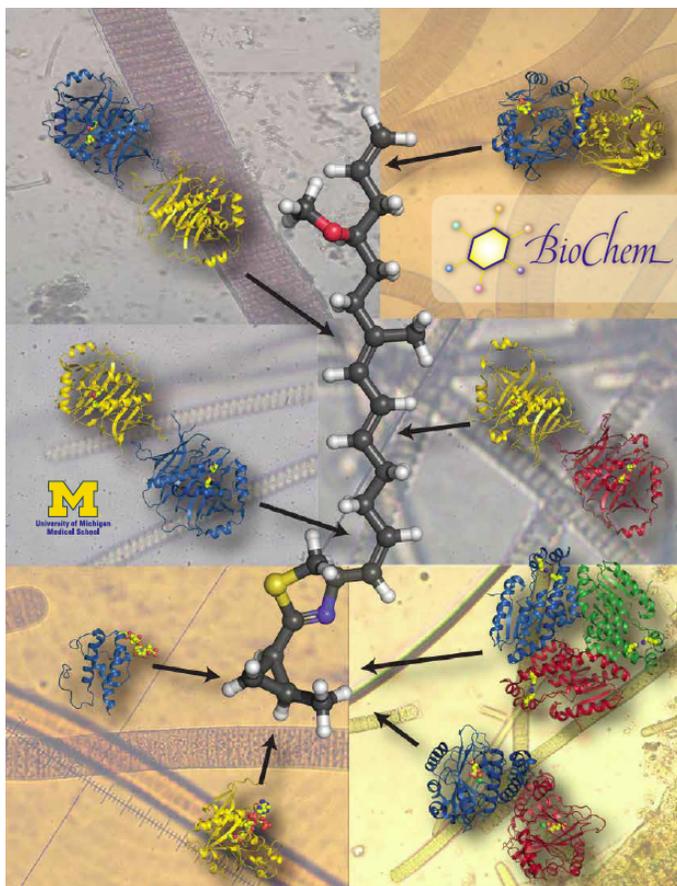




MEDICAL SCHOOL
BIOLOGICAL CHEMISTRY
UNIVERSITY OF MICHIGAN

BIOLOGICAL CHEMISTRY



PhD GRADUATE STUDENT HANDBOOK

(Revised 2021)

About the Cover

Jennifer Gehret McCarthy, Ph.D. (Biological Chemistry 2012)

The marine environment, full of bioactive natural products, is largely untapped. Natural products, including those found in the marine environment, exhibit an impressive array of chemical diversity and often potent bioactivity, which can be harnessed for therapeutics. Many unusual enzymes reside in natural product assembly-line pathways, and create the diverse collection of chemical functional groups found in natural products. The study of enzymes in natural product biosynthetic pathways can reveal new modes of catalysis, unique chemical transformations, and novel biosynthetic tools. The antimetabolic natural product curacin A is a perfect example of interesting chemistry found in the marine environment.

Curacin A (center), produced by the marine cyanobacterium *Moorea producens* (background), contains many interesting chemical groups including cyclopropane and thiazoline rings, an internal *cis* double bond and a terminal alkene. Equally interesting are the structural details of the biosynthetic pathway that produces curacin A (arrows), giving insight into how each unique chemical group is made. Shown are the published structures from the curacin A biosynthetic pathway (starting from the top left and moving counter clockwise): a dehydratase that produces a *trans* double bond¹, a dehydratase that produces a *cis* double bond¹, an acyl carrier protein involved in cyclopropane biosynthesis², a loading enzyme with dual decarboxylase and acetyltransferase activities³, an Fe²⁺/ α -ketoglutarate dependent halogenase involved in cyclopropane biosynthesis⁴, a decarboxylase that establishes regiochemistry for cyclopropane formation⁵, a dehydratase that produces a *trans* double bond¹, and a β -sulfate specific thioesterase that produces a terminal alkene⁶.

1. D.L. Akey, et al., *Structure* 18,94(2010).
2. A. Busche, et al., *ACS Chem boil* 7, 378(2012).
3. L. Gu, et al, *Science* 318, 970(2007).
4. D. Khare, et al., *Proc Natl Acad Sci USA* 107, 14099 (2010)
5. T.W. Geders, et al., *J Biol Chem* 282, 35954 (2007)
6. J.J. Gehret, et al., *J Biol Chem* 286, 14445 (2011).

