



**COLLEGE OF PHARMACY  
MEDICINAL CHEMISTRY**

UNIVERSITY OF MICHIGAN

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**Graduate Student Handbook for  
the Interdepartmental Graduate  
Program in Medicinal Chemistry**

## **GUIDE TO GRADUATE STUDENT REQUIREMENTS**

This document provides a summary of the requirements that must be fulfilled to earn the Ph.D. degree in Medicinal Chemistry and the timeline for meeting these requirements. Current versions of all required forms are available on the Department DropBox site or from the Med Chem office.

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## I. PROGRAM OVERVIEW

The Interdepartmental Program (IDP) in Medicinal Chemistry is housed within the Department of Medicinal Chemistry in the College of Pharmacy and offers a Ph.D. degree through the Rackham Graduate School. The Ph.D. program comprises coursework, seminars, and research focused on building core competencies in key areas of the early-stage drug discovery pipeline. As Medicinal Chemistry is inherently an interdisciplinary science, our research scope is broad and includes the fields of synthetic chemistry, chemical biology, computational chemistry, structural biology, and molecular pharmacology. The common theme is an interest in promoting the discovery of new therapeutic targets and drug molecules to improve human health.

## II. PROGRAM ADMINISTRATION

### Department:

<i>IDP Director</i>	Prof. Amanda Garner	algarner@umich.edu
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<i>Executive Secretary</i>	Grey Hendry	greylh@umich.edu

### College:

<i>Associate Dean, Graduate Education</i>	Prof. Karen Farris	kfarris@umich.edu
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<i>Student Financial Support</i>	Eileen Brussolo	efc@umich.edu

## III. PROGRAM FACULTY

<b>Medicinal Chemistry Department Faculty (*joint appointment)</b>		
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#### IV. FUNDING

Throughout the first 5 years of the Ph.D., students will be supported by the College of Pharmacy and their Ph.D. mentor through a combination of fellowships, teaching, staff, or research assistantships, and/or training grants. Support includes payment of full tuition for fall and winter terms, an annual stipend, and health insurance which includes medical and dental coverage. Students who have their own external funding, or who receive funding from an external source during their time in the program, are required to share the details of their support package with the College of Pharmacy. To ensure that all

graduate students receive no less than the College's current support package, the College will supplement a student's external award to cover any funding gaps between the external award and the College's current support package. If the external award provides full support, equivalent to the current graduate student support package, no additional College support will be provided. All external awards are reviewed on a case-by-case basis.

Students will be supported through completion of the Ph.D. program requirements provided they are making satisfactory progress towards the completion of the degree. Satisfactory progress includes passing core courses with a grade of B or better, maintaining at least a B average in coursework, a commitment to performing research year-round (12 months), advancing to candidacy within two years in the program, satisfactory performance during annual research updates during candidacy, and graduation before/early in your 5<sup>th</sup> year in the program.

For students whose Ph.D. studies extend beyond the 5<sup>th</sup> year, their Ph.D. mentor must contact the Department Chair describing their support plan for the student and completion plan for meeting all Ph.D. degree requirements. The Associate Dean for Graduate Studies must also approve any College funding beyond the 7<sup>th</sup> year.

If you have questions regarding your financial support, contact Eileen Brussolo at [efc@med.umich.edu](mailto:efc@med.umich.edu) or call (734) 615-3259.

## V. FIRST-YEAR GRADUATE STUDENTS

**First Year Advising.** New graduate students are assigned an academic advisor for their first year in the program. Typically, the first-year advisor is the IDP Director. The role of the first-year advisor is to help students with course selection and other aspects of the first year. Minimally, first-year graduate students meet with the first-year advisor once per semester in one-on-one meetings to discuss progress and other issues or questions that may arise. Students may request additional meetings by reaching out directly to their assigned advisor.

**Student Support.** The Interdepartmental Program (IDP) in Medicinal Chemistry seeks to be a welcoming environment for all people including students from groups underrepresented in the biomedical sciences. One of the most important areas for equitable treatment of all students is providing accommodations in the classroom and the lab for students with physical and mental disabilities. To assist any graduate students with disabilities, Med Chem and the College of Pharmacy will partner with U-M Services for Students with Disabilities (<https://ssd.umich.edu>) and Rackham Graduate School (<https://rackham.umich.edu/rackham-life/students-with-disabilities/>) to implement disability accommodations and services. Students may contact the Student Affairs Program Manager for *Student Affairs and Admissions* for information about campus resources and to request an accommodation. Examples of reasonable accommodations include, but are not limited to: note taking services, captioning, interpreter services, and adjusting time limits on exams.

**Pre-matriculation Summer Research.** Incoming students may want to come to Ann Arbor early and perform pre-matriculation summer research with one of the program faculty. The Medicinal Chemistry Department will partner with the faculty to provide financial support for students during the summer. The students must work for a minimum of 6 weeks. Depending on funds available and the number of requests, it is expected that the department will provide up to \$2,500 of the summer salary for a maximum of 10 weeks. The salary will be equivalent to the current graduate student stipend without fringe benefits.

Note that this summer research does not count as an official rotation, students must do the normal research rotations in the Fall and Winter terms. However, the student may not rotate with the same faculty member with whom they did their pre-matriculation summer research if they work 8 weeks or more with that faculty member.

To apply for funding, the faculty member should contact the IDP Director indicating the student involved, a brief title or description of the research project, the time frame for the summer research, and a description of how the faculty member will provide their portion of the support. No funds are available for supplies, travel, etc. Requests should be submitted by May 15<sup>th</sup>. Funding will be allotted on a rolling basis so earlier requests are more likely to be approved.

**Research Rotations.** To help students in their choice of a mentor and research group, and to gain understanding of the breadth of research in the Medicinal Chemistry program, all new graduate students are required to register for three 8-week lab rotations: two in the Fall term and one in the Winter term. This is done in the form of the course, Med Chem 573. All first-year students will be provided with a course syllabus before the start of the Fall semester that outlines relevant deadlines and objectives.

New students are expected to arrange meetings with faculty members to choose labs in which to fulfill the Med Chem 573 requirements. As the first rotation starts on the first day of classes, students should plan to meet with faculty before, or during, orientation week to arrange their rotation for the first half of the Fall term. Students should have their faculty rotation mentors sign the Rotation Interview Form which will be distributed to students. Once the Rotation Interview Form is submitted to the department office, the enrollment permissions will be issued to the student for each 8-week section of the course. The first choice (MC573 section 015) should be made after meeting with faculty during orientation week and is due to Grey Hendry on the first day of the Fall term. The choice of the second rotation in the Fall (MC573 section 115) is due to Grey Hendry by the end of September. The choice of the third rotation in Winter term (MC573 015) is due to the department office by the end of November. If a fourth rotation (MC573 115) is desired (and approved by the IDP Director), the choice must be made by the end of February. First-year students must match with a mentor by the end of Winter term to be in good standing with the program.

