Fall 2017

Memorandum of Understanding Among
The Molecular and Cellular Biology Program
The Department of Biological Sciences,
The Department of Biomedical Sciences,
The Department of Chemistry and Biochemistry,
and
The Department of Environmental and Plant Biology
at Ohio University

The Interdisciplinary Program in Molecular and Cellular Biology (MCB) is an academic program providing a broad graduate training of students by faculty from the participating departments. Because MCB students are departmental graduate students, they must be simultaneously admitted into both the MCB Program and their department of emphasis (home department). Unlike the Ph.D. program in MCB, the Master of Science is not a degree program but an area of concentration within the home department. The degree is granted through the home department. Each department participating in the MCB program (Department of Biological Sciences, Biomedical Sciences, Chemistry and Biochemistry, or Environmental and Plant Biology) may serve as a home department. Each of the home departments participates in programs of study leading to the M.S. degree, with its own requirements for admission and graduation. MCB admission and graduation requirements reflect both the requirements of the home department and the requirements of the MCB concentration. This document delineates the role of both the home departments and the MCB Program in admitting M.S. students, offering stipends and other support, setting requirements for graduation and monitoring progress. All general requirements and specific MCB and home department requirements must be followed. The intent of this document is to provide clarity and simplicity in these aspects of MCB student affairs. The home departments and MCB reserve the right to make changes in their policies, procedures, and requirements from time to time; therefore, this document will be revised as required by such changes. The policies and requirements in force at the time that the student is admitted into the program will govern the student’s program of study.

I. GENERAL PROCEDURES

A. Admission: The MCB Graduate Committee is composed of one MCB faculty member from the four participating departments (Biological Sciences, Biomedical Sciences, Chemistry and Biochemistry, and Environmental and Plant Biology) and an MCB student. The MCB Graduate Committee, in considering applications, will use the specific admission requirements for the home department and the MCB Program (see Section II A) as well as the objective and subjective evaluation of the quality of such information as letters of reference and student interviews. The specified requirements are to be considered minimal. Applicants accepted to the MCB graduate program must also be accepted by their respective home department graduate committee. The home department has veto authority regarding admission.

B. Student Progress and Graduation: Each student is personally responsible for satisfying all requirements, meeting all deadlines, and for ensuring that all documentation
of completion of said requirements is provided to the MCB program administrative assistant within one week after completion. Yearly, during the spring semester, the MCB administrative assistant will send the MCB Student Progress Form to all students. Each student should return the completed form to the administrative assistant within two weeks after receipt. The documents will be provided to the MCB Curriculum Committee chairperson who will maintain records and annual progress reports for each student. In addition, copies of each document regarding a student will be provided to the home department graduate chairperson by the MCB administrative assistant within one week of receipt of the document. The specific requirements for progress and graduation are defined under MCB and departmental requirements, and the chairperson of the MCB Graduate Committee will serve as the authority for determination that the requirements have been met. To ensure that students will not be confused over which unit governs their progress and graduation, once a student has been admitted she/he will deal with the MCB Graduate Committee chairperson. The MCB Graduate Committee chairperson, in consultation with the home department graduate chairperson, the student, and the student's advisor, will determine any action to be taken concerning problems or answers to any questions that might arise. Thus, the student need only notify the MCB chairperson of a concern or questions and will not be expected to mediate between MCB and the home department. However, departments may terminate students from their program if departmental requirements, as stated in this document, are not met.

If a department determines that this arrangement is not serving well, this Memorandum of Understanding can be altered in the spring or summer semester of each year. However, a student already enrolled will be affected only by the agreement in force when she/he was admitted.

