



PennState
Huck Institutes of
the Life Sciences

**Molecular, Cellular and Integrative
Biosciences Graduate Program**

Degree Requirements Booklet

Fall 2018

MCIBS Intercollege Graduate Degree Program home page:

<https://www.huck.psu.edu/graduate-programs/molecular-cellular-and-integrative-biosciences>

Penn State Graduate School home page: <http://www.gradschool.psu.edu/current-students/>

Penn State Graduate Student Policies: <http://www.gradschool.psu.edu/current-students/student/>

Molecular, Cellular and Integrative Biosciences (MCIBS)

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Molecular, Cellular and Integrative Biosciences (MCIBS)

Overview of Major Academic Requirements

These requirements can also be found on the MCIBS web site:

<https://www.huck.psu.edu/graduate-programs/molecular-cellular-and-integrative-biosciences/degree-requirements/overview-of-requirements>

Totals:

24 credits of course work total (this means 400, 500 or 800-level)

6+ credits of 600 level (research)

Of the total credits 18 must be 500 or 600 level

Core courses:

First semester (take the courses listed below):

- MCIBS 503 (4) Critical Elements of Genetics & Molecular & Cellular Biology
- MCIBS 590 (2) Colloquium
- MCIBS 591 (1) Ethics in the Life Sciences
- BIOL 598 (2) Experiential Teaching in Biology
- MCIBS 596 (1) Individual Studies (for research rotations)

Second semester (take the course listed below, and start to take emphasis area courses):

- MCIBS 592(2) Current Research Seminars

Totals = 12 of the 24 course work credits met by core courses (core courses are the ones listed above)

Emphasis Area Courses (these are electives taken in addition to the core courses):

3 credits of a course with a quantitative basis (including statistics, population genetics, bioinformatics)

9 credits of other courses from the emphasis area list

Totals = 12 of the 24 course work credits met by emphasis area courses

Emphasis area course lists can be found on the MCIBS web site, and recommendations for electives should be discussed with your thesis advisor. You may also find it helpful to get course recommendations from the Emphasis Area representative or the Program Chair.

Other Requirements (more information on each of these is presented later in the handbook):

TA- one semester in 400 level or lower undergraduate biosciences course

English competency as prescribed by the graduate school

Cumulative GPA of at least 3.0 to remain in good academic standing, and must be at least 3.0 to take qualifying, comprehensive and final oral examination

Qualifying, Comprehensive, Dissertation and Final Oral Examination

Responsible Conduct of Research Training Requirement:

All new students in the Huck graduate programs must complete an online Responsible Conduct of Research (RCR) training course during their first year. The online course is offered through the CITI (Collaborative Institutional Training Initiative) Program and supplements the in-class, discussion-based RCR training provided in MCIBS 591, Ethics in the Life Sciences, a required 1-credit course typically taken during the second year. Together, these two courses satisfy RCR training requirements mandated by Penn State's SARI (Scholarship and Research Integrity) Program, an RCR initiative organized through the Office for Research Protections (administrative unit within the Office of the Vice President for Research).

First year students should complete the online CITI RCR course during or before the Orientation. To register, go to the Penn State CITI website <http://citi.psu.edu/> where you will find instructions. Select your campus, then select Pennsylvania State University Courses and register for the Biomedical Responsible Conduct of Research Course. Students must work on their own to complete the course modules and pass the on-line quizzes. All modules must be completed before 12:00 noon on the first day of class, and a copy of the student's Completion Report must be submitted to the Program administrative office (101 Life Sciences Bldg or email tly2@psu.edu).

Rotations/Mentor Selection

All students are required to participate in **three** laboratory rotations. Laboratory rotations begin in the first semester of enrollment, each consisting of a five-week period during which the student participates in small research projects in a laboratory. Prior to the beginning of the semester, the student will receive a list of faculty who are interested in accepting rotation students. Students will have opportunities to meet with faculty at the program retreat and at short faculty talks at the beginning of the semester. Students will be required to attend these talks to learn about the breadth of research across the program. The first rotation will be set up ahead of time by the program chair based on student preference. The second and third rotations will be chosen by students once the semester starts (please let the program chair know where you will be rotating). Mentors will be selected at the end of the first semester. The selection process is initiated by discussions between students and potential mentors. The mentor must agree to take on financial responsibility for the student after the first year.