Students are encouraged to spend as much time as possible in their rotation labs, even when not actively working on their projects. This will help the students become acclimated to the program and to the research environment. Senior students and post docs are valuable resources for first-year students, not just for their rotation projects, but also for classes, etc. Additional details can be found in the course syllabus.

Beginning in late February, students should discuss the possibility of joining a lab with prospective mentors. After March 1<sup>st</sup>, students may officially join labs by having their mentor sign their mentor assignment form. Students are still required complete their Winter-term rotation and write their report.

**Responsible Conduct of Research.** The Rackham Graduate School requires training in the responsible conduct of research and scholarship to achieve candidacy. As such, enrollment in and completion of Med Chem 660 is required for all first-year graduate students entering the College of Pharmacy (Medicinal Chemistry, Pharmaceutical Sciences, and Clinical Pharmacy and Translational Sciences). The course was designed to satisfy the requirements of government and national funding agencies for a standard course in the responsible conduct of research and scholarship in the biomedical sciences. The course has also been designed to bring a cross-section of the entire research community of the College of Pharmacy together to foster a better understanding of the contribution of each discipline in the overall bench-to-bedside efforts of drug discovery and patient care. This course meets once a month in the early evening for the entire school year (8 classes); dinner and drinks will be provided. Details about the requirements and procedures for this course can be found in the course syllabus.



## VI. GENERAL PROGRAM REQUIREMENTS

**Department Seminar Program.** The Medicinal Chemistry Department seminars involve a mix of prominent researchers from both academic institutions and industry presenting research at the forefront of Medicinal Chemistry (broadly defined). They also include presentations from our own students (dissertation defenses and research seminars). The seminars are held approximately weekly during the academic year on Thursdays at 11:00 AM in 2548 NUB unless otherwise stated. We do recognize that occasional conflicts can arise, but all students are expected to attend seminars.

**Teaching Requirement.** The ability to teach is a critical professional development skill to gain during graduate studies. Although our program emphasizes research training of our students, to ensure that students gain this skill and are prepared to enter a diversity of careers, all students are required to gain teaching experience by serving as a graduate student instructor (GSI) for at least one term during the course of their graduate training. (Typically, students will serve as a GSI (or GSSA) one term each in the 2<sup>nd</sup> and 3<sup>rd</sup> years in the program.) Specific GSI assignments are made taking into consideration factors, such as: graduate student course preference, the experience level of the student (e.g., 2<sup>nd</sup> year students will likely GSI a more basic or lab course), students serving as GSIs for a second time will be preferentially assigned to the same course to minimize prep time, and senior students are more likely to be assigned to less time-consuming GSI positions.

For more formal training on teaching, interested students are encouraged to participate in the UM “Preparing Future Faculty” program. In collaboration with Rackham Graduate School, the UM Center for Research on Learning and Teaching (CRLT) offers seminars and symposia to help graduate students prepare for their first faculty jobs. Topics include preparing for the job market, learning about current issues in higher education, tenure and faculty work life, and effective teaching for a diverse student body. The CRLT also hosts an annual conference on “Preparing Future Faculty”. Topics covered have included: Getting Started with your CV; Negotiating an Academic Job Offer; Developing your Teaching Philosophy; Practicing Interviews; Starting and Running a Research Lab; Dual Career Issues; and Faculty Work-Life Balance. One aspect of this program that our students have taken advantage of is the UM Graduate Teaching Certificate, which provides graduate students with orientation, exposure, mentorship and experience in graduate level teaching in a month-long short course of study and “hands-on” experience.

**Individual Development Plan and Mentoring Agreement.** The College of Pharmacy requires the use of Individual Development Plans (IDPs) between Ph.D. students and their faculty mentors. IDPs facilitate the process of defining, recording, and tracking progress made in satisfying program requirements; completing near-term research and dissertation projects; and achieving longer-term education, research, and career goals. The College of Pharmacy also requires the use of Mentoring Agreements between Ph.D. students and their faculty mentors to ensure that mentoring relationships are set up for success. More information can be found from Rackham’s Faculty Committee on

Mentoring (MORE) (<https://rackham.umich.edu/faculty-and-staff/resources-for-directors/mentoring/>).

During the first term of their Ph.D. program, students participate in the College of Pharmacy Graduate Student Professional Development Program, during which students complete a professional goals assessment and create a professional curriculum vitae (CV). Thereafter, the IDP online program is used to align expectations and evaluations of students and as a site for students to maintain a current CV. Within the IDP, students are expected to discuss their mentored research, as well as generation of scientific products and professional development obtained, and provide a self-evaluation of their progress towards their programmatic and research goals.

Once a student selects their Ph.D. mentor, students complete a Mentoring Agreement which describes the student and mentor expectations for the coming year. The Mentoring Agreement is also housed with the online interface. Topics covered by this agreement include frequency of one-on-one meetings, participation in group meetings, annual research goals, student's role on a project, and tentative plans for manuscript submissions and publications, professional meeting presentations, and fellowship applications. Students are required to complete their Individual Development Plan and Mentoring Agreement online each year by April 30. Both documentation systems are available via the Ph.D. Student IDP Interface (<https://pharmacy.umich.edu/mycop/idp>).

Once completed by the student, both the IDP and Mentoring Agreement are reviewed by the student's faculty mentor. Faculty will annually review the student's past work and achievements and Mentoring Agreement in May to provide feedback to the student. Faculty will also provide their own evaluation of the student's progress for discussion with the student. Mentor Evaluations will be reviewed annually by the IDP Director to ensure that students are on-track in meeting programmatic requirements so that any concerns can be addressed proactively.

**Professionalism.** As professionals-in-training, it is expected that graduate students demonstrate high standards of professional behavior in all educational settings, including classrooms, both as a student and graduate student instructor (GSI), and laboratories. In addition to conduct outlined by the Rackham Academic and Professional Integrity Policy (<https://rackham.umich.edu/academic-policies/section8/>), additional examples of professional behavior include demonstrating empathy, cultural awareness, and respectful behavior towards faculty, staff, and students. Of equal importance to these behaviors are punctuality and effective communication. Students are expected to demonstrate punctuality in all academic environments including attending class and seminars, responding to requests (e.g., email) in a timely fashion, and turning in assignments on time. Many of the documents required to meet the program's academic milestones (MC740/741 proposal, candidacy proposal, etc.) must be turned in at least two weeks in advance; these are hard deadlines that will be enforced. Students are expected to communicate with their Ph.D. mentor, the IDP Director, and committee chair if situations arise that prohibit a student from meeting a deadline.

***Expectations for Completion of Dissertation Research.*** Graduate students are responsible for working toward completion of their PhD in a timely fashion. It is expected that graduate students will gain expertise in a particular area of medicinal chemistry and expand the knowledge of that field by discovering and pursuing a unique topic of scholarly research. As professionals-in-training, graduate students should learn how to impart disciplinary knowledge through appropriate forms of instruction and publication and how to apply that knowledge to particular scientific problems.

