

POLICIES AND CUSTOMS
Ph.D. PROGRAM
DEPARTMENT OF MOLECULAR & CELLULAR BIOCHEMISTRY
UNIVERSITY OF KENTUCKY

Revised: May 2008

The following is intended to serve as a guide for graduate students in the Department of Molecular & Cellular Biochemistry (MCB). The Graduate School Bulletin should be consulted for detailed procedures and regulations not discussed in this document. The MCB graduate program is designed for doctoral candidates who plan to pursue a research and/or teaching career in this field. The program consists of: (1) formal course work to broaden and deepen one's knowledge about biochemistry and related areas of medicine, chemistry and biology, and (2) original research in the laboratory leading to a dissertation on a biochemical problem.

ENTRY INTO THE PROGRAM

Starting in the fall of 2001, the five basic science departments at the University of Kentucky Medical Center agreed to combine their Ph.D. programs for first year students. As a participant in the Integrated Biomedical Sciences (IBS) Program, the Department of Molecular & Cellular Biochemistry no longer admits students directly, but joins with Anatomy & Neurobiology, Microbiology, Immunology, & Molecular Genetics, Molecular & Biomedical Pharmacology, and Physiology in the admission and teaching of doctoral students in their first year. The IBS manual should be consulted for further details on admission policy and graduate study during this first year.

In their first year of study, students are not committed to an individual Department and may explore research opportunities with any of the participating graduate programs. During this period all students will have multiple opportunities to meet with MCB faculty and, through the rotation system, the chance to do lab rotations with up to four members of the Department. At the conclusion of their first academic year, students are permanently transferred to one of the participating departments. Entry into the MCB Department will usually require that:

- The student selects a research mentor with an appointment in the MCB Department
- The selected mentor agrees to support and oversee the training of that student
- The MCB faculty approve the admission of the student
- The student be in good standing with respect to Graduate School and Departmental academic standards (described below)

Exceptions to these requirements can be made with the approval of the faculty of the MCB Department on an *ad hoc* basis.

COURSE REQUIREMENTS

In the first year of study, all students will usually take the classes listed below as part of the IBS program.

Fall	IBS601: Biomolecules and Metabolism
	IBS603: Cell Biology and Signaling I

Spring IBS605: Experimental Genetics
IBS602: Biomolecules and Molecular Biology
IBS604: Cell Biology and Signaling II
IBS606: Integrated Biomedical Sciences

In addition, participation in IBS laboratory rotations and seminar programs is mandatory. With the prior approval of the IBS oversight committee, students with exceptional training have the opportunity to opt out of one or more of the lecture classes.

In their second and third years, students take coursework designed to provide additional training in modern biochemistry and its experimental approaches, particularly in, but not limited to, areas relevant to the student's research. The coursework is chosen after consultation with and with the prior approval of the student's research mentor and special committee (see below). As a minimum, the student is expected to take at least three courses in addition to the IBS courses listed above. The courses need to be of two or more units at the 600 level or above, and need to include at least three of the advanced courses offered by the department, which currently are Lipids & Membranes (BCH 610), Biochemistry & Cell Biology of Nucleic Acids (BCH 611), Structure & Function of Proteins & Enzymes (BCH 612), and Structural Biology (BCH 604).

After entry into the MCB program, students are also required to participate in the Departmental student seminar course (BCH618/619) each semester until graduation. As part of this participation, the student presents an annual seminar during either the fall or spring semesters. Students are also required to attend and participate in the evaluation of the seminars of their fellow students. A letter grade is assigned for this course.

Students in good standing normally participate in the written and oral Qualifying exams at the end of the second year (see below). After the third year, a student registers for zero credit hours and stops paying tuition. This is described in more detail under Dissertation Research. Part-time students may fulfill these requirements as specified in the Graduate School Bulletin. Each student's Doctoral Committee will provide advice with respect to courses, set individual requirements, and evaluate each student's performance after each semester and inform the student and the faculty of his or her progress.