C. Stipends and Other Financial Support: At the time of admission and each year thereafter, the MCB graduate chairperson and the home department graduate chairperson will consult together and with the student's advisor to determine the appropriate source (department, MCB, or grant) of support, if any. Only Master’s students admitted directly to MCB and making progress in good standing qualify for financial support from MCB. A student may, however, be eligible for financial support from their home department. Factors such as teaching or research needs, availability of grant-funded stipends and student aptitude and progress will be considered. The MCB graduate chairperson in conjunction with the departmental graduate chairperson will provide each student a description of any service required for support. For specific information, see section II I.

II. SPECIFIC REQUIREMENTS

A. Admission: Applicants must have a B.A. or B.S. degree in biological or physical science. Criteria considered are coursework completed, grades, letters of recommendation, and scores on the Graduate Record Examination (GRE). Unconditional admission requires an overall grade-point average of 3.0 on a 4.0 point scale. International students, for whom English is not their primary language, should have earned a minimum score of 620 written or 260 computer on the Test of English as a Foreign Language (TOEFL).

For admission to the Departments of Biological Sciences and Biomedical Sciences, a score in the 50th percentile or above on the General Test of the Graduate Record Examinations (verbal, quantitative, and analytical) and an overall grade-point average of 3.2 on a 4.0 scale is required.
Exceptions to these requirements will be made only where background or special talents dictate.

B. Thesis Advisor: A thesis advisor must be selected by the end of the first semester of the program. Prior to selection of the thesis advisor, the home department representative to the MCB Graduate Committee will serve in that capacity. The selected faculty advisor must have graduate faculty status in the home department of the student advisee. If the faculty member does not have graduate status in the student’s home department, the student must apply to and be admitted to the home department in which the faculty has such an affiliation. Some home departments have documentation required after selection of a thesis advisor. See the Table of Required Forms to determine the specific requirements of each home department.

C. Master's Advisory Committee: The student and her/his research advisor will choose a Master's Advisory Committee (MAC) composed of no fewer than four faculty members, at least three of whom are MCB faculty. Two members of the committee, including the chairperson (the student's research advisor), must be from the student's home department or have graduate faculty status in the home department. At least one committee member must not be associated with the graduate program of the student’s home department. The MAC must be formed by the end of the first semester and should meet during the second semester to discuss coursework for the student’s program of study (see D. Coursework). A great deal of the responsibility for the student’s program of study is left to the MAC. General and specific requirements are included in this document, and the MAC has the initial responsibility to ensure that these requirements are met. The MAC has the responsibility not only of ensuring that minimum requirements are met but also of developing the entire course of study and research for a student.

Coursework: Each student is required to complete a minimum of 20 graded hours of graduate coursework. The student's MAC has the responsibility of determining appropriate course work. Within one week after the first meeting of the MAC (no later than the second semester of study), the student should submit the signed MCB Course Approval Form to the MCB Program administrative assistant. Students in the Environmental and Plant Biology must also submit a Course Approval Form to their graduate chair.

A core curriculum is required for all MCB MS students:

One semester of biochemistry - CHEM 5901 or CHEM 5890* (3 credits)
  *If a student chooses CHEM 5890 and then decides to transfer to the PhD program, they will have to take both CHEM 5901 and 5902,

And one course in
  Molecular Biology - MCB 7200 (3 credits),
  Bioinformatics – either MCB 5280 Genomics Laboratory (3 credits) or MCB 5160 Problem Solving using Bioinformatics Tools (3 credits) as appropriate to their needs,
  Cell Biology – either PBIO 5310 Cell Biology (3 credits)
  or *MCB 7600 Advanced Cell Biology (3 credits) as appropriate, and
  Biological Research and Science Ethics – PBIO 5170 (1 credit).
Students who do not have a background in cell biology should take PBIO 5310, Cell Biology (3 credits).

A student who can demonstrate competency (e.g. has previously taken a similar course and received a grade of B or better) in any required course may be exempt from the requirement but only with the approval of his/her MAC and the graduate chairperson. For exemption to be granted, the advisor must submit a letter to the MCB graduate chairperson indicating that the student has satisfied the requirement without taking the course indicated.