It is in the best interests of our students, their mentors, and the Med Chem program that our students publish multiple, high-quality papers during their dissertation research. However, it is recognized that the appropriate number of publications per student tends to vary widely, largely due to the nature of the work being reported. It is the expectation of the Med Chem IDP that each student will have at least one first-author publication in a high quality, peer-reviewed journal appropriate to the field of study. This minimal expectation should not be interpreted as sufficient for the PhD. One role of the Dissertation Committee is to make the determination that the student has completed and published a sufficient body of research in appropriate journals to merit the PhD. This determination should be made at the student's data meeting. The IDP Director will make the final decision in the event the dissertation committee cannot reach a consensus or under exceptional extenuating circumstances.

It is also preferred that each student attend at least one national or international conference and give a poster or talk at least once during the dissertation research. The Department of Medicinal Chemistry is usually able to provide assistance (see student travel policy) to help any Med Chem student going to a meeting. It is understood that some students may be limited by finances, childcare, health, or other issues that preclude travel. Funding for student travel to conferences etc. may also be requested from Rackham, training grants (for trainees), and other UM programs (e.g., Women in Science and Engineering). There are also multiple opportunities for local conferences and symposia where our students can present posters and talks.

## VII. CURRICULUM

The Medicinal Chemistry Ph.D. academic program has been designed to ensure that students attain a breadth and depth of knowledge in the field of medicinal chemistry, largely defined, can think critically to solve complex research problems, and can effectively communicate their science to a broad audience.

Major milestones of the program are:

Year 1	Year 2	Year 3	Years 4+
Med Chem core courses	Pre-candidate research	Ph.D. research	Ph.D. research
Research rotations	Electives	Third-year seminar	
Electives	MedChem 740/741		
MedChem 660	Candidacy		

**Academic Program.** The Medicinal Chemistry Ph.D. academic program is comprised of core courses in medicinal chemistry and is customizable to allow students to tailor their education to gain knowledge and skills in their area of research interest through additional foundational courses in chemistry and biology, as well as electives.

Note: no less than a “B” in each of the core medicinal chemistry courses (MedChem) must be achieved to pass core requirements. Failure to pass a core course will result in a student being placed on academic probation (see Appendix 7). Only two attempts towards passing a core course will be allowed; after which, if a student fails to achieve a passing grade, they will be dismissed from the program.

### First Year:

Fall	Winter
MedChem 532 (3 cr)	MedChem 535 (3 cr)
Chem 540 (3 cr) or Chem 543 (3 cr)	Bio* <sup>†</sup> Elective (3 cr)
Elective (3 cr) <sup>†</sup>	Elective (3 cr) <sup>†</sup>
MedChem 573 015 (2 cr)	MedChem 573 015 (2 cr)
MedChem 573 115 (2 cr)	MedChem 660 (0.5 cr)
MedChem 660 (0.5 cr)	

<sup>†</sup>Examples of recent electives include: Chem 541, Chem 542, BiolChem 602, Biophys 520, Biophys 521, Bioinf 527, Pharmacol 621; Chem 540 or Chem 543 can also be taken as electives if a student is interested in taking both courses

\*Acceptable courses include: ChemBio 502, BiolChem 528, Pharmacol 601, or other related courses; please consult the IDP Director if you are unsure of a course selection

<sup>‡</sup>The required Bio elective can be taken in fall or winter semester

**Second Year:**

Fall	Winter
MedChem 740 (0.5 cr)	MedChem 741 (0.5 cr)
Elective (1–3 cr)*	Elective (1–3 cr)*
MedChem 990 (0–9 cr)†	MedChem 990 (0–9 cr)†

\*Additional electives required (e.g., for a training grant) or not completed during Year 1

†In the second year, the number of MedChem 990 (pre-candidacy research) credits is set to fulfill the 8 credits minimum per term

A note about elective courses: Your advisor will help you choose among possible electives, which must be approved by the Medicinal Chemistry IDP Director. Some potential electives are listed as a footnote in the table above, as well as in Appendix 1, but these are not meant to be comprehensive lists. Six total credits of electives (excluding the required 3 credit Bio elective) are required by the program.

**Third (and Subsequent) Years:**

All students who have been admitted to candidacy register for 8 cr of MedChem 995† per term and may take one additional course (regardless of the number of credits) per term with no additional tuition fees (per Rackham guidelines).

Fall	Winter
MedChem 995 (8 cr)†	MedChem 995 (8 cr)†
Elective (option of 1 course per term)	Elective (option of 1 course per term)

†In the first semester of the third year, students will enroll in MedChem 990 for 8 cr during the pre-registration period in March. After the prelim committee recommendations for Advancement to Candidacy are approved and processed (September 1), Rackham will change the enrollment to MedChem 995.

**VIII. MEDICINAL CHEMISTRY 740/741**

Each student must prepare an original research proposal (ORP) in an area outside of their dissertation research. This is done as a separate course, MedChem 740/741 (MC740/741), held during the second year. Two hallmarks of the PhD degree are: (1) the ability to engage in thorough independent scholarship, and (2) to plan and conduct original research based on that scholarship. The ORP is designed to provide the student with the experience of researching a medicinal chemistry topic from the literature, and then proposing novel studies to extend that work. The research topic to be investigated should be complementary to the student's thesis research, i.e., not directly related, but relevant enough that increased knowledge in the area will add value to their thesis research. One overarching theme of medicinal chemistry involves the relationship of chemical structure with biological activity and function. Therefore, it is important that the proposal include some discussion of chemical structure. Medicinal chemistry research is a collaborative effort. It is important to be able to effectively work with others, to both give and receive constructive criticism, and these are incorporated into MC740/741.

Details about the MC740/741 requirements and process can be found in the course syllabus. Please note that students will be asked to suggest members of their MC740/741

committee, but the student's final committee will be assigned by the IDP Director, who makes sure that all the faculty are evenly spread across all the committees. The MC740/741 committee will be the same committee that will evaluate the candidacy exam (see the Candidacy Examination section below); however, faculty substitutions can be made in extreme situations (travel, illness, etc.). MC740/741 and the candidacy examination are evaluative exams, the roles of these committees (to assess the achievement of these programmatic requirements) are different than the student's dissertation committee. The dissertation committee is chosen by the student and their mentor after candidacy is achieved (see the Dissertation Committee section below). The dissertation committee is meant to be comprised of faculty members that can help to guide the student, keep the student on track towards completion of their Ph.D. studies, and aid the student in achieving their research goals.

The defense of the ORP (MedChem 741) must be completed by the end of February of the Winter term of the second year.

## **IX. CANDIDACY**

Once course work and other requirements (see below) are met, graduate students can be admitted into candidacy by the Rackham Graduate School, upon recommendation of the Medicinal Chemistry faculty. This marks the transition from a largely classroom-based experience to one focused on independent research. Under normal circumstances, it is expected that all graduate students complete the requirements for candidacy by the end of their second year in the program.