Topics for Discussion Prior to Joining A Laboratory

1. Time Commitment Expected in the Lab
2. Funding Source and Grade Level (after the first year you are appointed by a department rather than by the Huck, and this means that the amount of your stipend may be different!! Find out the standard stipend level in the department ahead of time- the program chair can help with this!)
3. Vacation and Leave Policy (you will find some guidelines about this later in the handbook)
4. Possibility of Internship and how much TAing is typical (one semester is required by program)
5. Access to Advisor
6. Possibility (expectations) for publications and conference presentations

Guidelines for Advisor/Student Interactions

Effective mentoring, open communication, and ethical professional conduct are essential for a high quality graduate education and research environment. Effective mentoring must be based on a commitment to provide every student access to supportive guidance on a range of professional, ethical and collegial issues. A productive mentorship requires that students are treated respectfully and fairly, and that the mentor serves as a role model – upholding the highest ethical standards. These guidelines embody many of the best practices used by the majority of our faculty here and elsewhere. They are intended to provide a heightened awareness of the need to consciously establish an effectual mentorship based on trust, courtesy, and shared expectations.

Faculty Advisors/Mentors will:

- provide an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment;
- be supportive, equitable, accessible, encouraging, and respectful;
- recognize and respect the cultural back-grounds of students;
- be sensitive to the power imbalance in the student-advisor relationship;
- avoid assigning duties or activities that are outside students' academic responsibilities or are detrimental to the timely completion of their degrees;
- respect student's needs to allocate their time among competing demands, while maintaining timely progress towards their degree;
- advise graduate students on the selection of a thesis topic with realistic prospects for successful completion within an appropriate time frame;
- assist students on selecting and forming a thesis committee;
- set clear expectations and goals for students regarding their research and thesis;
- discuss policies and expectations for work hours, vacation time and health contingencies;
- meet regularly and individually with students to provide feedback on research progress and expectations (weekly meetings are recommended);
- provide students with training and oversight in the design of research projects, development of necessary skills, use of rigorous research techniques, and all other aspects of research;
- arrange for the on-campus supervision and advisement of graduate students during extended absences as well as regular contact (e.g. by phone) when possible;
- provide and discuss clear criteria for authorship at the beginning of all collaborative projects;
- encourage participation in professional meetings and try to secure funding for such activities;
- provide career advice, help with interview and application preparation, and write letters of recommendation in a timely manner;
- ensure students receive training in the skills needed for a successful career in their discipline, including oral and written communication and grant preparation;
- schedule at least one meeting each semester to discuss topics other than research, like professional development, career objectives and opportunities, climate, laboratory personnel relations, etc;
- be a role model by acting in an ethical, professional, and courteous manner toward students, staff, and faculty

Graduate Students will:

- acknowledge that they bear the primary responsibility for the successful completion of their degree;
- exercise the highest ethical standards in all aspects of their research, including collection, storage, analysis, and communication of research data;
- complete to the best of their abilities all tasks assigned by the program, including teaching duties;
- be informed about regulations and policies governing graduate studies at the program and graduate school levels and take responsibility for meeting program and graduate school deadlines;
- set up meetings with their mentor and communicate regularly with their thesis committees;
- prepare progress reports and request feedback from their full committee annually;
- be considerate of time constraints and other demands imposed on faculty and staff;
- take an active role in identifying and pursuing professional development opportunities;
- be proactive about improving their research skills, including written and oral presentation skills;
- inform faculty mentors of potential and or existing conflicts and work toward their resolution;
- seek mentoring and support resources beyond their faculty advisor, including other faculty mentors, peers, and organizations;
- consult outside help from graduate program chairs, ombudsmen, or other faculty if conflicts arise with your advisor;
- be aware that if they feel compelled to change advisors or research direction, they may have options and should consult with their program chair;
- always act in an ethical, professional, and courteous manner toward other students, staff, and faculty.