University standards. Students must register for 9-12 credit hours each semester to be considered full-time. Each student must obtain prior approval from the DGS for all matters dealing with curriculum (normal course registration and course additions or drops). Satisfactory work in the classroom is defined by the University in the Graduate School Bulletin. Note that graduate students must maintain a GPA of 3.0 or better in all credited activities (class, seminar, or laboratory). If the cumulative grade point average, calculated at the end of each semester, falls below a B average, the student is placed on academic probation. Students on academic probation are not eligible for out-of-state tuition scholarships from the Graduate School. The student has one semester to raise his or her average to a B. Failing that, he or she is automatically dismissed from the Graduate Program. This applies to students at all stages of Ph.D. studies.

Departmental standards. The Department of Biochemistry expects its graduate students to perform above the minimal standards set by the university. Specifically:

- Students must obtain a grade of "B" or better in both IBS 601 and IBS 602.
- Students are allowed a grade lower than a "B" in only one credited activity (class, seminar, or laboratory) during their graduate career.

- Students must obtain a “B” or better in the three advanced courses (600 level or higher) that students take after joining the department (see above). If a “C” is obtained in any of these courses the student must subsequently obtain a “B” or better in the same course.
- All students must give an annual seminar to the Department in the Student seminar course.

In addition, the Department expects the student to maintain a level of scholarship and research productivity that is satisfactory to the student's mentor and Doctoral Committee. Failure to meet any of these expectations is grounds for dismissal from the program.

THE DOCTORAL COMMITTEE

Prior to the start of the student's second academic year, the student and his or her mentor will assemble the Doctoral Committee. **Since one of the primary purposes of the first committee meeting is to allow the committee to craft an academic program for the student, unless prior approval is given by the DGS (e.g. only for truly extenuating circumstances) this meeting must be held by a date no later than one week prior to the beginning of the Fall Semester.** If the meeting is not held by this date, then the student will no longer be considered to be in good standing with the department and may be subjected to sanctions, to be determined by the committee in consultation with the DGS. This committee consists of the dissertation director, two additional Biochemistry faculty members and one member from outside the department - in all, no fewer than four. At least three of the members must be full members of the Graduate Faculty; the remaining may be full or associate members. This committee is responsible for ensuring that the Department's and Universities standards for graduate education are met. They have the specific duties of (1) reviewing the student's records relevant to their educational pursuits, (2) setting requirements that the student must meet before taking the qualifying examination, (3) administering the qualifying exam, (4) setting any additional requirements that must be met after passing the qualifying examination, (5) monitoring and evaluating the student's progress during their time as dissertators, and (6) administering the dissertation defense. At a minimum, the Dissertation Committee should meet annually. At the conclusion of each meeting, the Committee chair will write a report to the DGS summarizing the committee's proceedings, noting especially the consensus opinion of the student's progress and any actions taken by the committee regarding requirements that the student must satisfy to continue in the Program. It is the responsibility of the student to schedule this annual meeting.

QUALIFYING EXAMINATION

The MCB Ph.D. Qualifying Examination consists of a written proposal, a written examination, and an oral examination. The Qualifying examination is generally taken at the end of the student's second year and can be divided into four distinct steps:

Step I. During the second year, each graduate student--in consultation with his/her mentor--develops a topic and direction for a dissertation proposal. These directions are further delineated by the student in a written *Background and Specific Aims*. The *Specific Aims* concisely (one page or less) state the major **scientific** goals to be accomplished (it should not be a statement of methods). The *Background* (5 page maximum recommended) should provide appropriate information that allows the committee members to understand the scientific problem to be examined and appreciate its significance. The approval of this written document by all Special Committee members is required. Unapproved *Background and Specific Aims* are returned to the student for rewriting. This process can be repeated until the committee approves the proposed research.

