

**University of Rochester  
School of Medicine and Dentistry**

**Ph.D. Program in  
Translational Biomedical Science**

**GRADUATE STUDENT HANDBOOK  
2013-2014**

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This handbook was prepared to supplement but **not** replace the Official Bulletin of Graduate Studies, which should be reviewed by all students.

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## **Preface**

This handbook summarizes the policies and procedures of the Ph.D. Program in Translational Biomedical Science. The general policies for graduate study at the University of Rochester are contained in the *Official Bulletin, Graduate Studies 2012-2014*. Copies may be obtained online at <http://www.rochester.edu/GradBulletin/>. Since policies continually evolve to respond to changing needs of the graduate program and our students, it is imperative that students and faculty advisors verify important information and consult with the Director of the Ph.D. Program in Translational Biomedical Science in the decision-making process.

## **I. THE FIRST YEAR**

### **A. Starting**

A successful applicant for the Ph.D. Program in Translational Biomedical Science (TBS) receives two letters of acceptance, one from the Program Director and another from the Senior Associate Dean for Graduate Education. These letters indicate the degree program to which the student has been admitted and the fellowship package offered.

In early summer, the incoming student will receive information from the Office for Graduate Education pertaining to the annual Graduate Student Orientation Program, which is generally held in advance of the start of the fall semester. At Orientation, University policies and procedures are reviewed and detailed information is presented by the University Health Service, Miner Library, Graduate Student Society, etc. The TBS Program Administrator and/or Director attends the Orientation Program and meets after with the new TBS students for course selection and registration. Students will complete the mandatory HIPAA (Health Insurance Portability and Accountability Act) as well as complete Laboratory Safety Training (LST). Periodic “refresher” training is required of graduate students for both HIPAA and LST.

### **B. Course Requirements**

The course requirements for the TBS Ph.D. are designed to be flexible because of the diverse interests of the students in this program. It is anticipated that the students will exchange information with and teach as much to each other as they will learn from their formal faculty and courses. A total of 96 credits must be earned to fulfill the Ph.D. requirements. The course requirements as they stand in the 2013-2014 term are:

#### **Year 1 Fall**

Ethics in Research (IND 501 or IND 503)

Introduction to Biostatistics (BST 463)

Molecular Basis of Disease (PTH 571)

Choose one of the following:

- Introduction to Epidemiology (PM 415)
- Advanced Biochemistry & Recitation (IND 408)
- Social & Behavioral Medicine (PM 426)
- Cell Biology (IND 409)

Elective course(s) in science discipline of research and PhD dissertation research  
CTSI Seminar Series  
Research Rotation 1 and PhD research credits  
Total Credit Hours: 16

### **Year 1 Spring**

Workshop in Scientific Communication (PM 478)

Choose one of the following:

- Design of Clinical Trials (BST 465)
- Experimental Therapeutics (PM 488)
- Qualitative Research (PM 458)
- Molecular Biology & Genetics (IND 410)
- Signal Transduction (IND 447)
- Eukaryotic Gene Regulation (IND 443)

Weekly TBS Student Seminar & Journal Club

Elective course(s) in science discipline of research and PhD dissertation research  
CTSI Seminar Series  
Research Rotations 1 and 2 and PhD research credits  
Total Credit Hours: 16

### **Year 1 Summer**

Introduction to Clinical Research

### **Year 2 Fall**

Lab Methods for Translational Research (PM 462) or replacement (This course is being redesigned)

Choose one of the following:

- Recruitment & Retention of Research Subjects (PM 419)
- Immunology (MBI 473)
- Cell & Molecular Physiology (PHP 403)

Elective course(s) in science discipline of research and PhD dissertation research  
CTSI Seminar Series  
Total Credit Hours: 16

### **Year 2 Spring**

Practical Skills in Grant Writing (PM 438)

Weekly TBS Student Seminar & Journal Club

Elective course(s) in science discipline of research and PhD dissertation research  
CTSI Seminar Series  
PhD research credits  
Total Credit Hours: 16

Students will register for 16 credit hours each semester (PhD research credits and required student seminar series and journal clubs in the major discipline of study) for years 03 and beyond until all requirements are successfully met for defense of the dissertation.