Students are also required to register for Seminar in Molecular and Cellular Biology (MCB 7410) when offered and must present at least one seminar each year. Note, first year students may be exempt from this presentation requirement depending upon seminar enrollment. However, students in the Departments of Biological Sciences and Biomedical Sciences must present a seminar in their first year, either in the MCB seminar series or an appropriate class or journal club. Also note that students in their final year in the program may use a thesis research seminar to fulfill the yearly MCB seminar presentation requirement. Attendance is required for all seminars in the semesters registered. All students are also required to attend all seminars presented by MCB -invited speakers. The MCB Graduate Committee chairperson or her/his representative will record student attendance at all MCB seminars. Absences must be approved in advance by the MCB Graduate Committee chairperson.

Typically, during the first year of enrollment, a student is expected to take core courses in the following sequence: fall semester - CHEM 5901, MCB 7200, and MCB 7410; spring semester - MCB 5160 or MCB 5280 as appropriate and MCB 7410. In the second year, the student is expected to take MCB 7600 or PBIO 5310 as appropriate, in the fall semester, MCB 7410 in all semesters, and additional coursework as required by the home department and as directed by the MAC. Coursework should have as one of its objectives the adequate preparation of the student for the comprehensive examinations.

Additional Courses Required by Home Departments:

Biological Sciences/ Biomedical Sciences: In addition to the above requirements, students must take BIOS 6700 Biostatistics I or PBIO 5150 Quantitative Methods in Plant Biology or equivalent.

Chemistry and Biochemistry: Students must take CHEM 5902 General Biochemistry II in addition to the MCB requirements above.

Environmental and Plant Biology: For MCB/Plant Biology degrees, a minimum of 10 of the 20 graded credits of coursework required must be from the Department of Environmental and Plant Biology.

E. Grades: Students must maintain a 3.0 grade-point average to remain in the MCB Program and to graduate (see item K below). In addition, if a student receives a grade of C+ or less in more than two courses, she/he will be terminated from the MCB Program.
F. Research Proposal: With the approval of her/his advisor and committee members*, the student will prepare and submit a specific research proposal to her/his MAC by the end of the second semester (excluding summers) in the program. The proposal should follow the format dictated by the National Science Foundation or the National Institute of Health as indicated by the advisor and shall include a half-page Abstract, a Project Description (comprised of Specific Aims, Background and Significance, Preliminary Data, Experimental Plan, Expected Outcomes and Pitfalls and a Time Table for Completion) and References. The Project Description should be no more than 15 single spaced pages, 11-12 pt font with 2.5 cm margins on all sides. The abstract and list of references shall not be counted in the 15 page limit.

The MAC will advise the student on the merits of the proposal, and the student will be allowed two attempts to submit an acceptable proposal. The student will arrange a meeting of the MAC during which the MAC will determine the student's understanding of the proposed research. If deficiencies are discovered, the MAC will ask the student to prepare again for another meeting (including revision of the proposal if required). A second unsatisfactory presentation will lead to termination from the MCB Program.

Some home departments have unique requirements for documentation of the proposal defense. Please see the Table of Required Forms to determine the specific requirement for each home department.

*This requirements can be met either formally by a meeting of the committee or informally by individual meetings between the student and each committee member.

G. Comprehensive Examination: After passing the research proposal requirement, the student must pass a written comprehensive examination prepared by their MAC. The MAC will decide which member (other than the student's advisor) will administer the examination. The student should speak with each member of the MAC in order to determine how she/he should prepare for the examination. It is the student's responsibility to contact the MAC members for this information. After notifying the student of the general content of the examination, each member of the MAC will prepare written examinations. These examinations will then be submitted to the MAC member administering the examination who will administer the written examinations to the student. The examinations will be taken one or two per day over a ten-day period. The MAC members will then evaluate their respective exams and compile a final grade within two weeks after completion of the last examination. The student is to be notified by the MAC (in writing) of the results of the written examination within one week thereafter (original and repeats). An examination may be repeated no more than one time. The comprehensive examination must be completed no later than the end of the third semester (excluding summers) of enrollment in the MCB Program. In the event an examination must be repeated, it must be completed by the end of the fourth semester of enrollment. Failure to pass all examinations after any second attempts will result in termination in the MCB Program. Some home departments have unique requirements for documentation of the comprehensive exams. Please see the Table of Required Forms to determine the specific requirement for each home department.