Programs will:

- provide students with up-to-date information that includes policies, practices, degree requirements, and resources;
- guide students through lab rotations (when applicable), assist students with selection of their advisor and resolution of student-advisor conflicts
- provide students with contacts and resources for potential conflict resolution in addition to the Program Chair (e.g. ombudsperson, director of graduate studies);
- provide pedagogical training and regular assessment of the teaching activities;
- monitor graduate student progress towards their degrees and professional development, including mentoring meetings, committee meetings, exam completions and other benchmarks appropriate to their discipline;
- provide and monitor training in the ethical conduct of research;
- provide appropriate infrastructure to allow students to complete their education and research in a timely and productive manner;
- establish and communicate policies for emergencies and unplanned situations that may disrupt the work of students and/or faculty;
- encourage and monitor student and faculty adherence to these guidelines

The above Guidelines are endorsed by the **Huck Institutes of the Life Sciences Graduate Education Office** and were adapted from guidelines recommended by the **Eberly College of Science**.

Teaching Requirement

In consultation with the Program Chair, students will be assigned a lecture, lab, or recitation class to help teach. Teaching will typically be scheduled during the second or third year. All MCIBS students are required to take BIOL 598A (Experiential Teaching in Biology, 2 cr) their first semester to help prepare them to TA. International graduate students must pass an English proficiency exam (see English Proficiency section) before any teaching duties are assigned. Students who would like to gain additional teaching skills and experience beyond that required by the program should consider earning a Graduate School Teaching Certificate. For information about the requirements to earn the Teaching Certificate, go to: <http://www.gradschool.psu.edu/current-students/tacert/>

Qualifying Exam

Students in the MCIBS graduate program must take a Qualifying Exam no later than the Fall semester of the second year. The purpose of the exam is to ensure that students have mastered the core concepts necessary to proceed further towards the Ph.D. The exam consists of both written and oral components, and is based primarily on the students' ability to critically read, understand, and communicate the key findings of a current research paper selected from the literature.

A Qualifying Exam Organizing Committee will oversee administration of the exams. At least one faculty member from each of the MCIBS Emphasis Areas, appointed by the elected Emphasis Area Representatives, will serve on the committee for 1-2 year terms. The Organizing Committee will assemble a three-member faculty Exam Committee for each student. In addition, the Organizing Committee will identify 3-5 scientific papers appropriate to the MCIBS program and its Emphasis Areas that will serve as the basis for the exams. Finally, the Organizing Committee will prepare a separate written exam corresponding to each of the papers. To facilitate this process, the Organizing Committee may seek input from the larger pool of Exam Committee members both during the paper selection process and for the purpose of formulating exam questions. Exam questions may include, but are not limited to, those that test knowledge of the background concepts underlying the paper and the Emphasis Areas, test the understanding of methods and techniques used in the paper, test data interpretation skills, or test the ability to apply knowledge gained from the paper towards novel problems.

10 days prior to the written exam date, the Organizing Committee will forward to each student the 3-5 scientific papers that have been selected for the exams. Students may examine all of the papers, but must choose one that will form the basis of his or her Qualifying Exam. On the day of the Written Exam, each student will declare which paper he or she has selected, and will be provided with (1) the Written Exam corresponding to that paper, and (2) a printed copy of the paper. No other written materials or electronic devices may be used during the written portion of the exam. Students will be given three hours to complete the Written Exam. Copies of the completed exams will be provided to the Exam Committee members that have been assigned to each student, in preparation for the Oral Exam.

Oral Exams will take place within two weeks following the written exam. The Organizing Committee will notify each student regarding the composition of the three-member faculty Exam Committee that has been assigned to them. Students will be responsible for scheduling a date, time, and location for the Oral Exam. On the day of the Oral Exam, the student will provide a formal presentation of the paper, and answer questions raised by committee members related to the Written Exam, the oral presentation, and the paper in general. Upon completion of the Oral Exam, Exam Committee members will reach a consensus regarding whether the student has passed the exam. In the event that the student does not pass the exam, a second-chance exam will be provided. Within two weeks of completing the second-chance Written Exam, the student will take the second-chance Oral Exam. A new exam committee will be formed for the second-chance exam, drawing from faculty members who serve on the Organizing Committee and/or serve as Emphasis Area Representatives. Failure to pass the second-chance exam will result in termination of the student's tenure in the MCIBS PhD program.