### **C. M.D./Ph.D. Combined Degree Program**

Program requirements for the M.D./Ph.D. degrees reflect the fact that most students enter the Ph.D. program after completion of two years of the Medical Curriculum. The student can use 12 credit hours for the completion of the first two years of Medical School; the difference must be made up of course work after consultation with his/her advisor for fulfilling the Qualifying Exam requirements. A total of 96 credits must be earned to fulfill the Ph.D. requirements. **M.D./Ph.D. students will not be allowed to re-enter the medical school until their thesis has been written and registered.**

### **D. Laboratory Rotations**

Three laboratory or research rotations are required for all PhD students in this program. The first rotation occurs in early fall semester, while the second and third rotations are during the spring semester, which begins mid-January. In some cases, a student may wish to do a rotation in the summer preceding the fall semester. Planning such a summer rotation should be coordinated with the Program Director and would begin on July 1. A student also may do a fourth rotation during the summer following the spring semester of the first year. The TBS Ph.D. Program Director may waive one rotation for students with substantive prior research experience.

The schedule of work involved during the individual rotations must be flexible to accommodate the very different kinds of research procedures that may be involved. These projects are nominally of eight to ten weeks duration. However, flexibility can be arranged for a variety of purposes, including holidays, conflicting obligations, and variations in experimental schedules. With this amount of flexibility built in, it should be possible to complete each project entirely within the allotted period so that the student can move on to the next rotation and give it the attention it deserves. No faculty member should expect a student to continue the project beyond the allotted time, and each student should expect to devote the appropriate amount of time and effort to each of his or her rotations during the block of time scheduled for it. Written evaluations of the rotation from both the student and the faculty mentor must be completed at the end of each rotation and given to the Program Coordinator who will then submit to the Senior Associate Dean for Graduate Education.

Rotations begin and end as follows:

Begin: October 1	End: December 15
January 1	March 15
March 16	May 31
July 1	August 31

More details and links to required forms can be found at:

<http://www.urmc.rochester.edu/education/graduate/trainee-handbook/getting-started/graduate-students.cfm>

Nothing said here precludes a student from participating in additional experiments in any laboratory with the permission of the Program Director, on an informal, entirely voluntary

basis, but a scheduled rotation is a formal part of each student's graduate training and the student is responsible to the rotation faculty member for each assigned project.

#### **E. Choice of Research Advisor and Mentor Development Core Committee**

**Research Advisor:** At the end of the first year of graduate study, each student chooses a primary research advisor. Students may choose as their primary research advisor any faculty member on the School of Medicine and Dentistry Interdisciplinary Graduate Program faculty of designated mentors with an appropriate research program and funding mechanism to support the student. The TBS Ph.D. Program Director will make the final determination as to whether the research program and research advisor meet the requirements of the program. A faculty member may decide not to accept a student on grounds that are not a reflection on the student. Examples are: limitation of laboratory space or facilities, limitation of funds to support research, pressing time commitments which preclude the faculty member devoting sufficient time to the student's training and education, plans for a sabbatical leave, etc.

Each student, before making a choice of research advisor, should have a chance to become acquainted with a range of individuals and research activities in the Medical Center. To this end, the faculty have adopted the date of May 1 as the earliest date on which any faculty member is free to give any student assurance (overt or implied) that the student will be accepted into the faculty member's laboratory. It is recognized that some exceptions may be necessary (for example, a student comes to the University of Rochester specifically to work with a given faculty member). Any student desiring such an exception should discuss the case with the TBS Ph.D. Program Director.

Each student is encouraged to explore the research interests of several faculty members, not limited to those faculty members with whom the student had laboratory rotations, and to do this over a period of several weeks before seeking acceptance into any laboratory. If a student is interested in choosing a research advisor with whom the student did not do a rotation, this should be discussed with and approved by the Program Director. The purpose of setting a specific date before which no commitments can be made is to ensure that each student has ample time for this kind of exploration without "losing out" to a student who might be more prompt or forceful in seeking an early assurance of acceptance.