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I. PROGRAM OVERVIEW

The Department of Biological Chemistry at the University of Michigan offers a Ph.D. degree through the Rackham School of Graduate Studies. The Ph.D. program includes formal course work, seminars, individual study and original research. Current areas of research include structural biology, protein biochemistry, enzyme reaction mechanisms, molecular genetics, signal transduction, neurobiology, and cell and developmental biology. The common theme is an interest in understanding biological phenomena at the molecular and mechanistic level.

II. PROGRAM ADMINISTRATION

Graduate Program Director	Dr. Anne Vojtek	avojtek@umich.edu
Graduate Program Manager	Ms. Beth Goodwin	egoodwin@umich.edu

Academic Advisors:	Dr. Anne Vojtek	avojtek@umich.edu
	Dr. Mike Uhler	muhler@umich.edu
	Dr. Pat O'Brien	pjobrien@umich.edu
	Dr. Peter Freddolino	petefred@umich.edu
	Dr. Bruce Palfey	brupalf@umich.edu

III. ADMISSION AND APPLICATION TO THE PROGRAM

The Program in Biomedical Sciences (PIBS) is the gateway for biomedical science graduate study at the University of Michigan. PIBS was created to provide flexibility to students in their choice of dissertation mentor and graduate program. PIBS coordinates the first-year graduate studies for 13 Ph.D. programs at the University of Michigan. These programs are: Biological Chemistry, Bioinformatics, Cancer Biology, Cell and Developmental Biology, Cellular and Molecular Biology, Genetics and Genomics, Immunology, Microbiology and Immunology, Molecular, Cellular, and Developmental Biology, Molecular and Cellular Pathology, Molecular and Integrative Physiology, Neuroscience, and Pharmacology. When applying to PIBS, students will be asked to specify the two departmental programs they are most interested in, although there are no restrictions to those programs when choosing rotation laboratories (see page 7 for additional information). Students seeking a Ph.D. in Biological Chemistry should apply directly to PIBS at the University of Michigan for admission, and designate Biological Chemistry as their primary department of interest on the application form.

Online applications are accepted from September through December 1 and are available from PIBS. See <http://medicine.umich.edu/medschool/education/phd-programs/phd-admissions> for instructions and applications.

IV. ACADEMIC PROGRAM

Ph.D. Program Requirements

Graduate work in the Department of Biological Chemistry combines the rigor of advanced study with the flexibility for students to design their own optimum curriculum. Coursework consists of both required and elective components. Elective coursework must be didactic, graded, relevant graduate-level course work. A minimum of 4 biological chemistry advanced elective credits (2 courses) is required. To best match each student's individual interests and needs, students choose elective coursework in consultation with their research mentor. Elective coursework outside the Biological Chemistry Department requires approval by Biological Chemistry academic advisors.

Biological Chemistry PhD Graduate Curriculum

A. Biological Chemistry Required Course:

BIOLCHEM 660 Molecules of Life: Protein Structure, Function & Dynamics (2 Cr, F)

B. Biological Chemistry Advanced Electives (4 Credits/2 courses minimum):

Fall

BIOLCHEM 650 Eukaryotic Gene Transcription (2 Cr, F)

BIOLCHEM 690 Biochemical Regulatory Mechanisms (2 Cr, F)

Winter

BIOLCHEM 528 Biology and Chemistry of Enzymes (2 Cr, W)

BIOLCHEM 597 Critical Analysis (2 Cr, W)

BIOLCHEM 640 Regulatory RNA and Control of Gene Expression (2 Cr, W)

BIOLCHEM 602 Protein Crystallography (3 Cr, W 2023)

BIOLCHEM 673 Enzyme Kinetics (3 Cr, W)

BIOLCHEM 675 Biochemistry of Membranes and Organelles (2 Cr, W)

C. Additional Biological Chemistry Electives

Fall

BIOLCHEM 713 Emerging Areas of Biochemistry (1 Cr, F)

D. Additional required courses:

BIOLCHEM 712 Biological Chemistry Seminar Series (2 Cr, F/W)