Dissertation Committee

Upon successful completion of the Qualifying Examination, the student, in consultation with the mentor, will select a dissertation committee. The committee will consist of at least three members of the IGDP in MCIBS, with at least 4 members total. One member of the committee must be from a different department from the home department(s) of the mentor(s). This committee is responsible for supervising the academic program and monitoring the progress of the student towards his/her degree. Doctoral Thesis Committee Composition is based on the Graduate School guidelines (<http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/doctoral-dissertation-committee-formation/>). After the comprehensive exam, students should schedule at least one meeting per year with their thesis committee.

Comprehensive Exam

The Comprehensive Examination will be administered by the student's Dissertation Committee. Taken within a year of the Qualifying Exam, it will consist of a written thesis proposal in grant format followed by an oral defense of the proposal and evaluation by the Committee of the student's knowledge of the area of research, assuring that s/he is competent in knowledge of the field to carry out the proposed studies and that s/he has developed investigation skills appropriate to planning a corpus of research. Students must be registered for classes (typically MCIBS 600) the semester they take this exam. More information and tips for this exam can be found on the MCIBS web site:

<https://www.huck.psu.edu/graduate-programs/molecular-cellular-and-integrative-biosciences/degree-requirements/comprehensive-exam>

General Information

Courses available for all Huck Institutes' Graduate Programs

MCIBS 590. HUCK INSTITUTES' COLLOQUIUM (2) Students take this course in the Fall semester of their first year. Students are introduced to a variety of contemporary life science topics drawn from

current research seminars. Students are challenged to collaborate in small teams to plan, organize, and deliver high-quality group presentations centered on specific research papers. Presentation skills will be emphasized, as will critical understanding of a variety of experimental approaches. Short writing assignment will emphasize identifying hypotheses being tested in papers and seminars. Students receive A-F quality grades.

MCIBS 591. ETHICS IN THE LIFE SCIENCES (1) Students examine integrity and misconduct in life sciences research, including issues of data collection, publication, authorship, and peer review. Students receive A-F quality grades.

MCIBS 595. INTERNSHIP (1, optional) For students interested in exploring academic, government, medical, law, or business corporate approaches to research. This is an external work assignment relevant to individual research or career goals. Students receive a R (satisfactory/passing) or U (unsatisfactory/failing). Only R credits are counted for credit totals. Students typically participate in an internship the summer of their first year. Contacts, positions, applications, course registration, course requirements, and grading are processed through the Eberly College of Science Cooperative Education Program (814-865-5000). Additional credits of MCIBS 595 are at the expense of the student. Interested Huck Institutes' graduate students are to discuss the opportunity with their graduate program/option chair and/or their faculty advisor to help determine the best timing for this experience.

MCIBS 596. INDEPENDENT STUDIES: LABORATORY ROTATIONS (1-3 per semester pending graduate program) For students exploring potential Ph.D. projects and faculty advisors.

MCIBS 600. THESIS RESEARCH (1-9 per semester pending graduate program) For students who have been matched with a faculty advisor AND have not taken/passed their comprehensive exams. Students may receive A-F grades or R/F grades at any time. By the time students pass their comprehensive exams, up to 12 credits worth of MCIBS 600 may have the A-F quality grade.

MCIBS 601. THESIS PREPARATION (0 per semester) For those students who passed their comprehensive exams. This course appears on the transcript but does not have any grade or credit associated with it.

MCIBS 602. SUPERVISED EXPERIENCE IN COLLEGE TEACHING (1) Students will be assigned a lecture, lab, or recitation class to help teach and must be registered for MCIBS 602 during the semester in which they are teaching assistants. Students will receive A-F grades on their transcripts from course faculty who supervise their work in MCIBS 602. Please note that these grades are not computed in with the overall GPA. International graduate students must pass an English proficiency exam before any teaching duties are assigned.

English Requirement for International Students

The English Requirement for International students is that prescribed by the Graduate School. Depending on the graduate program, all entering international students, whether or not they hold a Teaching Assistantship, will be required to take the American English Oral Communicative Proficiency Test (AEOCPT) which is administered by the University's Department of Applied Linguistics. Given at the beginning of fall and spring semesters, international students are required to pre-register for the AEOCPT. The test scores from the AEOCPT are posted on the University's Administrative Information System (AIS) computer. Below is the course of action for the various AEOCPT score ranges.

NR = No Restrictions. This student will be allowed to teach with no restrictions based on ability to communicate in English.

(Penn State AEOCPT Score of 250-300)

WR = Take ESL 118G. This student should not be allowed to teach before completing and receiving a grade of “A” in ESL 118G – “American Oral English for ITA’s III.”