Faculty in the Medicinal Chemistry IDP determine the academic integrity of the degree in terms of specific requirements, achieving milestones, and completing the degree. The Rackham Graduate School requirements for admission into candidacy include:

- A. You must have a bachelor's degree or equivalent awarded by an accredited institution.
- B. You must have maintained a cumulative minimum GPA of "B" (3.0 on a 4.0 point scale) or higher.
- C. Per the Rackham requirement, you must have completed at least 18 hours of graded coursework (including the grade of S-Satisfactory) in-residence during the pre-candidacy stage of their doctoral studies. That means 18 credits of "real" classes here on campus. You may accumulate more than 9 credits of "in-residency" courses in a single term. MedChem 990 and any courses that are taken as "visit/audit" do NOT count toward the "in-residency" credits.
- D. At least 3 credits must be from a course in a "cognate" field.
- E. All Ph.D. students must have completed training in the Responsible Conduct of Research and Scholarship before advancing to candidacy.
- F. Successful completion of the Candidacy Examination (see below).

If you follow our prescribed curricula, all of the above will be satisfied automatically.

To maintain "full-time" status, graduate students (pre- and post-candidacy) must enroll for a minimum of 8 credits in each of the Fall and Winter terms. You do NOT have to enroll for either the Spring or Summer terms.

**Candidacy Examination.** The candidacy meeting/examination is designed to evaluate the student's preparedness for dissertation studies by examining the student's knowledge in the fundamental scientific disciplines underlying the proposed Ph.D. research and their research skills by assessing their progress to date. Although many aspects of the exam may focus on the research proposal, this is not meant to be a dissertation committee meeting. Candidacy Committee Chairs are advised to focus the exam on the student's preparation and readiness (including pertinent research skills) for embarking upon their dissertation research. The candidacy committee is expected to review the student's Rotation Reports (MC 573) and MC 741 Evaluation. Any deficiencies or weaknesses identified in either of these benchmarks are to be explicitly probed in the candidacy exam. The procedure is the following:

- The candidacy exam will take place between May 1<sup>st</sup> and July 31<sup>st</sup>.
- The candidacy committee will have been previously selected for the student's Med Chem 741 oral exam. Any necessary changes must be approved by the Medicinal Chemistry IDP Director. The student's faculty mentor also attends the examination, in an *ex officio* capacity, to advise the committee of the student's overall progress but otherwise does not participate in the discussions and does not vote on the outcome. The Medicinal Chemistry IDP Director, or designee, will assign one committee member experienced in Medicinal Chemistry Preliminary Exams to chair the proceedings. Upon approval of the committee composition, the student consults with the committee to arrange a meeting for the candidacy defense.
- A written proposal for the student's own thesis research is required and should be submitted by the student to the entire committee (and to the Medicinal Chemistry office) **two weeks prior to the meeting date**. The proposal should describe a research project in the broad area of Medicinal Chemistry. The student's faculty mentor is responsible for guiding the preparation of this proposal.
- The written proposal must take the form of an NIH R21 proposal using the following format (approximate page guidelines):
  - Title Page (1 page; please see Appendix 3 for example)
  - Abstract (1/2 page)
  - Specific Aims (1 page)
  - Research Strategy (**6 pages limit**)
    - Significance and Innovation ( $\leq$  1 page)
    - Background and Progress Report (2–3 pages)
    - Approach (2–3 pages)
  - Bibliography (no limit)
- In addition to the proposal, copies of the student's MedChem 573 and MedChem 741

evaluations will be distributed to the committee along with the transcripts. The student's entire file (*placed in a Dropbox folder to which the committee will have access*) will be available for the committee to review. It is the responsibility of the student and/or the mentor to ensure that the evaluations have been distributed to the committee and that the student's file is available at the meeting if needed.

- The candidacy meeting will take the form of an oral presentation and defense of the research proposal. The student may prepare a limited number ( $\leq 25$ ) of slides (usually a Powerpoint presentation) but will not be expected to rely entirely on visual aids to answer the questions put forth by the committee. The student should prepare an oral presentation of about 40 minutes. Given interruptions for questions and answers, it is expected that the exam will take no more than 2 hours.
- Immediately following the meeting, the committee determines whether or not to recommend advancement to candidacy. The committee's evaluation and recommendation is then submitted to the Med Chem office on the Prelim/Candidacy Report Form and is kept in the student's file.
- The Candidacy Committee Chair (not the student's faculty mentor) shall be responsible for moderating the pre-candidacy meeting, preparing and submitting the Prelim/Candidacy Evaluation Form, and presenting it to the faculty at a faculty meeting where it will be reviewed and voted upon by the Medicinal Chemistry faculty.
- The student's faculty mentor and/or the Candidacy Committee Chair shall meet with the student to discuss their evaluation and give constructive feedback.
- In the event that the committee deems a student's performance slightly unsatisfactory, the student will likely be required to write a revised and extended proposal before the end of the Summer Term. The committee will decide if the revisions are appropriate to mitigate the previous weaknesses.
- In the event that the committee deems a student's performance significantly unsatisfactory, the student may be granted a second attempt at the written and oral exam. In this case, this attempt must be made during the Fall term of the third year.

## X. POST-CANDIDACY

***Embedded Master's Degree.*** An "embedded master's" is a Master's degree awarded "on-the-way" to a PhD in the exact same program. An embedded master's is NOT required for completion of the PhD degree. The decision to apply for an embedded master's rests with the student and is neither encouraged nor discouraged by the program. Upon advancement to candidacy, students may request to apply for an embedded Master's degree. The student must notify the Medicinal Chemistry office that they wish to apply for an embedded master's degree. The office will process the request and then the student will receive notification from the department that they can log onto Wolverine Access Student Business and "Apply for Graduation" (<http://www.rackham.umich.edu/downloads/oard-embedded-masters-tip-sheet.pdf>) .

***Establishing a Dissertation Committee.*** A dissertation committee consistent with Rackham guidelines must be proposed within two months of admission to candidacy and



must be approved by the Medicinal Chemistry IDP Director. The dissertation committee is chosen by the student and their mentor after candidacy is achieved. (Please note that each faculty member must be asked to be on the student's committee, and they need to accept that role before the student can submit the OARD Dissertation Committee Worksheet to the Rackham Graduate School with the assistance of the department secretary.) The role of the dissertation committee is to help guide the student, keep the student on track towards completion, and provide assistance to the student in achieving their research goals. It is possible to change the composition of the dissertation committee after it has been formed, but this should be done only after very careful consideration and must be approved by the Medicinal Chemistry IDP Director. (One example of justification for a change in committee composition would be if the student's research focus has changed such that committee members with different expertise are needed.)