Register F/W every year

BIOLCHEM 711 Graduate Seminar (2 Cr, F/W)

Register F/W Year 2 & 3

PHRMACOL 502 Introduction to Scientific Communication (2 Cr, F)

Register Fall Semester Year 2

PIBS 503 Research Responsibility & Ethics (1 Cr, F)

Register in Year 1 & Year 5

PIBS 504 Rigor and Reproducibility (1 Cr, W)

E. Electives*** (3 Cr minimum):

Fall

BIOINF 527 Introduction to Bioinformatics and Computational Biology (4 Cr, F)

BIOINF 528 Advanced Applications of Bioinformatics (3 Cr, F)
BIOPHYS 520 Techniques in Biophysical Chemistry (3 Cr, F)
CDB 530 Cell Biology (3 Cr, F)
CDB 560 Quantitative Cell Biology (4 Cr, F)
HUMGEN 541 Molecular Genetics (3 Cr, F)

Winter

BIOINF 524 Foundations for Bioinformatics (3 Cr, W)
PHYSIOL 555 Method and Logic in Biomedical Science (3 Cr, W)
HG 551 Computational Genomics (3 Cr, W)
PATH 581 Tissue, Cellular and Molecular Basis of Disease (4 Cr, W)
PHYSIOL 510 System and Integrative Physiology
CDB 582 Stem cells: Organogenesis to Regenerative Biology (3 Cr, W)

***This is a partial list. Consult your research mentor and academic advisor if you would like to take an elective course not listed above.

F. Research:

PIBS 600 Biomedical Science Independent Study (F/W, Year 1)
BIOLCHEM 990 Dissertation –Precandidate Research
BIOLCHEM 995 Dissertation –Candidate Research

In addition to coursework and conducting research, the Biological Chemistry PhD has the following additional requirements:

- Students are required to attend the Biological Chemistry Departmental Seminars, and attendance at 75% of the Biological Chemistry Departmental seminars per semester is mandatory.
- Students gain valuable teaching experiencing by serving as a teaching assistant in Biological Chemistry for one semester.
- Successful completion of the Preliminary/Qualifying Examination is necessary to advance to Ph.D. candidacy. This examination involves writing a research proposal and defending it orally before a faculty committee.
- Progress to degree is monitored by the student's thesis advisory committee. Meetings are required annually or more often if required by the thesis committee. At the first thesis advisory committee meeting, students prepare an NIH NRSA style thesis proposal for discussion with their committee.
- Students present a research seminar to the department in year 4.

Program requirements are reviewed periodically to assess the quality of graduate education in the Department and may be subject to change upon review. At the discretion of the Department, changes may be applied retroactively to students already enrolled in the Biological Chemistry Graduate Program.

Course Requirements for Students Entering with a Master's Degree

The Biological Chemistry program will work closely with the student to devise an optimal educational program that builds on and complements the student's prior training.

Course Requirements for the Medical Scientist Training Program (MSTP)

MSTP students who join the Biological Chemistry PhD program will devise an individual coursework plan in consultation with the MSTP program and the Biological Chemistry PhD program.

Biological Chemistry 711 Enrollment Requirements for Students Appointed to Training Grants

Biological Chemistry PhD students are required to take two years (4 terms) of Biolchem 711. If a training grant offers a similar course, the student may request a waiver for one year of the two-year requirement for 711. Additional terms of seminars may be required by the training grant.

TRAINING GRANT	REQUIRED 711 ENROLLMENT
Cellular Biotechnology Training Program (CBTP)	2 Years (4 terms)
Chemistry/Biology Interface (CBI)	2 Years (4 terms)
Genetics Training Program <i>(Enroll one year of Biochem 711 and two years Gen 631)</i>	1 Year (2 terms)
Pharmacological Sciences Training Program <i>(Enroll in one year of Biochem 711 and Med Chem 740)</i>	1 Year (2 terms)
Vision Training Grant	2 Years (4 terms)

Laboratory Rotations

PIBS students engage in research rotations, choosing rotations during both Fall and Winter terms. PIBS students also have the option to start in the summer, engaging full time in a research rotation. Upon completion of the PIBS year, the students elect a mentor and degree granting program.

