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Integrated Biomedical Science Graduate Program

University of South Carolina

**- Policies and Procedures -
MANUAL**

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Introduction

The Integrated Biomedical Science Graduate Program at the University of South Carolina is a cooperative program sponsored by a number of departments and schools that perform biomedical research at the University. At present these departments are:

University of South Carolina School of Medicine

- Department of Cell Biology and Anatomy
- Department of Pathology, Microbiology and Immunology
- Department of Pharmacology, Physiology, and Neuroscience

University of South Carolina College of Arts and Sciences

- Department of Biology
- Department of Chemistry and Biochemistry

University of South Carolina Arnold School of Public Health

- Department of Exercise Science

University of South Carolina College of Pharmacy

- Department of Drug Discovery and Biomedical Sciences

This is an “umbrella” program that lasts for one year during which all students take core courses and conduct up to three laboratory rotations. Before choosing a laboratory for their rotations, students should read the faculty research interests pages that can be found on the program web site (<http://integratedbiomedical.med.sc.edu/accordian.ib.asp>).

In most cases, PhD students receive a stipend and a tuition waiver. This is paid during the first year by the Integrated Biomedical Sciences Program. Stipends are full-time research assistantships and it is anticipated that students will make a significant contribution to any laboratory in which they are involved. After completion of course work, the student’s prime commitment is to laboratory-based dissertation research.

At any time during the first year, the student may select a major professor (mentor) and department but this must be done before May 15 (at the end of the first year). At that time, the student leaves the Integrated Biomedical Sciences Program and joins the mentor’s department. If this is before the end of the spring semester, the student continues in the core curriculum. The student is then subject to the rules and regulations of the graduate program of the major professor’s department. The student’s degree will be awarded by the major professor’s department. Thus, for example, students joining a laboratory in the School of Medicine will, on completion of their dissertation, be awarded a Doctor of Philosophy in Biomedical Science whereas students joining a laboratory in the Department of Biology will receive a Doctor of Philosophy in Biology. The PhD manuals for the member departments can be found on that department’s website. The rules and regulations pertaining to a particular student will be those in force at the time the student joins the mentor’s department and the student should ensure that he/she obtains a copy of the appropriate PhD manual. If the program is altered after the student is admitted, the student shall have the choice of complying with the new rules and regulations or those in force at the time of admission. The Director of the Integrated Biomedical Science Graduate Program will monitor and aid the progress of students through the various departmental/school programs, where appropriate, but after selecting a major professor the student should first consult the major professor concerning any difficulties and then the graduate director of the major professor’s department.

Once students select a major professor, the student, in association with the major professor, should appoint an advisory committee. Additional specialized course work, usually taking place during the second year, is defined by the mentor, the department and the student's advisory committee.

Administration

The Integrated Biomedical Science Graduate Program follows the general academic regulations of the Graduate School as described in the University of South Carolina Studies Bulletin. In addition, specific requirements of the Integrated Biomedical Science Graduate Program are described in this manual.

1. Program Administration

The program is administered by the Director for the Integrated Biomedical Sciences Graduate Program. The Director is also responsible for developing and maintaining the curriculum and managing admission. The Integrated Biomedical Science Graduate Program Advisory Committee consists of the director and one representative from each of the participating departments or schools. This committee is responsible for establishing policies and procedures consistent with University and School guidelines and for ensuring that program requirements are met. The Office of Graduate Studies at the School of Medicine maintains student files and required graduate forms and is located in room 229 of Building 3 on the School of Medicine campus.

Director, Biomedical Graduate Program	Dr. Edie Goldsmith	216-3809
Program Coordinator, Admissions	Ms. Danielle Sample	216-3358
Program Coordinator, Student Services	Ms. Larialmy Allen	216-3321
Program Coordinator, Human Resources	Ms. Debra Poston	216-3328
Assistant Director for Student Services	Mr. Jerel Arceneaux	216-3629

2. Departmental Representation

Each participating department or school selects one faculty member to serve as its representative on the Integrated Biomedical Science Graduate Program Committee. Departments and schools also have their own graduate director and committee to formulate departmental policies and to screen students for admission. The current department representatives on the Integrated Program committee are:

School of Medicine (Neuroscience)	Dr David Mott
Department of Biology	Dr Alan Waldman
Department of Chemistry and Biochemistry	Dr Mythreye Karthikeyan
College of Pharmacy	Dr Lorne Hofseth
Department of Exercise Science	Dr Mark Sarzynski

3. Academic Responsibility and The Office of the Ombudsperson

All policies related to student affairs and academic support, including the Honor Code, are located at the University of South Carolina Policies and Procedures website (<http://www.sc.edu/policies/policiesbydivision.php#STAF>). Students in the Biomedical Science Graduate Program are expected to adhere to the University Academic Responsibility policy and the Student Code of Conduct. These documents are concerned with infractions of academic discipline or ethical conduct and prohibits plagiarism, cheating, and falsification of data.