**YOU MUST INFORM THE PROGRAM DIRECTOR AND COORDINATOR AS SOON AS YOU HAVE CHOSEN AN ADVISOR.**

**CTSI Mentor Development Core:** Once the student has chosen a primary research advisor, both the student and the advisor are assigned to a member of the Clinical and Translational Science Institute (CTSI) Mentor Development Core (MDC) Committee. The Committee, chaired by Dr. Vivian Lewis, meets monthly to develop a flexible set of activities

to expand, promote, and sustain mentor development. The student and advisor will develop an academic career development plan for the student to then be shared with the MDC Committee member. The student will meet with their designated MDC Committee member at the beginning of the academic year and then meet with their advisor and the MDC committee member at the end of the year to make sure that the student has stayed on track with their academic career plan.

#### **F. Thesis Committee**

As soon as is practical after choosing a primary mentor (also referred to as thesis or research advisor), the student and advisor should agree on the composition of a Thesis Committee. The student should contact all members to obtain their agreement to serve. The TBS Program Director will help to determine whether the thesis committee members meet the criteria of “inside” or “outside” the program’s primary mentoring faculty.

The committee consists of the student’s research advisor, at least two primary tenure track faculty members associated with the TBS Program (a clinical researcher and a basic researcher—the clinical or research track can be fulfilled by your primary mentor) and at least one tenure track faculty member not associated with the TBS Program but whose expertise is relevant to the field of the student’s proposed research. This committee **must** meet at least once a year to review the progress of the student (see section on review of graduate students). The student and advisor **must** electronically submit the finalized Thesis Committee (annual evaluation) meeting form to the Program Coordinator and the Senior Associate Dean for Graduate Studies at least once a year. The electronic form can be obtained at the following website:

<http://www.urmc.rochester.edu/education/graduate/home/forms.cfm>

#### **G. Seminars**

There is an extensive program of seminars within the School of Medicine and Dentistry to supplement classroom and laboratory teaching. The CTSI Seminar Series is most pertinent, and it is expected that all students will attend unless there is a conflict with formal classes. The CTSI Seminar Series is held on Tuesdays, from 12:15-1:15 pm. In addition, very useful information can be gained from seminars held in departments across the university.

## **II. THE SECOND AND THIRD YEARS**

#### **A. Teaching**

As part of their graduate training, all Ph.D. and M.D./Ph.D. students are ***encouraged*** to have some teaching experience; however, there is not a specific requirement. This usually does not start until the second year, except for advanced students or students with previous teaching experience. In general, students are involved in assisting in one of the courses and/or seminars in their research advisor’s department. Students are also involved in recruiting and mentoring new TBS Ph.D. students each year.

## B. Qualifying Examination

Expected completion of the Qualifying exam no later than Oct 1<sup>st</sup> of the fifth semester (3<sup>rd</sup> 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 Ph.D. 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 30 credit hours of courses/seminars/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 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.

**Six - twelve months before 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. The TBS Program Director, Dr. PJ Simpson-Haidaris, 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, but it is a good idea to include Dr. PJ in the pre-qualifying exam committee meeting.

**The format of a TBS dissertation proposal is in the style of an NIH R01 grant application.** In brief, the written proposal requires use of Arial font, 11 point type; minimum of 0.5 inch (or larger) margins on all four sides; 1 page for Abstract (not more than 30 lines of single line spaced text); 1 page for Specific Aims (single line spaced text allowed); 12 pages single-spaced for Research Strategy including Significance (and Background), Innovation and Approach; Preliminary data in the form of schematics, tables and/or figures needed to understand the major points of the proposal must be included in the page limits of the Research Strategy and 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/supporting rationale. Tables and figure legends—may use smaller font sizes, but not less than 8 point font; in the Approach section, include rationale, experimental or study design, statistical methods/data analyses, data interpretation and provide discussion of limitations, anticipated problems and alternative approaches to accomplish the goals of each experimental aim; Literature cited (can be single-spaced) has no page limits but must include all authors names, complete title, journal, volume, inclusive pages, and year as required in the NIH SF424 Guidelines to grant proposals; Appendix material can 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.

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.