Before choosing a laboratory for a rotation, students review faculty research interests through the departmental or PIBS websites and attend formal and informal networking sessions with faculty, including the Biological Chemistry Annual Retreat. Appointments with potential research mentors should be arranged to discuss potential projects available in a given term.

Selection of Thesis/Dissertation Advisor

The design of the PIBS program allows students to perform rotations with any of the faculty associated with PIBS Ph.D. programs. However, once a mentor is chosen the student is expected to join a Ph.D. program with which the mentor is associated. To join the Biological Chemistry graduate program, the student's mentor must be a faculty member in Biological Chemistry or an affiliate member of the Biological Chemistry graduate program. The only exceptions to this policy would be cases in which there is a clear and extensive collaboration occurring between a primary mentor in another

program and a co-mentor in Biological Chemistry. In instances like this a very significant amount of the experimental work would be expected to occur in the laboratory of the Biological Chemistry faculty mentor. Approval for a co-mentorship arrangement is granted by the Graduate Program Director in consultation with the faculty Advisory Committee.

PIBS students select thesis advisors and begin full-time laboratory research by the beginning of the summer following the first year of graduate study. Once your thesis advisor has been selected, he or she will provide guidance in selecting a dissertation research problem, in selecting a Dissertation Committee, and in other aspects of your graduate career and professional development. In addition, the graduate program director and graduate program advisors along with the Biological Chemistry Career Development Committee provide mentorship during the graduate school experience.

Preliminary/Qualifying Examination

At the end of the first year, Biological Chemistry students write and defend orally an original research proposal. The written and oral components of the exam assess the student's understanding of the required course content for the department and the student's ability to reason analytically and to independently develop ideas and experimental approaches. Students receive specific feedback on the strengths and weaknesses of his/her performance. Both components of the exam must be passed in order to advance to candidacy. If a student fails either or both of the exam components, the academic probation and dismissal policy applies (Section V-VII).

Advancement to Candidacy

The minimal requirements for Candidacy are: (a) Bachelor's degree or equivalent awarded by an accredited university; (b) a minimum of 18 credits of graded coursework in residence; (c) graduate didactic coursework in biochemistry and related fields, including Biolchem 660 (see IV. Academic Program, PhD Program Requirements above for more detailed information on required coursework and electives); (d) two semesters of PIBS 600; (e) 3 credit hours of cognate coursework with a B- or better; (f) a cumulative grade point average of B (3.0 or better on 4.0 scale) AND a minimum grade of B- in required courses; (g) passing the preliminary examination; and, (h) satisfactory progress in research.

Formation of Thesis Advisory Committee

Following advancement to candidacy you will be asked to form your dissertation committee. Biological Chemistry requires that your committee consist of (at least) five members, including your research mentor. The Chair of your committee must be a Biological Chemistry faculty member or affiliate member of the graduate program, other than your dissertation mentor. You may appoint a co-chair if you wish. At least three of the members of your dissertation committee will be faculty members of Biological Chemistry. At least one other member of your committee will be chosen from outside of the department (and will not hold any fraction of an appointment in Biological Chemistry) and will be designated as your cognate member. After approval by your mentor, the names of the members of your committee are submitted to Beth Goodwin in the Biological Chemistry Graduate Program Office. Following approval by the Biological Chemistry Graduate Program Director, your committee will be officially submitted to the

Rackham Graduate School. Should the composition of your dissertation committee change during the course of your thesis research be sure to update the Graduate Program Office.

You are required to form your thesis committee no later than fall semester, year 2 (the term after you advance to candidacy) and to hold your first committee meeting winter term, year 2. Thereafter, you are required to meet with your committee at regular intervals as determined by your dissertation committee but no less than once per year to maintain your academic standing in the program. You are also required to submit reports of your progress to your committee and the Biological Chemistry Graduate Program Office. Students usually complete the program within 5-6 years.

Master's Degree

Biological Chemistry Ph.D. students who have completed a minimum of 24 credit hours may apply for a master's degree. It is possible to meet the Biological Chemistry Ph.D. coursework requirements but not have the required number of credits for receipt of a master's degree, as some coursework (including 990, 995 and audited courses) cannot be counted towards this degree. The degree is not automatically awarded; you must submit a request that the Graduate School award it to you. Contact Beth Goodwin and an academic advisor for the Biological Chemistry Ph.D. program for additional information.