The educational program of the university has been developed to support and encourage the collegiality and professionalism essential to an effective learning environment. Students who believe that they have been punitively assessed or mistreated because of religion, race,

ethnicity, gender, sexual orientation, age or other factors have access to the school or department Ombudspersons who are empowered to receive and investigate reports of mistreatment in a completely confidential manner, to mediate between the parties involved and, in the event mediation is not successful, to make recommendations directly to the Dean of the School regarding appropriate resolution of any complaints. The use of the Ombudspersons' services to resolve a complaint represents a form of alternate dispute resolution. For this reason the services of the Ombudsperson will no longer be available to a student once that student engages an attorney to initiate legal action against the school, the University of South Carolina, or the employees of those institutions. During the first "umbrella" year, students who wish to consult the Ombudsman should consult those in the School of Medicine. The current Ombudsperson is Dr. Jay Potts, 216-3820, (Jay.Potts@uscmed.sc.edu).

Curriculum

The course of study in this program leads to the degree of Doctor of Philosophy. The student receives extensive theoretical and practical training in the biomedical sciences. The goal of this program is to prepare students to become productive biomedical researchers and highly qualified teachers. In the first year, students are not members of any department but are registered for classes through the School of Medicine. Their advisor is the director of the program.

The first year of course work consists of the Integrated Biomedical Science core curriculum. This consists of one of two tracks:

- Cell and Molecular Biology
- Neuroscience

The first semester of either track is very similar and students may switch between tracks if their research interests change. The annual Graduate Studies Bulletin (available at the Graduate School's website) lists, with a brief description, all graduate course offered by the University of South Carolina, arranged by graduate program and department. The Master Schedule (accessed from https://ssb.onecarolina.sc.edu/BANP/twbkwbis.P_GenMenu?name=homepage) lists which courses are offered in a given semester, as well as meeting time, place, and instructor. In order to satisfy program requirements, the sequences below are strongly recommended for all first year students:

1. MOLECULAR AND CELLULAR BIOLOGY TRACK

FALL SEMESTER

BIOL 711 Structure-Function Nucleic Acids or CHEM 751 Biosynthesis of Macromolecules - 3 credit hours
BIOL 717 Biological Chemistry or CHEM 753 Enzymology and Protein Chemistry - 3 credit hours
BMSC 700 - Interdisciplinary Lab I - 1 credit hour
BMSC 706 - Biomedical Ethics - 2 credit hours

SPRING SEMESTER

BIOL 718 Biological Chemistry II or CHEM 752 Regulation and Integration of Metabolism - 3 credit hours
BIOL 714 – Advanced Cell Biology - 3 credit hours

2. NEUROSCIENCE TRACK

This track is highlighted by three neuroscience courses (PHPH 740, 750 and 751) of which students are required to take two.

FALL SEMESTER

PHPH 750 – Fundamental Neuroscience I – 4 credit hours

BMSC 702 Medical Cell Biology I – 4 credit hours

BMSC 700 - Interdisciplinary Lab I - 1 credit hour

SPRING SEMESTER

PHPH 740 Neuroscience or PHPH 751 Fundamental Neuroscience II – 4 credit hours

Elective(s) – 2 credit hour

While these initial course loads may seem low compared to what students are comfortable with as undergraduates, the increased level of detail and fast paced nature of graduate course work along with associated teaching assistant duties make this a challenging first year of graduate study.

Degree Requirements

1. Admissions

Applicants can apply to the Integrated Biomedical Sciences PhD program using the USC ApplyWeb system (<http://integratedbiomedical.med.sc.edu/> under the Future Students tab). An applicant must have a baccalaureate degree or its equivalent from an accredited college or university. Undergraduate courses should include two semesters each of biology, physics, inorganic chemistry, and organic chemistry as well as some math (preferably through calculus).

Admission to the Integrated Biomedical Sciences Ph.D. program is determined by the Dean of The Graduate School after recommendation by the Integrated Biomedical Sciences Graduate Committee. Criteria examined include an appraisal of courses taken, grades achieved, letters of recommendation, research experience, scores on the Graduate Records Examination (GRE), and the student's statement of purpose for graduate study. Highly ranked domestic applicants are invited to interview and visit the university. Selected overseas applicants receive a telephone interview.

A Grade Point Average (GPA) of 3.00 or better is required in both the major and overall. GRE scores on the general Verbal and Quantitative sections above the 50th percentile are also required. A minimum TOEFL score of 100 (out of 120) is also required by the USC Graduate School for students whose native language is not English; however, a score of 110 or above is preferred.