**Three weeks before the Qualifying Exam:** The qualifying exam paperwork and date set for the exam must be submitted 15 full working days before the exam date to the TBS Program Coordinator and the Program Director, Dr. PJ Simpson-Haidaris for approval (signature approval required using specified form for registering qualifying exam), and turned into the Senior Associate Dean for Graduate Education Office (c/o Linda Lipani) by Katie Libby, TBS Program Coordinator, at least 10 full working days before the exam date. This paperwork includes the official form (fillable PDF), a cover page (word .doc template) and the abstract of the proposal. Before the written proposal can be registered with the Senior Associate Dean for Graduate Education, the student's primary advisor must complete and sign the fillable PDF form "Advisor signoff orals proposal written document PhD in TBS" and, 12-15 full working days before the exam date, return the signed form to the Program Director (Dr. PJ Simpson-Haidaris) verifying that the written proposal is acceptable according to the advisor and ready for distribution to the thesis committee members.

**Two weeks before the 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 has signed the approval form ("Advisor signoff orals proposal written document PhD in TBS") and returned it to the Program Director. Electronic copies in the form of a PDF file are welcome, but not required.

**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 20-25 min presentation (PowerPoint) 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, Molecular Basis of Diseases, 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 Qualifying Examination Committee will meet in closed session to evaluate the student's overall performance (including the oral examination, academic record, and laboratory performance). The committee will then vote on the following options: (1) the student may pass; (2) the student may fail; or (3) the student may pass contingent upon meeting some further requirement set by the Qualifying Examination 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 Qualifying Examination 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 Qualifying Examination. 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 Qualifying Examination 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 defense will not be approved. If the student fails, a second examination may be taken after a period of five calendar months.

#### **Forms/documents required (Available from the Program Coordinator):**

- 1) Official QE registration form (fillable PDF) (prepared by TBS Program Coordinator and signed by TBS Program Director)
- 2) A cover page (word .doc template) (completed by student)
- 3) The abstract of the proposal (provided by student)
- 4) "Advisor signoff orals proposal written document Ph.D. in TBS" (fillable PDF) (TBS program-specific form must be signed by primary advisor and returned to TBS Program Director before hard copy of proposal is handed out to thesis committee members).
- 5) Annual Evaluation form must also be filled out after the qualifying exam by the student and primary advisor and agreed upon by all committee members as described below (III. Student Evaluation).

### **III. Student Evaluation**

It is the Program's responsibility to keep track of its students and to determine that they are making progress in their graduate training. This review is done as follows:

First year students will receive written evaluations from each of their Lab Rotation

advisors. In addition, the TBS executive committee will review the progress of the first year students' coursework and lab rotation evaluations. If remediation is necessary, the committee will design an action plan appropriate to address the student's weaknesses. A designated TBS Executive Committee member will see that the remediation is carried out in the time line agreed upon to complete the activities. This report will be submitted to the Sr. Associate Dean of Graduate Studies, the student, the primary mentor/thesis advisor (if one has been chosen at this time) and the Program Director. The TBS Program Director will ultimately be responsible for ensuring that the action plan is carried out and a final report submitted.

During their second year, each student chooses a thesis committee and this committee must meet at least annually to review the student's progress. Therefore, at the end of a student's second, third, etc., years, the review is the meeting form report from the student's thesis committee (electronically approved by all members) stating that it met, reviewed the student's progress, and agreed that the progress was acceptable. Any reservations should also be included on this form.

To be in good standing for any academic year (starting in July), a student's progress must have been reviewed for the preceding year. It is the responsibility of the Program Director to make sure that first year students are reviewed. **After that, it is the student's responsibility to make sure his or her committee has met and that the committee members have reviewed the completed form and agreed with the content. After the committee members agree to the content of the evaluation, the student sends (electronically) the completed annual evaluation form to the TBS Program Coordinator by June 15 of each academic year who will distribute it to the appropriate faculty members, Dean of Graduate Studies and TBS Program Director.**

#### IV. FINAL YEAR

##### A. Seminar

During the final year of study, each Ph.D. candidate MUST present the results of his/her research conducted for the thesis at a public seminar. This seminar will immediately precede the final examination but may be part of a regular seminar series. In the latter case, the Chairman of the seminar committee should be consulted well ahead of time because there are generally scheduling problems in the spring semester. The public seminar is 45-50 minutes in length and should include the major findings of your research. Do not include details of every single experiment or data analysis performed as part of your public seminar as it is important to convey the "take home" messages and how your research fits in the spectrum of translational research. A 10-15 min question and answer period is part of the public seminar.