(Penn State AEOCPT Score of 240-249)

TC = Take ESL 117G. This student should not be allowed to teach before completing and receiving a grade of “A” in both ESL 117G – “American Oral English for ITA’s II” and ESL 118G – “American Oral English for ITA’s III.”

(Penn State AEOCPT Score of 150-199)

SL = Speaking/Listening. This student should enroll in ESL 115G – “American Oral English for ITA’s I” and receive a grade of “A” before taking ESL 117G and ESL 118G.

(Penn State AEOCPT Score below 150)

Students who are required to enroll in ESL courses must complete the ESL requirement by the end of the second semester of residency. Students who fail to satisfy this requirement may be terminated from the respective graduate program, at the discretion of the graduate program chair.

Safety Training Sessions / Examinations

Within the first semester of residence, all students are required to take/pass the laboratory safety and chemical waste disposal training sessions offered at the respective campus.

Assistantships and Student Status

Students with teaching or research graduate assistantships must be registered as full-time students to maintain stipend eligibility. Full time status is considered either a minimum of nine credits each fall and spring semester (pre-comprehensive exam) or MCIBS 601 (0 credits, post-comprehensive exam). The assistantship appointments typically originate with the department of the faculty advisor. During the first-year students should consult with their Graduate Program Chair if they have questions about their appointments.

Academic Integrity

Students should not “engage in or tolerate acts of falsification, misrepresentation or deception. Acts of dishonesty violate the ethical principles of the University community and compromise the worth of work completed by others”. Academic dishonesty, cheating, and plagiarism are not tolerated by the University. Plagiarism (taking Academic integrity violations will result in disciplinary sanctions including dismissal from the MCIBS Graduate program. University Policies for handling student misconduct are available at <http://undergrad.psu.edu/aappm/G-9-academic-integrity.html> and at: <http://gradschool.psu.edu/graduate-education-policies/>. Academic integrity violations will result in disciplinary sanctions and can result in a student’s dismissal from the Graduate Program.

Grade Point Average

Credit hours are earned only for the grades A, B, and C. However, all D and F grades are included in the computation of the grade point average. Grade points are assigned as follows:

- A = 4 (above average graduate work)
- B = 3 (average graduate work)
- C = 2 (below average graduate work)
- D = 1 (failing graduate work)
- F = 0 (failing graduate work)

Grades D and F are not acceptable for graduate credit. If a course is repeated, both grades are used in computing the cumulative grade point average.

Unsatisfactory Scholarship

Students are required to have a minimum grade-point average of 3.0 for the doctoral qualifying examination, admission to the comprehensive examination, thesis defense, and graduation. One or more failing grades, a cumulative grade-point average below 3.0, or failing any of the examinations may be considered evidence of unsatisfactory scholarship and be grounds for dismissal from the University. (see:

<http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-800/procedures-termination-unsatisfactory-scholarship/>).

Annual Graduate Student Activity Report (GSAR) https://apps.science.psu.edu/grad_activity/

The GSAR online system replaces and incorporates the former “Annual Huck Graduate Student Evaluation Review”. This online evaluation must be completed and approved for ALL HUCK graduate students by mid-August. All graduate students enrolled in Huck-supported IGDPs will receive an automated invitation to begin to work on their reports. Students will also receive automated prompts as deadlines approach.

Individual Development Plan

To facilitate career development, it will be helpful for students to register at myIDP site (<http://myidp.sciencecareers.org/>) and use the resources to set their career goals. This website provides:

- Exercises to examine your skills, interests, and values
- A list of 20 scientific career paths with a prediction of which ones best fit your skills and interests
- A tool for setting strategic goals for the coming year, with optional reminders to keep you on track

Vacation Guidelines

Full-time graduate students in the MCIBS Graduate Program who receive stipends must get permission for all absences from the laboratory. Vacation leave should be arranged with the MCIBS Graduate Program Chair (1st year students) or thesis advisor (2nd year and above students). In addition to designated University holidays, 10 days (2 weeks) of discretionary vacation per year is standard. Days spent attending scientific meetings or training conferences will not count as vacation time (extra days before or after the meeting would count as vacation). Students may take more than the regularly allocated vacation time in any given calendar year for special travel or activities if they have the **consent of their research advisor** and they take correspondingly fewer vacation days in the preceding and/or following years.