Step II. The approved *Background and Specific Aims* is then expanded into a dissertation proposal that is written in the NIH grant format (10 page maximum, including any figures, but not including the references). **This document must be given to all committee members by August 15th.** If this deadline is not met then student will no longer be considered to be in good standing with the department and may be subjected to sanctions, to be determined by the committee in consultation with the DGS. In addition to the *Background and Specific Aims*, the full proposal should include descriptions of:

- relevant preliminary results (if any) obtained by the student
- the experimental approach that will be taken to achieve the specific aims (including an evaluation of reasonable alternative methods)
- the results that are expected
- how the results will be analyzed or interpreted
- alternative results that could also be (reasonably) obtained and their interpretation
- a bibliography

Although the topic and direction of the proposal should be developed in consultation with the student's mentor, the exercise of writing that proposal is the responsibility of the student. As with the *Background and Specific Aims* section, the finished proposal must be approved by all committee members. Unapproved proposals are returned to the student for rewriting. This process can be repeated until the committee approves the proposal.

Step III. All graduate students are required to take a written examination prior to the oral exam. This examination is derived from questions submitted by committee members. These questions examine the ability of the student to perform, evaluate and troubleshoot the research described in his/her written proposal. As with the oral exam described below, the questions can be directly related to the proposed research or can examine the students breadth of knowledge in related biochemical topics. A student failing this exam can retake it once (with different questions) at a time to be set by the committee.

Step IV. Once the written exam has been passed, the student is then required to take an oral examination. The purpose of this exam is to address, in a more open environment, perceived weaknesses or deficiencies exposed in the written examination. Students will be given ample opportunity to examine the results of their written test and it is anticipated that the basis for questions for this oral exam will, in part, be derived from evaluation of the written exam. Questions generally begin with topics closely related to the proposed research and can subsequently expand to spheres only remotely bordering his/her research area. As with the

written exam, a student failing this exam can retake it once. The minimum time between examinations is 4 months and any re-examination must be taken within 1 year following the first exam. Note: if the Oral Exam is not passed by 6 weeks into the Fall semester this means the mentor will have to pay another year of tuition.

DISSERTATION RESEARCH

All students that pass the Qualifying Exam need to then register for 2 credits of BCH 767 every Fall and Spring semester until they graduate, starting with the Fall semester in which they pass this exam.

FINANCIAL SUPPORT

Financial support is given to all qualified graduate students pursuing the Ph.D. degree full time in the MCB Department. In addition to an annual stipend, the Department will also pay the student's tuition, standard university fees, and health insurance. Students are expected to cooperate with the DGS and their mentor in obtaining outside financial support (grants, fellowships, etc.) when requested. These stipends are given with the understanding that the student will not take on secondary employment without the approval of the DGS and their mentor during their graduate career. Secondary employment will normally result in the loss of financial support from the Department.

Financial support is guaranteed only to students that remain in good standing in the program. A student's academic performance in course work and in laboratory investigation is monitored periodically. If performance in either category is found to be unsatisfactory (as defined the DGS or Committee, as appropriate), financial support to that student can be terminated with an advance notice of 60 days.

Starting July 1, 2007 the stipend will be \$23,500. Students with special qualifications may be awarded bonuses that augment this standard stipend.

Tuition

Students awarded a research assistantship or fellowship through IBS receive payment of tuition, both in-state and out-of-state. Students are guaranteed payment of tuition related to their doctoral programs subject to the following conditions:

(1) The coursework for which the student has registered has been approved by the IBS director during the IBS year, and by the chair of their advisory committee and the DGS of their program, once they have entered a doctoral program.

(2) The student is in good academic standing. Effective fall 2007, students who have been notified by the Graduate School that they are officially on academic probation will be responsible for payment of in-state tuition charges while they remain on probation. During this time, out-of-state tuition will be paid by the PI/program for out-of-state students. Once they have raised their GPA to the required 3.0 to regain good academic standing, payment of any future tuition charges will be covered by their PI and/or program, subject to condition #1.