Dissertation Defense and Final Oral Examination

The Department requires that all five (or more) members of a dissertation committee read and approve the dissertation and all members should be present at the defense. However, in special cases in which a student has undue difficulty in scheduling all five members for the actual final oral defense, the student can request that the defense proceed with only four members present. This must include the Chair and the Cognate member. The Chair of the Defense Committee is the student's research mentor. To get approval to hold the defense with only four members present, the student must receive approval from all five members. This request can be made by email; all committee members must respond to the student and to either the Graduate Program Director or Beth Goodwin.

Biological Chemistry Seminar Series

The Department of Biological Chemistry sponsors a weekly seminar program during the Fall and Winter terms that attracts outside speakers of national reputation. **The seminars are held each Tuesday at Noon and all biochemistry students are required to attend.** Students are invited and encouraged to meet with the seminar speakers. In addition to the weekly seminar program, the Department sponsors an annual Distinguished Alumni Lecture and four endowed lectureships: the Irwin Goldstein Lectureship in Glycobiology, the G. Robert Greenberg Lectureship in Biological Chemistry, the William E.M. Lands Lectureship in the Biochemical Basis for the Physiology of Essential Nutrients, and the Martha L. Ludwig Lectureship in Structural Biology. Attendance at 75% of weekly seminars and biochemistry sponsored lectureships is required each semester during graduate school. Exceptions are made on a case-by-case basis and include overlapping required coursework and off-site

internships.

Work Hours, Vacation Guidelines and Other Employment

Students should consult with their mentors regarding specific laboratory policies on research hours and planned absences. Request for time off from research must be done in advance and in consultation with the student's mentor. Biological Chemistry students and first year PIBS students may take time off on official university holidays and season days, plus two weeks of the student's choice (10 business days, M-F), in consultation with the student's mentor.

Students in Biological Chemistry are expected to commit full-time effort to coursework, research and professional development. Students may not be employed in other positions where regularly scheduled work commitments are required. Activities, such as tutoring and babysitting, are not considered additional employment, but should also not interfere with the students' graduate education and research. Department and training grant approved internships for professional development of the graduate student are also not considered other employment.

V. Academic Standing

- A. The Rackham Graduate School requires a 3.00 cumulative GPA for good academic standing, and the Department of Biological Chemistry further requires all student to receive grades no lower than a B- in coursework. Students in Biological Chemistry who receive a grade lower than a B- in a required course who are otherwise in good standing in the program may be asked to repeat the class or undertake additional coursework. Failure to successfully remediate the coursework will result in the student being placed on probation. Students are encouraged to be proactive and seek assistance when in difficulty as the department has resources available to assist the students when academic difficulties occur.
- B. Once students have achieved candidacy, program requirements for good academic standing are: (a) satisfactory progress in research (including grades of Satisfactory (S) in Biolchem 995); (b) a cumulative grade point average of B (3.00) AND a minimum grade of B- in required biological chemistry courses; (c) minimum of 75% attendance at biochemistry department seminars each semester; (d) annual meetings (at a minimum) with thesis advisory committee; and, (e) completion of an individual development plan (IDP) annually.

VI. Academic Probation and Dismissal

- A. A student whose cumulative GPA falls below a B or who is not making satisfactory progress towards the degree in coursework and/or in research will be placed on probation.
- B. Preliminary exam policy. If a student fails either or both of the preliminary exam components, the Preliminary Exam Committee will make a recommendation to the Graduate Chair whether the student can re-write the written component and/or re-defend the oral component one time, or recommend that the student be dismissed from the program.

To be eligible to retake the preliminary exam, the student must be in good standing in research. The academic record of the student will also be taken into consideration in making the decision to allow a retake of the exam. The Preliminary Exam Committee may also recommend additional coursework.

If a student fails the initial preliminary exam and the preliminary exam committee recommends dismissal, the graduate chair, the advisor, and at least one other member of the graduate program committee will review the student's standing and decide as a committee whether or not to dismiss the student. A student who fails the re-take of the preliminary exam will be dismissed from the program.