Students **must inform their research advisor (or the Graduate Program Chair if a research advisor has not yet been assigned)** of their vacation plans no fewer than 15 days prior to the first day of their planned vacation. It is recommended that the student submits their vacation request to their advisor in writing and also obtains written approval of the vacation time (an email will suffice). While it is expected that the advisor/Program Chair will approve most reasonable requests, the advisor/Program Chair may deny the requested absence if there are particular circumstances that warrant such a denial. Such denials should not, however, become an ongoing impediment to any given student being able to use all of their annual vacation time in a reasonable fashion.

These recommended guidelines are advisory and reflect those suggested by government agencies such as National Science Foundation and National Institutes of Health for training grant fellows. **Students should consult with their research advisor regarding any specific guidelines relating to vacation or laboratory absences that apply to research group members of the particular advisor. Common sense policies and procedures should apply. Note that vacation time should be planned to avoid interference with specific duties including teaching and classes.**

Information about longer leaves

If a graduate assistant (defined as TAs, RAs, Gas or students on fellowship) is unable to fulfill the duties of his/her appointment because of illness, injury, pregnancy or adoption, every effort should be made to assist the graduate assistant in performing the level of duties possible for the duration of the semester. If the graduate assistant cannot

fulfill any duties, the stipend should be maintained for up to 3 weeks or until the end of the stipend period (whichever occurs first). If circumstances are such that three weeks of paid leave does not provide the graduate assistant with sufficient time to resume his/her duties, the department head/unit leader is authorized to grant an additional three weeks leave of absence. Requests for paid leave for medical reasons or a new child should be in writing.

If the source of funding is external to the University, **prior to granting the leave**, it will be the responsibility of the PI to be sure that the commitments to any grant or contract are fulfilled by the PI, and to be sure that the funding agency rules allow the implementation of such a leave. Note: most funding agencies defer to the policies of the institution. There are some special programs e.g. NIH and NSF fellowship, which have defined policies. In those cases, the agency policy will prevail.

If it becomes necessary to terminate funding of a graduate assistant, the individual should be referred to the Student Insurance office (302 Student Health Center; 814-865-7467) to be accurately informed of the implications of the termination for his/her health insurance coverage, and of the mechanisms available for coverage once that provided by their stipend benefit is no longer in effect. It is recommended that such referral be documented in writing to the graduate assistant, in addition to any verbal provision.

Programs should provide a mechanism for a graduate assistant to take an unpaid leave for medical reasons of no more than one calendar year. Such a leave would not guarantee that support would be available when the student returns to full time graduate work. However, the program should not count the leave against the student's time to degree, and should notify the Graduate School in writing of the approval of the leave, its circumstances (i.e., for medical/health reasons) and its duration. Before a leave of absence is discussed with a foreign national graduate assistant, the program chair or mentor needs to contact the Global Programs Office (DISSA) (814-865-6348) to insure consistency with federal regulations.

Graduate School Policy on Graduate Assistant Leaves

<http://www.gradschool.psu.edu/index.cfm/graduate-funding/infoqa/paid-leaves/>

The above vacation and leave guidelines are advisory and reflect those suggested by government agencies such as National Science Foundation and National Institutes of Health for training grant fellows.

Doctoral Thesis Committee Composition

According to the Graduate Degree Programs Bulletin published by the Graduate School regarding Dissertation Committees (<http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/doctoral-dissertation-committee-formation/>):

- 4 person minimum of approved PSU Graduate Faculty.
- 3 Faculty should be part of MCIBS
- One member of the dissertation committee must represent a field outside the candidate's major field of study in order to provide a broader range of disciplinary perspectives and expertise (but can still be in MCIBS). This person is the "outside field member." Additionally, one member of the committee must be an "outside unit member:" a member of the graduate faculty outside the adviser's administrative home (for a tenure-line faculty member this is the department that serves as their tenure home). The same person can be the outside field member and outside unit member. The outside member(s) can be members of MCIBS.
- A person not affiliated with PSU may be added as a special member (beyond the 4 members of the approved PSU Graduate Faculty) upon recommendation of the head of the program and approval of the graduate dean. A memo plus the individual's C.V. must be drafted with approval signature spaces for the Graduate Program Chair plus the Director of Graduate Enrollment.
- The chair of the committee must be a member of the approved PSU Graduate Faculty. Typically this is the faculty advisor or someone in the graduate program.