##### B. Thesis Format

When the student's thesis committee and advisor have approved the completion of the thesis research, the annual evaluation form should be filled out granting approval to the

student to write the final thesis; all committee members need to agree that a sufficient body of work is finished to give the go ahead to write the thesis and arrange a time for the thesis defense. This form is delivered electronically to the TBS Program Coordinator as stated above.

When the student is ready to write the thesis, he/she should review the booklet "The preparation of theses: A manual for graduate students" available on the web (see important web links at the end of the handbook). This booklet outlines the University requirements for format, documentation, and the physical form of the thesis. The student must prepare the thesis such that all of the requirements set forth in this booklet are met. Below, we describe the formats acceptable for the section called "Text of the thesis" in this booklet.

The student must consult with his/her advisor and thesis committee members prior to writing the thesis in order to reach an agreement regarding the format and content of the thesis. The advisor has the ultimate responsibility and authority to determine the format of the student's thesis. It is best to reach this agreement before starting to write the thesis. The Program Director will gladly help the advisor and student in deciding the format.

### **Format One**

This format presents the thesis work in the context of the current literature with the following organization:

**1. Introduction.** This is a scholarly critical review of the literature that presents the current state of knowledge in the thesis area. Although no specific page requirements are set, it should be considerably more comprehensive in scope than is typical for the introduction to a research paper in a journal.

Schematics to illustrate concepts are highly encouraged. However, if schematics are used unmodified from published primary scientific or review articles or books for illustrative purposes, the student must obtain copyright permission from the journal/book before he/she can include this material in the thesis. Permission to use schematics obtained from online sources must be obtained if such material is copyright protected.

Fair use guidelines for copyrighted materials can be found online at:

<http://www.copyright.gov/fls/fl102.html>

<http://www.copyright.gov/circs/circ21.pdf>

If there is any doubt whether copyright permission is needed, it is best to obtain such permissions or not use the material in question.

**2. Materials and Methods.** This section should include a description of the methods used in the research that is complete enough as it is presented for another researcher to duplicate the experiments. Any modifications of standard procedures should be described in full. The source of the materials used in the study should be indicated as necessary.

**3. Results.** This section contains the presentation of experimental results, documented by figures and/or tables. It should include the rationale or design of the experiments as well as the results, but the student should reserve extensive interpretation of the results for the Discussion section. It is recommended that the student include subject titles to delineate the various portions of the results section.

**4. Discussion.** The discussion should provide an interpretation of the results in relation to previously published work. This should be a scholarly treatment analyzing the experiments performed, reservations in the interpretation of the results, and the significance of the work relative to the research field.

**5. Bibliography.** The references cited throughout the thesis should be merged and presented after the discussion.

### **Format Two**

Often the research that the student has completed does not organize well into Format One because several different research avenues were taken. These different research projects may be related to each other or relatively independent of each other. In this case, the student and advisor may wish to separate the presentation of the results into separate chapters. The following format is recommended:

**1. Introduction.** This scholarly review of the literature should be completed essentially the same as in Format One, although it may be somewhat shorter, since each chapter of the Results section (see below) will have its own introduction.

Schematics to illustrate concepts are highly encouraged. However, if schematics are used unmodified from published primary scientific or review articles or books for illustrative purposes, the student must obtain copyright permission from the journal/book before he/she can include this material in the thesis. Permission to use schematics obtained from online sources must be obtained if such material is copyright protected.

Fair use guidelines for copyrighted materials can be found online at:

<http://www.copyright.gov/fls/fl102.html>

<http://www.copyright.gov/circs/circ21.pdf>

If there is any doubt whether copyright permission is needed, it is best to obtain such permissions or not use the material in question.

**2. Methods.** All of the methods used should be presented together in this section, rather than in the results section of the thesis, to avoid duplication. This section should be essentially the same as in Format One.

**3. Results and Discussion.** The results should be presented in a chapter format; each chapter would have its own introduction, results, and discussion section. The

introduction should be relatively short and directed toward the data presented in the results section. The results should be the same in content as in Format One for the portion of the research presented, and the discussion should focus on the data presented in the results.

**4. General/Global Discussion.** As there was a discussion section presented with each chapter, it is not necessary to repeat, in detail, information already presented. The purpose of this section is to tie together the material presented in the individual chapters to present the thesis as a cohesive body of work. However, the global discussion should be sufficiently long to analyze the data in the entire body of the thesis, to present any reservations in the interpretation of the data, and to present the significance of the thesis relative to the research field.