- C. The student will have a 6-week period after a failed preliminary exam with recommended dismissal, during which time the Department will pay the student's stipend and health care. During this period, the student is expected to actively utilize university resources for CV/resume writing and career counseling resources.
- D. Students without an advisor. A student without an advisor is expected to make an immediate and concerted effort to identify a new research advisor, with the expectation that the student will arrange meetings with research faculty to discuss the transition within one week of notifying the graduate chair of the need or desire to seek a new research advisor.

If a student has not rotated in the lab of the new research advisor, the student and advisor have a period of up to 8 weeks to make a final decision, during which time the department will fund the student's stipend, health care, and/or tuition. Upon approval by the graduate program committee, the student may elect two rotations of up to 4-weeks duration each.

If the student has previously rotated in the lab of the research advisor, the decision to join the new lab is expected to be finalized as soon as possible but no later than two weeks after initial notification of the graduate chair of the need/desire to seek a new advisor.

- E. Students who fail to meet standards of academic or professional integrity or who have been found responsible for violations of other university standards of conduct may be dismissed in accordance with separate procedures detailed in the Rackham Graduate School Academic Policies.

VII. Policy and Procedure for Placing a Student on Probation

- A. A student that is not in good academic standing (V A-B) will be placed on probation. If a student is not in good academic standing because the student has failed the preliminary exam, the following policies apply. If a student fails the preliminary exam and the preliminary exam committee recommends dismissal, the graduate chair, the advisor, and at least one other member of the graduate committee will review the student's standing and decide as a committee whether or not to dismiss the student (Section VI B). A student who fails the re-take of the preliminary exam will be dismissed from the program (Section VI B).

- B. The decision to place a student on probation will be made by a faculty committee of at least three persons, the graduate chair, the advisor and at least one other member of the graduate committee. This committee will review the student's standing and decide as a committee whether or not to place the student on probation, the corrective actions needed, and the length of the probationary period needed for the corrective actions to return to good standing.

The student and Rackham will be notified before the probationary period begins in writing including the reasons for probation, the start/end dates for the probationary period, the corrective actions and conditions for returning to good standing, and the options for appeal.

- C. Academic probation period. The academic probation period will be for no shorter than two months of a term in which the student is enrolled and ordinarily conclude at the end of that term. Summer probationary periods are allowed. For a student placed on probation within two months of the end of an academic term, the probationary period will be extended into the next academic term (including Spring/Summer half-terms) for a total period of at least two months. In accordance with Rackham policy, probation will be recorded on the transcript and become a permanent part of the student's academic record.
- D. Funding for a student on probation. The student's funding will be maintained during the probationary period, with the funding source typically the same as that preceding the probationary period.
- E. Procedure to appeal a dismissal for academic reasons. The student can appeal (within two weeks) the decision for probation or dismissal to the Biological Chemistry Department Chair's advisory committee. Students may use the Graduate School's Academic Dispute Resolution Policy process only for procedural issues of fair and

equal treatment under the policy of the program and not to appeal the academic reason(s) for the decision.

- F. Reinstatement after probation. At the end of the probationary period, a student may either be returned to good academic standing or dismissed from the program. A student on probation who wishes to be reinstated must petition the graduate program to modify the conditions of academic standing. The petition should: provide reasons for the poor academic record; explain how conditions that produced this poor performance have changed; and present specific plans for improvement. The graduate program must approve the petition before the student can be reinstated. The graduate chair will notify Rackham of the recommendation to reinstate after probation or to dismiss.

VIII. DEPARTMENT EVENTS

Annual Departmental Retreat

The student-organized Biological Chemistry retreat, held before the beginning of the Fall semester at Kellogg Biological Station on Gull Lake in Western Michigan, provides students, postdoctoral fellows and faculty an opportunity to present and discuss research in a relaxed and informal setting.

Student chalk talks

Students in the Department of Biological Chemistry meet twice each month for lunch, conversation, and an informal research talk. This gathering provides an opportunity for students to keep in touch with their colleagues and to share scientific expertise and advice. The chalk talk schedule can be found on our website.

Monthly Happy Hour

Once a month members of the department are invited to gather together at a local establishment in Ann Arbor to enjoy conversation and appetizers.