- The doctoral candidate and three committee members must be physically present for the comprehensive exam and defense. No more than one person may be present via telephone. Telephone or video-conference arrangements must be approved by the Dean of the Graduate School. A form letter is available for this special request.
- Need approval of 2/3 of the committee members for passing comprehensive exam and defense dissertation.
- **Students must submit Committee paperwork 3-4 weeks prior to their scheduled comprehensive exam and defense. Please contact Terrie Young in 101 Life Sciences Bldg (814-863-3273; tly2@psu.edu).**

Thesis Preparation and Final Oral Examination

Please see the MCIBS web site for additional information and tips about the thesis and defense:

<https://www.huck.psu.edu/graduate-programs/molecular-cellular-and-integrative-biosciences/degree-requirements/thesis>

The Thesis Committee will evaluate the student's thesis research progress annually, determine when research is sufficient for preparation of the thesis, and pass or fail the student based on the written thesis and an oral defense.

Students must prepare and submit their Doctoral or Master's thesis in accordance with Penn State Graduate School guidelines as described in the THESIS AND DISSERTATION GUIDE. This Guide and other important instructions and deadlines regarding thesis submission and approval by the Office of Theses and Dissertations are found at: <http://www.gradschool.psu.edu/current-students/etd/>. Additional advice regarding thesis preparation can be found on the MCIBS web site.

The following paragraphs from the Graduate School Thesis Guidelines provide a brief overview of the thesis submission process:

“Final Oral Examination (Ph.D./D.Ed.)—Both the dissertation adviser/committee chair and the student are responsible for ensuring the completion of a draft of the dissertation and for adequate consultation with members of the dissertation committee well in advance of the final oral examination. Major revisions of the dissertation should be completed before this examination.

It is the responsibility of the doctoral candidate and committee chair/dissertation adviser to provide a copy of the dissertation to each member of the dissertation committee at least two weeks before the date of the scheduled examination. The dissertation should be complete and in its final draft, with correct and polished content and style, appropriate notes, bibliography, tables, etc., at the time it is distributed to the committee members. If a committee member finds that the final draft is not correct and polished with respect to content and style, it is his/her responsibility to notify the committee chair/dissertation adviser at least one week in advance of the final oral examination date. The committee member should indicate his/her concerns regarding the draft and may recommend consideration of postponement of the examination to the committee chair/dissertation adviser. The chair/adviser, in consultation with committee members, is responsible for notifying the student and assessing whether the student can make the necessary revisions to the final draft before the examination date. If it is determined that revisions cannot be made in time, the final oral examination must be postponed.”

The **Office of Theses and Dissertations** is located in 115 Kern Building (814/865-5448)

Guidelines and deadlines relevant to thesis submission and Activating Intent to Graduate are found here:

<http://www.gradschool.psu.edu/current-students/etd/>

Applying to Graduate

At the beginning of the semester that students wish to graduate, they are to access LionPATH via www.lionpath.psu.edu and navigate to “ACADEMICS” AND CHOOSE “APPLY TO GRADUATE”. The deadline to apply and other thesis-related deadlines can be found at: <http://www.gradschool.psu.edu/current-students/etd/thesisdissertationperformance-calendar/>.

Thesis Submission and Exit Interview and Survey

Upon completion of the degree, students are to provide the Graduate Program with an electronic copy of their thesis. Students also participate in both the University and MCIBS Program Exit Interview Process. For the latter, students may meet with the Graduate Program Chair or other designated Program representative. The Huck Institutes' Graduate Office will also send each graduating student an Exit Survey to complete on-line.

Master's (M.S.) Thesis Option

Students are not accepted directly into MCIBS as Master's degree candidates. However, for various reasons, a student may need to discontinue their PhD program. Depending on the circumstances, the advisor and Thesis Committee may allow the student to finish the program by earning a Master's degree.

Master's students must take a minimum of 30 credits (24 of core, specialized/prescribed, and elective courses for the selected Emphasis Area or Option, as described above, plus at least 6 credits of MCIBS 600, Thesis Research). At least 18 credits in 500- and 600-level courses combined must be included in the program. A minimum of 24 credits in course work (400, 500, and 800 series), as contrasted with research, must be completed in the major program.