2. Interim Advisor

The Director for the Integrated Biomedical Science Graduate Program will serve as interim advisor to PhD students until they have selected a major professor. The interim advisor will assist the student in the selection of a course of study and in the selection of laboratory rotations. The interim advisor will also ensure that all early requirements are met. At all stages of the student's participation in the graduate program, the interim advisor will try to ensure the smooth progress of the student through the program. A permanent graduate faculty advisor, usually the major professor, should be appointed as soon as an area of research is identified but no later than May 15 the first year.

3. Transfer Credits and Course Substitution for Advanced Standing

Applicants with previous graduate or medical training may request advanced standing to reduce course requirements so that the time to complete a degree is reduced. Students may be excused from repeating courses in the Integrated Biomedical Science Program when a similar graduate course has been taken elsewhere within the past three to five years. The student should consult with the Director for the Integrated Biomedical Science Graduate Program immediately after orientation so that a decision may be reached within the drop-add period of registration. Decisions regarding transfer of graduate credits as a substitution for required program core courses are decided by the Advisory Committee. Students may be asked to provide information about the course including an outline, credit hours, and required tests; in some cases, a competency exam may be recommended as a condition of course waiver. It is unlikely that transfer of credits will be allowed from colleges or universities whose standards are unknown to the faculty of the University of South Carolina. Note that USC Graduate School policy requires that all course work including transfers must be no more than eight years old when the Ph.D. degree is **awarded**. The Graduate School imposes a limit to the number of credit hours that may be transferred.

4. Academic Regulations

a. *Grades and Academic Progress*

Graduate courses may be passed for degree credit with a grade as low as C, but the student's average on all courses attempted for graduate credit must be at least B (3.0 on a 4 point system). Graduate students whose cumulative grade point average drops below **B** (3.00) will be placed on academic probation and allowed one calendar year in which to raise the grade point average to at least 3.00. Students who do not reach a cumulative 3.00 grade point average during the grace period will not be permitted to enroll for further graduate course work in that degree program. Appeals for reinstatement to degree candidacy may be made first to the Integrated Biomedical Science Graduate Program committee in the first "umbrella" year and the major professor's department committee thereafter. The appeal and the committee's recommendation will then be forwarded to the Dean of the Graduate School.

b. *Graduate Assistantships*

The primary means of graduate student support is the Graduate Research Assistantship. Graduate Assistantships are provided to support costs of graduate education, providing a stipend for living expenses and reduced or waived tuition. The graduate assistant is considered a temporary employee of the University and is normally obligated to assigned responsibilities in supporting the research endeavors of the university. The maximum number of hours of assigned duties required per week during semesters with required course work is twenty; during summer or semesters without required coursework, the student is expected to devote full time to research.

Whereas the Program Office coordinates administrative processing of appointment forms at the start of each fiscal year, supervision of graduate assistants is delegated to the major professor or to an appointed advisor prior to selection of the major professor. Graduate Assistants are not normally expected to work during examination periods and school holidays. Other vacations are at the discretion of the major professor or the program director (before a major professor is selected). It is the responsibility of the supervisor to discuss the period of appointment, work schedule, specific duties, manner, method, and schedule of evaluation with the Graduate Assistant. Regular reviews should give feedback to the Graduate Assistant about areas of excellent performance and substandard performance which are detailed enough to make clear what results are desired.

Graduate students are expected to devote full-time effort to their studies and assistantship research responsibilities. Additional employment is therefore discouraged during terms of appointment. Students must discuss with their supervisor and obtain prior approval for any additional employment to insure that it does not interfere with academic performance. Students may request assistantship appointment for less than a 12-month period if they need time off to pursue other activities. Failure to comply with these policies is grounds for termination of assistantship support.

c. *Teaching Assistantships and responsibilities*

The Integrated Biomedical Science Graduate Program supports all students during the first year. Some departments participating in the program have major undergraduate teaching responsibilities and all graduate students in the Integrated Biomedical Sciences program will be expected to participate in teaching in some way during their first year. All incoming students will attend the Graduate School's teaching assistant training program during the orientation period and will be assigned some teaching responsibilities. These will usually be the running of one or more laboratory sessions or recitations. Teaching assignments will be made by the Program

Director with consideration of the student's academic background. Teaching Assistant training for graduate students is offered annually through the Center of Teaching Excellence and is required for students appointed as Teaching Assistants. More information regarding these sessions can be found at the Center for Teaching Excellence website (http://sc.edu/cte/graduate_students.php).