**5. Bibliography.** The references cited throughout the thesis should be merged and presented after the discussion.

### **Format Three**

It is expected that students will endeavor to publish their research while it is still in progress, rather than waiting until after the thesis has been completed. This is advantageous to the student as he/she will obtain an outside appraisal of his/her research. The Program, under certain circumstances, accepts an alternative format to the thesis that allows the student to use manuscripts prepared for publication as part of the text/chapters of the thesis. Generally, the alternative organization of the thesis should be as follows:

**1. Introduction.** This should be a scholarly review of the pertinent literature, essentially the same as in Format One. It should be considerably longer and more complete than that allowed as an introduction to a research paper in a journal.

Schematics to illustrate concepts are highly encouraged. However, if schematics are used unmodified from published primary scientific or review articles or books for illustrative purposes, the student must obtain copyright permission from the journal/book before he/she can include this material in the thesis. Permission to use schematics obtained from online sources must be obtained if such material is copyright protected.

Fair use guidelines for copyrighted materials can be found online at:

<http://www.copyright.gov/fls/fl102.html>  
<http://www.copyright.gov/circs/circ21.pdf>

If there is any doubt whether copyright permission is needed, it is best to obtain such permissions or not use the material in question.

**2. Results.** The results should be presented in a chapter format; with each chapter containing one published or submitted manuscript. Thus, each chapter could have its own introduction, methods, results, discussion, and references (not necessarily in

this order). As journals are under pressure to shorten papers, these sections should include, rather than omit, tables and/or figures that were deleted from a submitted manuscript. These or other data that were omitted from the manuscript may be included, as required by the advisor, either here or in an appendix. The physical form of the chapter must comply with the University regulations regarding margin size and printing on bond paper, etc. If excerpts of a published manuscript (even your own work!) are reproduced as it appears in the journal, the student must obtain copyright permission from the journal before he/she can include this material in the thesis. In the case of manuscripts that were co-authored by persons other than the student or the advisor, the contribution of the co-author(s) must be specifically identified, preferably in the Acknowledgements section. However, copies of publications **cannot** be submitted in lieu of a dissertation.

**3. Discussion (Global discussion).** As there may be discussion presented within each chapter, it is not necessary to repeat, in detail, information already presented. The major purpose of this section is to tie together the material presented in the individual chapters to present the thesis as a cohesive body or work. However, the discussion should be sufficiently long to allow an analysis of the data in the entire body of the thesis, to present any reservations in the interpretation of the data, and to present the significance of the thesis relative to the research field.

**4. Bibliography.** The references cited for the introduction and discussion should be merged and presented after the discussion. It is also acceptable to have one Bibliography where references cited from the individual results chapters (manuscripts) are cited only at the end of the global discussion.

Appendices can be used with any of the three formats to provide supplemental material, such as extra detail on methods used, data that did not "fit" into the thesis or was part of an incomplete project, data deleted from published manuscripts (Format Three), etc.

**Other relevant comments** - Although there is no formal requirement, students are urged to prepare a preliminary copy of the thesis for evaluation by the advisory committee. This procedure can save on extensive revisions of the final typed copy. Also, it is good to know before the final examination that the committee finds the thesis generally acceptable. It is possible to obtain partial support for preparation of thesis from research grants, especially if figures and tables from the thesis are used for the preparation of scientific journal articles.

### **C. Registration of the Thesis**

**The TBS Program Coordinator must assist the student in submitting the paperwork scheduling the Ph.D. defense with the Dean.** The timelines for submitting the paperwork for a thesis defense and registering a thesis with the Senior Associate Dean (URMC) and the Dean of Graduate Studies (University of Rochester) differ depending on whether the defense will be held in the fall or spring semester or in the summer. Please refer to the Academic Calendar for the exact dates allowed for holding a thesis defense

(blackout periods are strictly observed) and the number of full working days required to submit the paper work to the Program Coordinator and to register the Ph.D. thesis with the Dean's office. At this time, the approval form signed by the Thesis Committee and Program Director must be on file in the TBS Program Office. The Program Director will not sign the approval form until she has seen a complete draft of the thesis.