***Internships.*** Students are allowed to participate in internships during their Ph.D. candidacy years by approval of their faculty mentor. The dissertation committee should be notified that the student is participating in an internship, including the value of the internship to the student's scientific and/or professional development. Internships may delay the student's Ph.D. progress, which may affect student funding and time to graduation. Students on unpaid internships will receive their usual stipend and health benefits. Students on paid internships will receive supplemental support such that their total payment is equal to their typical stipend including benefits. Students on paid internships that exceed their stipend will receive only the internship payment, in full. Students who participate in internships during Fall or Winter semesters will be required to pay their tuition.

***Third-Year Seminar.*** In each student's third year of studies, they will present a public seminar in the Medicinal Chemistry Seminar Program on their research project, encompassing background, goals, progress to date, and future plans. The student's mentor will guide the student in the preparation of this presentation. The seminars will be held in the Winter term of the student's third year. The student's dissertation committee will meet to give the student feedback as soon as possible after the seminar, so all committee members should be present. The committee evaluation section of the Annual Dissertation Committee Meeting form should be submitted, filled out by the mentor, and reviewed with the student. Both the student and mentor sign the form and submit it to the Med Chem office. Please see Appendix 4 for Instructions.

***Dissertation Committee Meetings.*** Subsequent Dissertation Committee Meetings should be held annually in the fourth and subsequent years. The student will submit a written progress report to the committee for review at least 2 weeks prior to the annual committee meeting (or Third Year Seminar; see above). The Dissertation Committee Meeting (DCM) Report Form is filled out in the Ph.D. Student Individual Development Plan Interface by the student and advisor prior to the meeting. After the meeting, the committee summary is added to the form by the student's faculty mentor. The faculty mentor meets with the student and reviews the committee feedback; the form is signed by both student and mentor and submitted to the Med Chem office to be kept in the student's file.

**Data Meeting.** Four to six months before the final defense, a Dissertation Committee meeting is held to discuss the data generated and to identify any required, final experiments. A Data Meeting Report Form (distinct from the DCM Form) is filled out by the mentor and a copy is submitted to the Med Chem office and is kept in the student's file.

Note: In all cases above, both the student and the mentor should keep copies of the reports, the PowerPoint presentations, and the evaluation/feedback forms for their records.

**Dissertation Defense.** The defense includes a public seminar presentation, ideally included within the regularly scheduled Medicinal Chemistry seminar program. This public presentation is followed by a private session with the Dissertation Committee. The Dissertation Committee members are provided with copies of the dissertation **at least 2 weeks prior to the defense**. Please see the Rackham Website ([http://www.rackham.umich.edu/dissertation\\_information/](http://www.rackham.umich.edu/dissertation_information/)) for further administrative guidelines regarding the dissertation defense process and dissertation format instructions. The student is required to submit their digital dissertation as per Rackham's instructions. Please see Appendix 5 for logistical information and important departmental deadlines for scheduling your defense.

## XI. PharmD/PhD DUAL DEGREE PROGRAM

This program is designed to streamline the process of concurrently working toward both the Pharm.D. and Ph.D. (Medicinal Chemistry) degrees at the University of Michigan. Some degree of overlap exists between the two programs and concurrent enrollment and the substitution/waiver of select courses can streamline the process of obtaining both degrees. The student may apply to both programs concurrently, or during their P1 year. If accepted, the student will be dual enrolled and will follow the Pharm.D./Ph.D. Medicinal Chemistry curriculum below. Upon completion of the Pharm.D. degree (e.g., the end of the P4 year), the student will continue in the Medicinal Chemistry Ph.D. program and will be eligible for support (just as any other Ph.D. student). It is anticipated that at least one year can be eliminated from the time for the Ph.D. degree by taking the coursework during the Pharm.D.

Other than the curricular changes noted below, the requirements for the Ph.D. are identical to those for any Medicinal Chemistry Ph.D. student and can be found in the prior sections of this Graduate Student Handbook.

### **Ph.D. Portion of the Pharm.D./Ph.D. Curriculum**

<b>Fall Term Only Courses</b>	<b>Winter Term Only Courses</b>	<b>Any Term Courses</b>
MedChem 532 (3 cr)	MedChem 535 (3 cr)	Bio* <sup>‡</sup> Elective (3 cr)
Chem 540 (3 cr) or Chem 543 (3 cr)	MedChem 660 (0.5 cr)	Elective ×2 (3 cr each; 6 cr total) <sup>†</sup>
MedChem 660 (0.5 cr)	MedChem 741 (0.5 cr)	
MedChem 740 (0.5 cr)		

\*Acceptable courses include: ChemBio 502, BiolChem 528, Pharmacol 601, or other related courses; please consult the IDP Director if you are unsure of a course selection

<sup>‡</sup>The required Bio elective can be taken in fall or winter semester

<sup>†</sup>Examples of recent electives include: Chem 541, Chem 542, BiolChem 602, Biophys 520, Biophys 521, Bioinf 527, Pharmacol 621; Chem 540 or Chem 543 if both courses are taken

- Any of the above courses may be taken during years P1–4, with the exception of MedChem 740/741 that should be taken in the P5 year. It is important that these courses be taken in the Ph.D. part of the student's tenure as this will help to transition the Pharm.D./Ph.D. students into the Ph.D. program and community.
- The College will provide support for summer research for up to 3 summers: (1) P0, prior to matriculation; (2) P1, between P1 and P2 years; and (3) P2, between P2 and P3 years. Pharm.D./Ph.D. students will perform two research rotations during the P0 or P1 summer. The remaining summers, P1 and P2 or just P2 if the student does not elect to do P0 research, will be spent getting started on their Ph.D. research.
- Any 700-level Pharm.D. course can substitute for an elective course (except the Bio elective).
- The Pharm.D. Investigation requirement and research course will be waived in lieu of MedChem 740/741 and the dissertation research.
- During year 5 (P5), the students will complete their Ph.D. coursework and will take their candidacy exam in the summer before P6 year.

## XII. COLLEGE OF PHARMACY ACADEMIC PROBATION AND DISMISSAL PROCEDURES

Link to College of Pharmacy policy statement:

[https://pharmacy.umich.edu/system/files/intranet/policy/Deficiencies\\_for\\_Academic\\_Progress\\_and\\_Unsatisfactory\\_Academic\\_Standing%20Policy.pdf](https://pharmacy.umich.edu/system/files/intranet/policy/Deficiencies_for_Academic_Progress_and_Unsatisfactory_Academic_Standing%20Policy.pdf)

### Academic Probation and Dismissal Procedures for College of Pharmacy PhD Programs

Academic standing, maintaining a cumulative GPA of 3.0 and the satisfactory completion of coursework, is reviewed during years 1 and 2 of the PhD program. In addition, a review of a student’s progress in achieving the PhD milestones/requirements will occur annually and be recorded in the College of Pharmacy Individual Development Plan system. See the *College of Pharmacy Policy for Deficiencies for Academic Progress, Unsatisfactory Academic Standing, Academic Probation and Dismissal from the Doctoral Programs Policy* for additional information on academic standing.