Poster Session for PIBS Rotation Students

PIBS students rotating with Biological Chemistry faculty have the opportunity to present their research at informal poster sessions held at the conclusion of the Fall and Winter terms.

Annual Student Awards

Students in the Department of Biological Chemistry PhD program are eligible for nomination for the following awards. Each award, which carries with it a cash prize, is presented by the Chair of the Department at a special ceremony held annually, usually in May.

The **Halvor N. and Mary M. Christensen Award** is presented to an outstanding Ph.D. student in the Biological Chemistry Department who has demonstrated excellence in her/his academic scholarship and research contributions. The recipient receives a cash award of \$1,000.

The **Adam A. and Mary J. Christman Award** is presented to an outstanding Ph.D student in the Biological Chemistry Department who has demonstrated excellence in her/his academic scholarship and research contributions. The recipient receives a cash award of \$1,000.

The **Anthony and Lillian Lu Award** is presented to an undergraduate, graduate, or postdoctoral fellow on the basis of academic background, achievement in research, and potential as a scientist. The recipient receives a cash award of \$1,000.

The **Lee Murphy Memorial Prize** is awarded to a Ph.D. or MS student who embodies the highest ideals of scientific integrity and who has published a paper, or a series of papers, judged most significant within the last year. The recipient receives a cash award of \$1,000.

The **Minor J. and Mary Lou Coon Award** is presented to a Ph.D. and/or a MS student who best exhibits overall excellence in academic performance and service to the department and/or teaching. The recipient receives a cash award of \$1,000.

IX. WEB RESOURCES

LABORATORY SAFETY AND TRAINING EHS – Environmental Health and Safety
<http://ehs.umich.edu/>

WELCOME MATERIALS FOR NEW GRADUATE STUDENTS
<http://www.rackham.umich.edu/current-students/life-at-michigan/after-you-arrive-on-campus/welcome-materials>

RESOURCES FOR GRADUATE STUDENTS
<http://www.rackham.umich.edu>

WRITING SUPPORT
<http://lsa.umich.edu/sweetland>

RACKHAM ACADEMIC POLICIES
<https://rackham.umich.edu/academic-policies/>

INTEGRITY IN SCHOLARSHIP
<http://www.rackham.umich.edu/current-students/policies/academic-policies/section11>

PROFESSIONAL DEVELOPMENT

A. Rackham
<http://www.rackham.umich.edu/current-students/graduate-student-success/pd>

B. UM Alumni Association
<http://alumni.umich.edu/career>

C. University of Michigan Medical School

UM Office of Graduate & Postdoctoral Studies

<https://ogps.med.umich.edu/resources/cpd/>

Office of Graduate & Postdoctoral Studies Career and Professional Development

Shoba Subramanian, PhD (shobas@umich.edu)

Director of Curriculum and Educational Initiatives

Margery (Maggie) Evans, PhD (maggieev@med.umich.edu)

Career and Professional Development Coordinator

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[manage.com/subscribe?u=ee64a3a6bcbccffc8d01e0ff9d&id=48baff1b33](https://umich.us14.list-manage.com/subscribe?u=ee64a3a6bcbccffc8d01e0ff9d&id=48baff1b33)

HOW TO GET THE MENTORING YOU WANT

<http://www.rackham.umich.edu/downloads/publications/mentoring.pdf>

PARENTAL ACCOMMODATION POLICY

<http://www.rackham.umich.edu/current-students/policies/parental-accommodation-policy>

HEALTH AND WELLNESS RESOURCES

OGPS:

<https://ogps.med.umich.edu/resources/health-wellness/>

Rackham:

<http://www.rackham.umich.edu/current-students/life-at-michigan/health-wellness>

FINANCIAL ASSISTANCE

Emergency Funds

<http://www.rackham.umich.edu/prospective-students/funding/student-application/graduate-student-emergency-funds>

Fellowships, grants and scholarships

<http://www.rackham.umich.edu/prospective-students/funding>

Rackham Student Research Grant

<http://www.rackham.umich.edu/prospective-students/funding/student-application/graduate-student-research-grant>

Rackham Conference Travel Grant

<http://www.rackham.umich.edu/prospective-students/funding/student-application/rackham-conference-travel-grant>