Academic calendar:

<http://www.urmc.rochester.edu/education/graduate/home/documents/Academic-Calendar-2013-2014.pdf>.

Students should be aware that the University does not allow a thesis registered later than six weeks before the end of the spring semester to be defended until June. The Program Coordinator will send defense paperwork to the Senior Associate Dean's Office to schedule the exam formally. A bound copy of the thesis is registered with the University Dean's office (Dean Kearney) after the above paperwork is completed with the Senior Associate Dean's office (Dean Lord). At the time the thesis is registered, the bound thesis is distributed to committee members. For the 2013-2014 academic year, the submission of paperwork must begin at least 30 full working days before the thesis defense date and registration of the thesis 20 full working days before the defense date (Note: the thesis defense day does not count as one of these days) during the Fall and Spring semesters. Additional time is required for a thesis defense date scheduled in the summer (typically 35 full working days before the desired defense date to submit paperwork and 25 full working days to register and turn in the bound copy of the thesis). Note: should official holidays fall within the required time period, additional days must be added to account for the closure of academic offices during the holidays.

The forms to register your thesis defense and make your PhD defense appointment are on the following website:

<http://www.urmc.rochester.edu/education/graduate/home/forms.cfm>

#### **D. Ph.D. Defense**

##### **a. Eight weeks prior to the students defense date (TBS program requirement):**

Give Program Coordinator necessary information to prepare paperwork to be submitted to the office of the Senior Associate Dean for Graduate Affairs. This will allow the Program Coordinator one-two weeks to fulfill the lead-time requirements stated by the Dean's office for submitting paperwork to schedule the defense.

##### **b. Six (or seven for summer) weeks prior to the students defense date:**

The following paperwork must be submitted to the Office for Graduate Education:

- 1) Appointment form for Ph.D. Final Oral Examination

- 2) Program of study signed by Advisor and Program Director showing a minimum of 96 credit hours
- 3) Permission form signed by Advisor to register the thesis
- 4) Program Statement of Completion of Ph.D. requirements
- 5) Copy of thesis title page and abstract
- 6) List of names and email addresses of thesis committee members
- 7) Memo to the Senior Associate Dean for Graduate Affairs from the Program Administrator

**c. 20 FULL working days (Fall and Spring) and 25 FULL working days (Summer) prior to defense date:**

Bound copy of thesis needs to be registered in the Office for Graduate Education. You will need to take with you: 1 bound copy of your thesis, 2 extra copies of abstract and title page, and ProQuest publishing form.

**d. Prior to registering your thesis:**

You will need to call the Office for Graduate Education (273-4650 located in URM C Room: G-9556) to set up an appointment to fill out some paperwork and to pick up paperwork to take with you to River Campus to the Office of Council for Graduate Studies. **It is strongly recommended that you do not wait until the last minute to do this.**

Before the exam, the student's advisor receives confirmation of the scheduling of the exam and the name of the chairman of the examining committee who is appointed as the representative of the Dean of Graduate Studies.

After successful completion of the Ph.D. oral examination and after making any necessary corrections in the thesis, the student must:

1. Submit **one** corrected copy of the thesis to the Office for Graduate Education along with 2 additional copies of the title page and abstract, CV, University publishing agreement and digital copy of the thesis.
2. Submit **one** corrected copy of the thesis to the Program Director's Office.

**V. USEFUL WEBSITES**

Offices for Graduate Education:

<http://www.urmc.rochester.edu/smd/grad/>

Graduate Bulletin:

<http://www.rochester.edu/GradBulletin/>

Academic Calendar:

<http://www.urmc.rochester.edu/education/graduate/faculty-and-staff/academic-calendar.cfm>

The Preparation of Doctoral Theses: A Manual for Graduate Students

<http://www.rochester.edu/Theses/>

University Health Services (UHS)

<http://www.rochester.edu/uhs/>

University Counseling Center

<http://www.rochester.edu/ucc/>

University Safety and Security

<http://security.rochester.edu/>

Bursar's Office

<http://www.urmc.rochester.edu/smd/bursar/>

Graduate Student Society

<http://www.urmc.rochester.edu/gss/>

Clinical and Translational Science Institute

<http://www.urmc.rochester.edu/ctsi/>