#### STUDENT STATUS

Academic Warning	Academic probation	Dismissal
<input type="checkbox"/> Cumulative GPA is 2.99-2.00	<input type="checkbox"/> Cumulative GPA is 2.99-2.00 continues into a second consecutive term <input type="checkbox"/> Cumulative GPA is 1.99 or below <input type="checkbox"/> Student’s performance falls below requirements in <ul style="list-style-type: none"> <li>• required coursework</li> <li>• meeting program milestones/degree requirements</li> <li>• research progress is deemed unsatisfactory by advisor and dissertation committee</li> </ul>	<input type="checkbox"/> Cumulative GPA is 2.99-2.00 continues into a third consecutive term <input type="checkbox"/> Cumulative GPA is 1.99 or below continues into a second consecutive term <input type="checkbox"/> Student has not successfully completed conditions identified in their notification and their performance remains below requirements in <ul style="list-style-type: none"> <li>• required coursework</li> <li>• meeting program milestones/degree requirements</li> <li>• research progress is deemed unsatisfactory by advisor and dissertation committee</li> </ul>

**Note:** In the above instances, a student’s status returns to “good academic standing” when the combination of these items have been successfully attained: cumulative GPA returns to 3.00 or above, they complete the requirements of required coursework and program milestones/degree requirements.

**PARTIES AND DOCUMENTS THAT CONFIRM STUDENT STATUS:**

<b>Pre-candidacy Students</b>	<b>Post-candidacy Students</b>
Meet with a committee made up of the Graduate Chair or their designee, and a group of at least three departmental faculty (identified by the department chair) to discuss progress	Meet with their dissertation committee

**Note:** The College of Pharmacy Individual Development Plan is the primary source for confirming a student’s progress in each year of the academic program and is supported by written notification provided by the program. Email notification is considered to be “in writing.”

**PROCEDURES FOR PLACING A STUDENT ON ACADEMIC WARNING/PROBATION**

<b>Initial Placement</b>	<b>Continued placement</b>	<b>Dismissal from the Graduate Program</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Graduate Chair notified that student is not in good academic standing.</li> <li><input type="checkbox"/> Student receives written notification of the Academic Warning/Probation for the following term.</li> <li><input type="checkbox"/> Student informed of College of Pharmacy appeals process.</li> <li><input type="checkbox"/> Student Affairs Program Manager, Department chair, and Rackham receive a copy of student’s notification.</li> <li><input type="checkbox"/> The Academic Warning/Probation is noted in the student’s Individual Development Program Evaluation.</li> <li><input type="checkbox"/> A meeting is scheduled with the graduate chair, their designee, or the student’s advisor to discuss additional measures that will facilitate the successful completion of the conditions identified in</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Student meets with committee for an update meeting and/or during the annual feedback and Individual Development Program review.</li> <li><input type="checkbox"/> Graduate Chair notified that student is continuing to not make academic progress.</li> <li><input type="checkbox"/> Student receives written notification of the Academic Probation.</li> <li><input type="checkbox"/> Student informed of College of Pharmacy appeals process.</li> <li><input type="checkbox"/> Student Affairs Program Manager, Department chair, and Rackham receive a copy of student’s notification.</li> <li><input type="checkbox"/> The continuing Academic Probation is noted in the student’s Individual Development Program Evaluation.</li> <li><input type="checkbox"/> A meeting is scheduled with the graduate chair or the student’s advisor to discuss additional measures that will facilitate the</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Student meets with committee for an update meeting and/or during annual feedback and Individual Development Program review.</li> <li><input type="checkbox"/> Graduate Chair notified that student is recommended for dismissal from the program.</li> <li><input type="checkbox"/> Graduate Chair and Department Chair review recommendation and make decision about dismissal, in collaboration with Associate Dean for Research and Graduate Studies.</li> <li><input type="checkbox"/> Student receives written notification of the Dismissal.</li> <li><input type="checkbox"/> Student Affairs Program Manager, Department chair, and Rackham receive a copy of student’s notification.</li> <li><input type="checkbox"/> The dismissal decision is noted in the student’s Individual Development Program Evaluation.</li> <li><input type="checkbox"/> Student is advised of the College of Pharmacy appeals process, and notifications about an appeal and its status are distributed to</li> </ul>
the written notification (tutoring, group study, etc.).	successful completion of the conditions identified in their notification (tutoring, group study, etc.).	Department chair, Student Affairs Program Manager, and Rackham. <ul style="list-style-type: none"> <li><input type="checkbox"/> Graduate student funding ends on the effective date of the dismissal or as negotiated by the Department Chair and the student.</li> </ul>

### **XIII. ACADEMIC DISPUTES**

The College of Pharmacy has procedures for managing student conflict. Students may manage the conflict on their own using the process below or they may reach out to the College of Pharmacy, Rackham Resolution Officer in the College who can assist in formulating communications and an approach. As well, students may contact the Student Affairs Program Manager for *Student Affairs and Admissions* for assistance.

In terms of process, students are first asked to try to resolve any issue with the faculty in question. If the faculty member is not your PhD Advisor, students should then go to their PhD Advisor for assistance. If concerns continue, students should involve the Dissertation Committee Chair (if applicable) and Director of the IDP to resolve the problem. Issues that remain unresolved will move to the Associate Dean for Faculty Affairs and Graduate and Undergraduate Education, prior to moving to the Dean of the College. The issue can then be taken to the Rackham Graduate School if needed after this stage (<https://rackham.umich.edu/rackham-life/conflict-resolution-and-student-grievances/>).

In terms of documentation at each stage, it is anticipated students will email the person to schedule a meeting, present a short, written agenda at the meeting, and develop a summary of the meeting thereafter. The summary will be shared with both parties.

Students may file a Professional Concern Note if preferred <https://pharmacy.umich.edu/mycop/dei/concern-reporting>.

## XIV. APPENDICES

### **Appendix 1: Brief Course Descriptions**

Note: This list is not meant to be comprehensive. Additional elective courses can be identified by searching the websites of other Departments (e.g., Chemistry, Biological Chemistry, Biophysics, Pharmacology) or from the University of Michigan course database (<https://atlas.ai.umich.edu>)

**Medicinal Chemistry 532** (3 cr): *Bioorganic Principles of Medicinal Chemistry*. A molecular/chemical approach to medicinal chemistry, emphasizing macromolecular targets of drug action.

**Medicinal Chemistry 535** (3 cr): *Principles of Drug Design*. An overview of the drug design process from lead selection to ADMET optimization.

**Medicinal Chemistry 573** (2 cr): *Investigations in Medicinal Chemistry*. A lab rotation course that allows the student to experience research prior to selecting a dissertation mentor.

