination Committee. The focus of the examination is not just the Thesis Proposal or the supporting data. The exam will also evaluate whether the student's basic theoretical and practical knowledge is sufficient for the student to pursue a significant thesis. In this respect, the Thesis Proposal serves as a touchstone that will guide the committee's questions. The goal of these questions is to determine whether the student's coursework and preparation for the examination provide a sufficient foundation to qualify the student for the investigation of a significant scientific problem. Accordingly, the questions will test the student's knowledge of (i) the general theories and paradigms in the chosen field of study, (ii) the classical and current literature related to the student's chosen field of study and (iii) the experimental techniques commonly used in the chosen field of study, as well as alternative approaches and their strengths and weaknesses.

There are two acceptable formats for preparing the TBS written QE proposal:

1) Students may use their **NIH Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship application** (F30 or F31) including the following sections: Abstract (not more than 30 lines of single line spaced text), Public Health Narrative (2-4 sentences), Specific Aims Page (1-page), Research Strategy including preliminary data (6-page), and Literature Cited (no limit) **only if the student has completed AND submitted the application to NIH**. An additional innovation section (1-page limit), which is not part of the F30 or F31, must be included. Even if student has submitted the F31/F30, you may choose to follow NIH R01 style.

2) Students may choose to use the NIH R01 grant format, which allows more space to write the proposal (as described below) even if they have submitted the F30 or F31 proposal. Students who have not submitted an NRSA individual fellowship will follow the style of an R01 grant.

The examining procedure involves the preparation of a written proposal based on the student's expected Ph.D. thesis project and an oral examination based on this proposal by an Examining Committee—the thesis committee. The TBS Program director is a non-voting member of all TBS students' qualifying exam to ensure a similar standard of rigor and expectations is held for all students in the program.

NIH R01 grant application style for dissertation proposal. The written proposal requires use of Arial font, 11-point type; 0.5 inch (or larger) margins on all four sides. The following sections must be included:

(1) Abstract (**not more than 30 lines of single line spaced text**)**:** State the proposal's broad long-term objectives and specific aims, and describe concisely the experimental design and methods for achieving these goals. The abstract should be a succinct description of the proposed research, even when separated from the proposal. This section is not included in the 12-page proposal limit.

(2) Specific Aims: State concisely and realistically what the research described in the proposal is intended to accomplish and hypotheses to be tested. Define a gap in the field, how you intend to fulfill (answer) the gap in knowledge, the expected outcomes and relevance (impact) on public health and mission of funding agencies (e.g., NIH); do not exceed 1 page (not included in the 12-page proposal limit).

(**3) Research Strategy** – **12-page limit**. Include the following sections:

A. Significance. Briefly, sketch the background for the proposed research and critically evaluate relevant literature in the field (Scientific Premise and strengths and weaknesses of supporting data). State concisely the importance of the research described in the proposal by relating the specific aims to broad, longer-term objectives. Describe the current knowledge in the field and define the rationale supporting/leading to the hypothesis being tested (knowledge gap in the field). This content is now called "Scientific Premise"; please include a discussion of the strengths and weaknesses of the published literature and preliminary data used to provide evidence to define the gap in the field the thesis proposal will address. Make sure the central hypothesis to be tested is important enough that even if a negative or unexpected answer is obtained, the data is publishable and MOVES the knowledge in the field FORWARD. Student's mentors and thesis committee members should provide input and guidance as the project is developed. Recommended page limit is 2-3 pages.

B. Innovation. Briefly describe innovation–proposing a new paradigm, challenging old dogma, shifting research or clinical practice. In a dissertation proposal, innovation is met if the research proposed is new, unique and will move knowledge in the field forward (½ to 1 page, max for innovation).

C. Approach.

- **Preliminary Data** may be presented as a separate section after Innovation or within the Approach section of the specific aim for which the preliminary data provide proof-of-concept, feasibility, and supporting rationale. A figure may be placed in the Significance section if it provides critical rationale supporting the hypothesis to be tested. Preliminary Data should summarize work done by the student, or unpublished work of others in the PI's lab (**with appropriate acknowledgement of others' work**), to indicate that the proposed studies are feasible and significant. Students are not expected to have a large amount of data accumulated at the time of the Qualifying Examination. Preliminary data may be in the form of schematics, tables and/or figures needed to understand the major points of the proposal and MUST be included in the page limits of the Research Strategy. Tables and figure legends—may use smaller font sizes, but not less than 8-point font. Include ONLY data needed to convey the scientific message and feasibility pertinent to the hypotheses being tested; do not include irrelevant data just to prove experienced in a specific technique. Technical expertise will be described during oral presentation to examining committee!
- **Experimental Design and Methods.** Discuss in detail the experimental design and the procedures to be used to accomplish the specific aims of the proposal. The **emphasis should be on the rationale and experimental design of the experiments, including necessary controls, rather than the experimental details -** for example, do not include reagent concentrations and volumes unless this information is critical to the experimental design and interpretation. Describe protocols to be used and **provide a tentative timetable for the project**. Include a discussion of the means by which data will be analyzed and interpreted. Describe new methodology and its advantage over existing methodology. **Discuss the potential difficulties and limitations of the proposed experiments, and alternative approaches to achieve the project aims**. If applicable, briefly include information about numbers and species of animals to be used, including justifications for these choices. Include details of human subjects/patient populations (important inclusion/exclusion criteria) included in your proposal. Graphs, data, and tables that are critical to this section of the proposal MUST be included in the 12-page Research Strategy. Critical preliminary data may NOT be included in an Appendix. The Approach section is usually ~8-9 pages; however, the entire Research Strategy (Sections A-C) cannot exceed 12 pages.

(4) Literature cited (can be single-spaced). This section has no page limits but must include all authors' names, complete title, journal, volume, inclusive pages, and year as required for NIH grants. Include PMCID numbers in compliance with NIH Public Access Policy as well (as taught in the grant writing class)!

(5) Appendix. Include study brochures, consent forms, abstracts or manuscripts by the student that are accepted or in press and pertinent to the proposal, etc.—do not use the appendix to circumvent page limitations of the proposal. Do not include preliminary data in the appendix.

Although the written proposal is the intellectual output of the student, the student is encouraged to consult with others (*e.g*., his or her advisor, other faculty members, thesis committee members, postdoctoral fellows, other students, or investigators outside the University) in preparing the written proposal. It is recognized that there will be some (even substantial) input by the student's advisor, since the thesis generally reflects research activities in the advisor's laboratory. **However, the actual written proposal is to be the intellectual output of the student, and plagiarism from publications or grant applications written by the advisor or others is not allowed.** When the student has completed the written proposal, the advisor must review it before the oral examination is scheduled. While the advisor and other thesis committee members may suggest modifications in the written proposal, all revisions are to be done by the student.

Note, the information below is in the handbook, which we are working on revising/updating.

Timeline to PhD thesis/dissertation defense for SMD PhD programs is found at:
https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/education/graduate/trainee-handbook/academic-resources/documents/thesis-defense-timeline.pdf