Mentoring Plan

UM-Biochemistry Graduate Student Commitments

- I acknowledge that I have the primary responsibility for the successful completion of my degree. I will be committed to my graduate education and will demonstrate this by my efforts in the classroom and the research laboratory. I will maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- I will meet regularly with my thesis advisor and provide him/her with updates on the progress and results of my activities and experiments.
- I will work with my thesis advisor to develop a thesis project. This will include establishing a timeline for each phase of my work. I will strive to meet the established deadlines.
- I will work with my thesis advisor to select a thesis committee and commit to meeting with this committee, according to my graduate program guidelines. I will be responsive to the advice of and constructive criticisms from my committee.
- I will be knowledgeable of the policies and requirements of my graduate program, Rackham Graduate School and the University of Michigan. I will commit to meeting these requirements, including teaching responsibilities.
- I will attend and participate in laboratory meetings, seminars and journal clubs that are part of my educational program
- I will comply with all UMMS and Rackham Graduate School policies, including academic program milestones. I will comply with both the letter and the spirit of all institutional safety laboratory practices and animal use and human-research policies at my institution.
- I will participate in the UM Responsible Conduct of Research Training Program (PIBS 503) and practice those guidelines in conducting my thesis research.
- I will be a good laboratory citizen. I will agree to take part in shared laboratory responsibilities and will use laboratory resources carefully and frugally. I will maintain a safe and a clean laboratory space. I will be respectful of, tolerant of, and work collegially with all laboratory personnel.
- I will maintain a detailed, organized, and accurate laboratory notebook. I am aware that my original notebooks and all tangible research data are property of my institution but that I am able to take a copy of my notebooks with me after I complete my thesis.
- I will discuss policies on work hours, sick leave and vacation with my thesis advisor. I will consult with my advisor and notify fellow lab members in advance of any planned absences.
- I will discuss policies on authorship with my research advisor. I will work with my advisor to submit all relevant research results that are ready for publication in a timely manner prior to my graduation.
- I acknowledge that it is primarily my responsibility to develop my career following the completion of my degree. I will seek guidance from my research advisor, dissertation committee, other mentors and any other resources available for advice on career plans.

Adapted from the Association of American Medical Colleges and UM-PIBS.

Mentoring Plan

UM-Biochemistry Research Advisor Commitments

- I will be committed to mentoring the graduate student. I will be committed to the education and training of the graduate student as a future member of the scholarly community.
- I will be committed to the research project of the graduate student. I will help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. I recognize the possibility of conflicts between the interests of my own larger research program and the particular research goals of the graduate student, and will not let my larger goals interfere with the student's pursuit of his/her thesis/dissertation research.
- I will be committed to meeting with the student on a regular basis.
- I will be committed to providing resources for the graduate student as appropriate or according to my institution's guidelines, in order for him/her to conduct thesis/dissertation research.
- I will be knowledgeable of, and guide the graduate student through, the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines.
- I will help the graduate student select a thesis/dissertation committee. I will help assure that this committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
- I will lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful researcher; these may include oral and written communication skills, grant writing, lab management, animal and human research policies, the ethical conduct of research, and scientific professionalism. I will encourage the student to seek additional opportunities in career development training.
- I will expect the graduate student to share common research responsibilities in my research group and to utilize resources carefully and frugally.
- I will discuss authorship policies regarding papers with the graduate student. I will acknowledge the graduate student's contributions to projects beyond his or her own, and I will work with the graduate student to publish his/her work in a timely manner.
- I will discuss intellectual policy issues with the student with regard to disclosure, patent rights and publishing research discoveries, when they are appropriate.
- I will encourage the graduate student to attend professional meetings and make an effort to help him/her secure funding for such activities.
- I will provide career advice and honest letters of recommendation for his/her next phase of professional development. I will also be accessible to give advice and feedback on career goals.
- I will try to provide for every graduate student under my supervision an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.
- Throughout the graduate student's time in graduate school, I will be supportive, equitable, accessible, encouraging, and respectful. I will foster the graduate student's professional confidence and encourage critical thinking, skepticism and creativity.

Adapted from the Rackham/Dean's Office "Michigan Graduate Student Mentoring Plans"