**Medicinal Chemistry 660** (1 cr total, 0.5 cr per term): *Responsible Conduct of Research and Scholarship (RCRS) in Pharmaceutical Sciences*. (See detailed description above).

**Medicinal Chemistry 740/741** (1 cr total, 0.5 cr per term): *Original Research Proposal*. The student presents an original research proposal on a topic distinct from but related to their dissertation work (See detailed description above).

**Medicinal Chemistry 990** (1–9 cr): *Dissertation Research/Pre-candidacy*. Election for dissertation work by doctoral student not yet admitted to candidacy.

**Medicinal Chemistry 995** (8 cr): *Dissertation Research/Candidacy*. Election for dissertation work by doctoral student admitted to candidacy.

**BiolChem 528** (3 cr): *Biology and Chemistry of Enzymes*. Chemical and catalytic mechanisms of enzyme-catalyzed reactions, with an emphasis on organic and organometallic cofactors in biology and mechanisms of group transfer reactions, redox reactions, rearrangements, decarboxylations, carboxylations, and methylation.

**Bioinformatics 527** (4 cr): *Introduction to Bioinformatics and Computational Biology*. Fundamental theories and practices of Bioinformatics and Computational Biology via a series of integrated lectures and labs.

**Biophysics 520** (3 cr): *Methods of Biophysical Chemistry*. Key methodologies of contemporary biophysics and biophysical chemistry, including X-ray diffraction, solution and solid-state NMR, electron microscopy, optical spectroscopic techniques, and the separation and study of biological macromolecules and membranes

**Biophysics 521** (3 cr): *Principles of Biophysical Chemistry*. Protein and nucleic acid structure and dynamics, the nature of underlying forces and interactions that control biopolymer processes, and aspects of dynamics in the context of function.

**Chemical Biology 502** (3 cr): *Chemical Biology*. Combinatorial methods including SELEX and gene shuffling, combinatorial organic synthesis, high throughput screening and chemical genetics; signal transduction, emphasizing how small molecules have been used to probe and modulate signal transduction pathways; protein translation, stressing mechanistic aspects of protein synthesis and folding *in vivo*.

**Chemistry 540** (3 cr): *Organic Principles*. The principles governing thermodynamic equilibria and reaction rates, as well as tools that interrogate them and how to apply these tools to understand and/or predict the stability and reactivity of organic molecules.

**Chemistry 541** (3 cr): *Advanced Organic Chemistry*. The scope and limitations of the more important synthetic reactions are discussed within the framework of multistep organic synthesis.

**Chemistry 542** (3 cr): *Applications of Physical Methods to Organic Chemistry*. Applications of infrared, ultraviolet and nuclear magnetic resonance spectroscopy, optical rotary dispersion, mass spectrometry, and other physical methods to the study of the structure and reactions of organic compounds.

**Chemistry 543** (3 cr): *Organic Mechanisms*. Students will learn to propose and write reasonable mechanisms for organic reactions, including complex multi-step processes. Knowledge of the details of the fundamental organic reaction processes will also be gained.

**Pharmacol 503** (2 cr): *Real-World Drug Discovery*. Students will participate in “New Target Strategy Teams,” with each team researching and presenting their evaluation of a potential novel drug discovery project of interest to Michigan Drug Discovery. These teams will be organized and run very similarly to how these same kinds of teams operate in “big pharma;” and trainees will be making an important contribution to real-world decisions regarding which potential projects Michigan Drug Discovery and its collaborators will invest resources into.

**Pharmacol 601** (3 cr): *From Molecules to Patients: Basic Quantitative Principles of Pharmacology*. Fundamental principles of pharmacology and their quantitative treatment as a basis for understanding the properties and mechanism of action of drugs.

**Pharmacol 621** (2 cr): *Translational Pharmacology: From Drug Discovery to Therapeutics*. Experts from academia and industry will take you on a journey from bench science to new therapeutic agents. Students will learn how to translate preclinical studies to clinical trials and FDA approval. Critical evaluation of clinical trials, patent issues and pharmacoeconomics will also be taught.





**Appendix 2: Timetable of Deadlines**

<b>Item</b>	<b>Students</b>	<b>Term/Month</b>	<b>Form and Location</b>	<b>Responsible Parties</b>
<i>1<sup>st</sup> Year Evaluation</i>	1st Yrs	April 30	Yes, CoP IDP Website	Student and First-Year Advisor
<i>MC740/741 (ORP)</i>	2nd Yrs	Fall and Winter; by end of February	Yes, Med Chem	MC740/741 Committee Chair
<i>Prelim/Candidacy Exam</i>	2nd Yrs	May–July	Yes, Med Chem	MC740/741 Committee Chair
<i>Establish Dissertation Committee</i>	3rd Yrs	end of Fall term	Yes, Rackham	Student and Mentor
<i>3rd Year Seminar (serves as the first Annual DCM)</i>	3rd Yrs	Winter	Yes, CoP IDP Website and Committee Eval form	Student, Mentor, and Dissertation Committee
<i>Annual Dissertation Committee Meeting (DCM)</i>	≥ 4th Yrs	Winter	Yes, CoP IDP Website and Committee Eval form	Student, Mentor, and Dissertation Committee
<i>IDP/Mentoring Agreement</i>	All	April 30	Yes, CoP IDP Website	Student and Mentor
<i>First-author paper</i>	All	before defense	No	Student and Mentor
<i>Data Meeting</i>	3–6 months prior to defense	as needed	Yes, Med Chem	Student, Mentor, and Dissertation Committee
<b>Defense</b>	graduating students	as needed	Yes, Rackham and Med Chem	Student, Mentor, and Dissertation Committee

**Appendix 3: Example Title Page for MC 741 and Candidacy Proposals and Annual Dissertation Committee Reports**

**Candidacy Proposal**

***Title of proposal***

*Your Name*

Medicinal Chemistry Program  
University of Michigan, Ann Arbor

*Date of meeting*

*Place of meeting*

Committee:

Prof. XXXX (Chair)

Prof. YYYY

Prof. ZZZZ

Prof. AAAA (Ex officio, mentor)

*Note: Page number document.*

## **Appendix 4: Third-Year Seminar Instructions**

**For the Third-Year Seminar, please consult your mentor for seminar preparation advice.**

The third-year seminar gives you an opportunity to work on your oral-presentation and scientific-communication skills. It is also an opportunity to have your first annual Dissertation Committee Meeting (DCM). **The most important point to emphasize regarding the third-year seminar is that it is not just a repeat of your candidacy exam. You must describe in detail the progress that you have made in the ~6 months AFTER reaching candidacy.** For anyone who struggled in their candidacy exam, this is the time to really shine and show your thesis committee that you have serious Ph.D. skills! Below are some pointers/requirements:

**1. You should build your annual report “on top” of your candidacy exam paper.**

- a. Correct any errors/omissions in the report that you gave to your candidacy committee; you don't have to rewrite it.
- b. Add a new section at the end called “**Recent Progress**” that specifically talks about what you accomplished in lab after becoming a candidate. Adjust any future aims based on your progress and the evolution of your project.
- c. Send your updated report to your dissertation committee **two weeks in advance of your talk.**
- d. Send your title and abstract to the department executive secretary **two weeks in advance** for the website and flyer.