H. Teaching Requirement: Teaching experience is an important aspect of graduate education. For the Departments of Biological Sciences and Biomedical Sciences, each student, regardless of funding source, is required to teach a full assigned course load for a minimum of one semester prior to completion of the M.S. degree. Students in Environmental and Plant Biology are required to teach a minimum of two semesters prior to completion of the M.S. degree. Teaching in an MCB course(s) and/or a home department course(s) as needed by the department and MCB may fulfill the teaching
requirement. The department of Chemistry and Biochemistry has no teaching requirement for the M.S.

The MCB Program reserves the right to select specific students enrolled in the MCB Program to serve as teaching assistants for MCB courses, as long as the selected student is being fully supported (stipend and fee waiver) by the MCB Program.

I. **Financial Support:** Students must have unconditional admission status in the MCB Program and maintain a 3.0 or better grade point average in overall course work to receive financial support from the MCB Program. A student may be supported for two years with an additional semester possible with approval of the graduate committee. The MCB graduate chairperson and the home department graduate chairperson will consult together and with the student's advisor to determine the appropriate source (department, MCB, or grant) of support, if any. Students must register for a minimum of 10 hours/semester each, including summer semester, to receive a stipend and tuition waiver, unless otherwise approved by the home department and, if necessary, by the Dean of Arts and Sciences.

   **Teaching Associates** in all departments generally teach three semesters per year (fall, spring and summer).

   **Research stipends** may be available dependent upon funding. A student may receive a departmental research assistantship or a grant-funded stipend. Departmental awards are usually granted competitively at the discretion of the MCB or home department graduate committee and may be awarded for any duration from a single semester to a full academic year. Grant-funded research stipends are awarded solely at the discretion of the advisor and graduate chair.

J. **Thesis Defense:** Each student must defend her/his thesis before the MAC at a public forum. The thesis (which must satisfy requirements of the home department) must be approved by the graduate chair of the home department. Within one week after completion of the oral thesis defense the student should submit **CAS#8 - Report of Final Oral Thesis Exam**, signed by the committee members and the graduate chair of the home department, to the MCB program administrative assistant.

K. **Probation and Remediation:** A student failing to achieve a 3.0 or higher GPA at the end of any semester will be placed on probation for the next semester. If the GPA is still below a 3.0 at the end of the probationary semester, the student will be terminated from the MCB Program. No variance from the requirements stated in this document is allowed except in extraordinary cases, such as prolonged hospitalization. If a deadline cannot be met due to an unforeseen and unavoidable extraordinary circumstance, the student and her/his advisor may petition the MCB Graduate Committee in writing for an opportunity to correct the deficiency. The graduate committee will determine whether the request can be allowed and notify the student and advisor in writing of its decision.

L. **Academic Misconduct:** Academic misconduct in any form by an MCB graduate student will not be tolerated. It is the student's responsibility for knowing what constitutes academic misconduct. However, incoming students will be provided with material from the Office of Judiciaries, which defines many forms of misconduct. If the student did not receive this material, she/he should obtain it from the MCB graduate
chairman. Students can also consult the Ohio University student handbook for information regarding academic misconduct. A guilty charge of academic misconduct may result in the loss of financial support (i.e. stipend), fee waiver or dismissal from the MCB Program. The MCB Executive Committee will be responsible for the review of each case of academic misconduct and will determine the penalties.