5. Research Rotations and Mentor Selection

b. *Discussing the Research Interests of the Faculty*

In the first semester, students are expected to familiarize themselves with ongoing research in the biomedical sciences across the university campus and to reach out to faculty members conducting research in areas of interest to the student. To help the student, a research symposium will be scheduled during Orientation prior to the start of the fall semester in which potential mentors will describe their research. Students should attend this symposium and subsequently meet with potential mentors individually.

c. *Laboratory Rotations*

During the first year, students are expected to divide their time profitably between course work and creative research in the form of up to three laboratory rotations, each of which will last approximately 8 weeks. Usually, one rotation will be performed in the fall semester and two in the spring semester although students may also enter the program early (e.g. in July) to start a rotation before formal classes begin.

A laboratory rotation will usually consist of approximately 8 weeks of research experience working with a faculty member; this may consist of a small independent project or of a component of an on-going project. A student who undertakes a laboratory rotation with a faculty member is under no obligation whatsoever to continue dissertation research with that professor. A student will start rotations in his/her first semester. During the rotation, students should be spending between 15-20 hours/week in the rotation lab.

To ensure the smooth progression of the student through the program, it is a requirement that students must do two or more laboratory rotations during the first year. The student must complete the research rotation form (<http://integratedbiomedical.med.sc.edu/Lab%20Rotation%20fillable.pdf>) identifying the chosen mentor and return it to the Biomedical Sciences Graduate Office as soon as a mentor is selected. A new research rotation form detailing the planned rotation must be submitted for each rotation. The forms should also be signed by the faculty member involved.

The faculty member in whose laboratory a rotation is carried out should submit a report on the student's performance to the Graduate Office using a form that may be obtained from the Biomedical Sciences Graduate Studies office.

d. *Selection of Major Professor*

The selection of major professor is by mutual agreement and is formalized by submission of a completed "Selection of Major Professor" form to the program office (<http://biomedical.med.sc.edu/Selection%20of%20Major%20Professor%20fillable.pdf>). The student should formally affiliate with a major professor by the end of the first year of graduate study. Failure to identify a major professor by May 15th after the student's matriculation into the program may result in suspension from the program.

It is important that the selection of a major professor be an informed decision by the student and advisor. The research talks given during the Orientation symposium by potential advisors to showcase their research interests will give students the opportunity to select faculty with whom they share an interest. Rotations allow the student and faculty to determine on a trial basis whether they can act productively in a student/mentor relationship and whether the student can commit to a specific area of research. Research in biomedical science is expensive and in selecting a major professor, a student should ensure that the mentor is in a position to support both the student's stipend and research expenses.

The choice of a major professor by a graduate student and the acceptance of the role of major professor by a faculty member are important decisions that imply a certain sense of obligation on both sides. The choice of a major professor is normally made with every intention of that being a final decision. However, it is appreciated that a student may decide that the choice was inappropriate for that student; therefore, a mechanism exists for changing the major professor. It is pointed out to the student that this is not a decision to be taken lightly. It will almost certainly delay completion of his/her degree program as it will be necessary to develop a new dissertation research program and have it approved. If a change in major professor is to be made, it should always be made prior to the point at which the student attempts the Comprehensive Examination.

In the event that a graduate student deems a change of major professor necessary, the procedures of the major professor's department will apply. The student may seek advice from the department's graduate director and/or the director of the integrated program, if necessary.

APPENDICES

**University of South Carolina
Integrated Biomedical Science Graduate Program**

LABORATORY ROTATION FORM

Date _____

After discussion with the laboratory mentor, I will be performing a rotation in the undersigned faculty member's laboratory.

I understand that this does not obligate the faculty mentor to accepting me into their laboratory for my PhD research. Similarly, I am not obligated to join the mentor's laboratory at the end of the rotation.

Name of Student

Signature of Student

Name of Faculty Member

Signature of Faculty Member

Dates of the Planned Rotation: _____
Beginning Date

End Date

***Please submit this form electronically or hard copy to Ansley Roberts in the School of Medicine Graduate Office. Complete a new form for each rotation that you do.*

**University of South Carolina
Integrated Biomedical Science Graduate Program**

SELECTION OF MAJOR PROFESSOR FORM

Selection of a Major Professor is an important step in the progression towards the PhD degree. This is an agreement that should be entered into only after considerable discussion and consideration.

This form should be filled out by the student, signed by all involved parties and electronically or in print form to the School of Medicine Graduate Office.

The undersigned individuals agree that _____ will carry out their
Student's Name

PhD dissertation under the mentorship of _____.
Mentor's Name

For PhD students, the mentor and department chair also agree to provide financial support of the student for the duration of their PhD studies.

Signatures:

Student: _____

Major Professor: _____

Department Chair: _____

Graduate Program Director: _____