Master's student must complete at least 6 credits of thesis research (MCIBS 600), and up to 6 of the MCIBS 600 credits may be assigned a quality grade (A-F). In consultation with the adviser, the student must select a thesis committee of at least three members, including the adviser, write a thesis, and defend the thesis. The final master's thesis that is accepted by the student's thesis committee must be submitted as an eTD to and approved by the Graduate School. If all course credits and requirements are met, a student does not have to be registered for classes while writing and/or defending his/her thesis. Students must present their thesis in accordance with Graduate Council and Graduate School guidelines.

Molecular, Cellular and Integrative Biosciences

Appendix 1

MCIBS Program Contact Information

Program Chair:

Dr. Melissa Rolls
118 Life Sciences Bldg
814-867-1395
mur22@psu.edu

Administrative Support in the Huck Graduate Office:

Contact regarding stipends, fellowships, semester bills, etc:
Dana Coval-Dinant, Huck Administrative Assistant
101 Life Sciences
814-865-3155
Dmc6@psu.edu

Contact regarding Program paperwork, scheduling exams, etc:

Terrie Young, Records Specialist
101 Life Sciences
tly2@psu.edu
814-863-3273

Huck Institutes Academic Advisor *

Dr. Troy Ott
Associate Director, Huck Institutes
321 Ag Sci Bldg.
tlo12@psu.edu
814-441-2657

*for assistance regarding conflicts/problems which cannot be resolved through normal channels within the Graduate Program

Appendix 2

Graduate Student Resources:

Graduate Resources page: <https://www.huck.psu.edu/resources/students/graduate-students/professional-development/professional-development-overview>. This website contains a collection of useful articles, tips, and links focused on professional development issues and career opportunities. The site is managed by the Huck Institutes' Graduate Advisory Committee.

Huck Institutes Graduate Advisory Committee –graduate student representatives from each of the six PhD programs administrated by the Huck Institutes of the Life Sciences as well as from the Biochemistry, Microbiology, and Molecular Biology (BMMB) graduate program in the Eberly College of Science. The committee has a maximum size of 15 students, including the Chair and two representatives from each graduate

program. The committee organizes career development, networking, and social events, serves as a liaison between the graduate students, faculty and administrators.

Contact: PSU.HGSAC@gmail.com

Huck Institutes Awards

The Huck Institutes of the Life Sciences provide travel awards to Ph.D. students enrolled in all Huck graduate programs who will give poster and/or oral presentations at domestic or international conferences. To apply for this travel award, submit a request form at <https://wiki.vpr.psu.edu/display/HUCKGPA/Graduate+travel+award+requests>. The application will be sent to the Program Chair for review and approval. The maximum award for domestic travel is \$750, and the maximum award for international travel is \$1500. These funds may be used for transportation, lodging, and meeting registration fees; meals and per diem charges are not allowed. Students are eligible to receive the award twice during their study at Penn State (for 2 domestic or 1 domestic and 1 international meeting).

Huck Graduate Student Advisory Committee (HGSAC)

This Graduate Student Advisory Committee represents all graduate students in the Huck Institutes of the Life Sciences. Its mission is to promote graduate student interests, facilitate communication among students and faculty, and help guide students in their career plans. More information is available at:

<https://www.huck.psu.edu/resources/students/graduate-students/graduate-student-involvement/student-leadership/huck-graduate-student-advisory-committee>

Career Development Resources Website

The HGSAC maintains a Career Development Resources web site

(<https://www.huck.psu.edu/resources/students/graduate-students/professional-development/professional-development-overview>) that can be reached from the Huck Institutes Graduate Program home page. It provides a wide variety of articles on professional development and career exploration for life science students and postdocs, as well as links to seminars, conferences and workshops of interest.

Huck Institutes Graduate Network on LinkedIn

MCIBS students, especially those who may be interested in jobs in industry are encouraged to join the Penn State Huck Institutes Graduate Network on LinkedIn: <https://www.linkedin.com/groups/Penn-State-Huck-Institutes-Graduate-8278299/about> LinkedIn is no longer just a place for business- and marketing-oriented networking – scientists in both industry and academia are beginning to catch on to the benefits of on-line networking.