**2. Write a 1-page abstract.**

- a. This is a little more detailed than a regular abstract. Feel free to include a key picture from your report; however, it is not required.
- b. Be sure to start with your seminar title, your name and your advisor's name at the top of the page, in addition to the date and time of your talk.
- c. The department executive secretary will arrange scheduling and will send out the third-year seminar announcements for each week's presentation the Monday preceding your Tuesday or Thursday seminar.

**3. DCM evaluation form.**

- a. You and your advisor need to fill out your self-evaluation and the advisor's evaluation sections of the DCM evaluation form and give it to your dissertation committee **one week prior to your seminar.**

**4. You should build your oral presentation “around” your candidacy slides.**

- a. Correct any errors/omissions in your slides. You still need to give a good presentation on all of the background material.

- b. You must clearly denote what experiments were your “Data at Candidacy” (the later slides from your candidacy exam).
- c. Follow that section with your new slides on “Recent Progress”.
- d. Follow the “Recent Progress” information with your adjusted future plans for your research.

**5. Meet with your committee immediately following your talk.**

- a. Yes, they will ask you detailed questions, just like any other committee meeting you will have.
- b. Your advisor will update the DCM evaluation form to document the comments and suggestions from your committee. Turn the form in to the Med Chem office and keep copies for yourselves.
- c. If some of your committee members can't stay after, move the meeting with your whole committee to another date/time (within one week of your seminar). Still do the seminar when you are scheduled but meet with your committee at a separate time (this is allowable, but not preferable).

## **Appendix 5: Guidelines for Oral Dissertation Defenses**

### **1. Links to Guidelines on Rackham Website:**

<https://rackham.umich.edu/navigating-your-degree/dissertation-timeline/>

<http://www.rackham.umich.edu/current-students/dissertation/the-dissertation/dissertation-timeline>

<http://www.rackham.umich.edu/current-students/dissertation/defense>

### **2. Flyer and Website Information**

**Due at least 30 days before defense**, to be e-mailed to the department executive secretary

Information needed:

- Date
- Time
- Location
- Title

### **3. Reserving Room for Oral Defense Seminar**

To reserve a room for the oral defense seminar, send an e-mail with the requested room, date, start time, and end time to:

- College of Pharmacy or NUB, email: [cop.facilities@umich.edu](mailto:cop.facilities@umich.edu)
- Rackham (if no rooms are available in the COP):  
<http://www.rackham.umich.edu/rackham-building/room-scheduling/scheduling-guidelines#who-may-schedule>, e-mail: [RackhamScheduling@umich.edu](mailto:RackhamScheduling@umich.edu).
- Chemistry (if your advisor is in the Chemistry Dept.) e-mail: [chemreservations@umich.edu](mailto:chemreservations@umich.edu)
- Life Sciences Institute (if your advisor is in LSI) e-mail: [LSIreservations@umich.edu](mailto:LSIreservations@umich.edu)

Also reserve a room (allow at least 1 additional hour) for the private meeting with the committee immediately after the seminar. This can be in the seminar room itself. Note that the department will provide refreshments ONLY if the defense seminar is in the College of Pharmacy.

### **4. Program Booklet (Yellow book)**

Two weeks prior to your defense, please e-mail, in a Word document, the following information to the department executive secretary.

Information needed:

- Your name as you would like it listed
- Photo image (preferably a current headshot to be used for the flyer)

- Title
- Abstract
- Publications
- Presentations
- Committee Member Names
- Future plans
- Anything else you want included in the yellow book.

**5. Final Steps after oral defense:**

- Provide your forwarding address and e-mail contact to the department executive secretary.
- Provide a bound hardcopy of your dissertation to the department executive secretary.
- Complete the exit survey and an exit interview with the Dean. One of the Student Affairs Program Managers will e-mail you the exit survey. Once your survey has been completed, the Dean's office administrative staff will contact you to schedule your exit interview.
- Optional: schedule an exit interview with the MedChem Dept. Chair. Please contact the department executive secretary to schedule your optional exit interview with the Dept. Chair.

**Appendix 6: College of Pharmacy Graduate Student Vacation Policy and Form**

Graduate Students are allowed two weeks of vacation per year, plus University holiday and seasonal days. Permission needs to be granted from the student's faculty mentor before travel plans are made.

Vacation Extension Policy:

Students requesting an extension to the two-week policy must obtain approval from the advisor AND the IDP Director BEFORE travel plans are made. When scheduling vacation, international students should plan to return to campus no later than three weeks before the beginning of the term in order to avoid any re-entry issues when travel is out of the U.S.A. Extensions will only be granted once every two to three years. Any student requesting an extension must be in good academic standing at the time of the request.

VACATION APPROVAL FORM:

Student \_\_\_\_\_ Program \_\_\_\_\_

Dates requested \_\_\_\_\_

Total regular days this request (up to 12) \_\_\_\_\_ Total regular remaining \_\_\_\_\_

Additional days requested as EXTENSION \_\_\_\_\_

Advisor approval \_\_\_\_\_ DATE \_\_\_\_\_

IDP Director approval \_\_\_\_\_ DATE \_\_\_\_\_

(Required for extensions)

Student: Please return to the department when all signatures are obtained.



## **Appendix 7: Training Grant and Fellowship Opportunities**

### **Training Grant Opportunities**

- Pharmacological Sciences Training Program (PSTP)  
<https://medschool.umich.edu/departments/pharmacology/education/nih-pstp-training-program>
- Chemistry-Biology Interface Training Program (CBI)  
<https://sites.lsa.umich.edu/cbi/>
- Cellular Biotechnology Training Program (CBT)  
<https://cbtp.umich.edu/index.php>
- Training Program in Translational Research (TPTR)  
<https://www.pathology.med.umich.edu/t-32>
- Cancer Biology Training Program (CBTP)  
<https://medicine.umich.edu/dept/cancer-biology>

### **Internal Fellowship Opportunities**

- Rackham Merit Fellowship  
*Nominated by dept during admissions*
- Rackham Pre-doctoral Fellowship  
<https://rackham.umich.edu/funding/rackham-predoctoral-fellowship-program/>
- Rackham Barbour Fellowship  
<https://rackham.umich.edu/funding/barbour-scholarship/>
- Rackham International Fellowships  
<https://rackham.umich.edu/funding/rackham-international-student-fellowships/>

### **External Fellowship Opportunities**

- ACS Med Chem Fellowship  
<https://www.acsmedchem.org/medi-division-predoctoral-fellowship-awards-ac-medical-chemistry-division>
- NSF Graduate Research Fellowship Program (GRFP)  
<https://www.nsfgrfp.org/>