Boston University School of Medicine

Program in Biomedical Sciences (PiBS)

Graduate Handbook
2020-2021

* Approved by the PiBS Executive Committee

CONTENTS

1. Welcome

Welcome to the Program in Biomedical Sciences (PiBS). We're pleased to have you join PiBS, which is a Ph.D. program within the Division of Graduate Medical Sciences (GMS) at Boston University School of Medicine. This umbrella program embodies 10 participating departments and programs within GMS (Departments of Biochemistry, Biophysics, Microbiology, Pathology, Physiology, Programs in Genetics & Genomics, Molecular & Translational Medicine, Nutrition & Metabolism, Oral Biology and Immunology Training Program). Students fulfill requirements of PiBS and upon choosing a dissertation laboratory and a department/program affiliation, requirements of the department/program are fulfilled as well.

This guide is intended to provide graduate students (as well as faculty members) within PiBS with a description of the policies and requirements of the graduate program. This guide was prepared to assist students in progressing through the program. This handbook is intended only to describe general PiBS requirements/policies, not those of the individual participating departments/programs *i.e.* as mentioned above, students are required to complete both PiBS as well as the department/program-specific requirements. As program policies and requirements may change, students are advised to consult with their advisors during the first year in the PiBS program and then with their dissertation advisors and the Directors of Graduate Studies of the departments/programs they join upon choosing a dissertation laboratory (see below for more information about this process). To be certain that they are in compliance with all policies and requirements, students must also adhere to the guidelines of GMS at Boston University School of Medicine, as well as Boston University at large, and they are advised to consult relevant administrative personnel for further information regarding graduate study at Boston University. It is each student's responsibility to be certain that all program requirements are fulfilled. The student is encouraged to consult regularly with his/her advisor to be certain that he/she is progressing as expected and that all requirements will be completed in time for the student's planned graduation.

2. Title IX & BU Policies

"Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits sex-based discrimination in federally funded education programs and activities. Sex-based discrimination includes sexual harassment and sexual violence, such as rape, sexual assault, sexual battery, and sexual coercion. The law covers sex-based discrimination against students, faculty, and staff.

To ensure compliance with Title IX, Boston University has appointed a University Title IX Coordinator as well as deputy coordinators for key offices and within all schools. The Deputy Title IX Coordinators for Boston University School of Medicine (BUSM) are:

1) Gwynneth Offner, Ph.D., Director, M.A. Medical Sciences Program (GMS)
goffner@bu.edu / (617) 358-9541
2) Karen Symes, Ph.D., Assistant Dean of Student Affairs (MED)
symes@bu.edu / (617) 358-4578

For more information, including BU Title IX contacts, BU's responsibilities under Title IX and disciplinary procedures, go to:
http://www.bu.edu/safety/sexual-misconduct/title-ix-bu-policies/

3. PiBS Governance

The program is designed with a shared-governance philosophy that draws on faculty from all participating departments and programs. Included in the governance structure are the Program Director, the Executive Committee, the Admissions Committee, the Advising Committee and the Steering Committee. All work together to ensure that the program runs smoothly on a day to day basis, that new students are recruited annually, that students are properly guided through the program, that student progress is assessed, that new ideas are considered and new policies and initiatives disseminated to the home departments/programs and that the Associate Dean of GMS is kept abreast of program progress. This PiBS governance structure is designed to ensure that all ten programs have representation and that open communication between the leadership, the faculty and the students is in place.

4. Academic Advisors

Each student is assigned a faculty member as academic advisor upon entering the PiBS graduate program. The academic advisor functions as the student's formal administrative advisor until a permanent research advisor is assigned (at the end of the first academic year). The role of the academic advisor is to provide assistance and advice on all academic issues. The advisors are members of the PiBS Advising Committee.

5. Academic Requirements

The PiBS Ph.D. program requires 64 credits. Some of these credits are taken as formal didactic courses and the remainder are earned by performing research and/or attending and actively participating in department/program-related activities *e.g.* seminars. PiBS required courses for students entering the program in 2020 are outlined below (Table I). In addition, students choose elective coursework.

Table I. PiBS COURSE REQUIREMENTS

	Semester	Credits	Course
Core courses (16 credits)	Fall	3	FC711 Foundations in Biomedical Sciences: Protein Structure, Catalysis and Interaction
	Fall	3	FC712 Foundations in Biomedical Sciences: Structure and Function of the Genome
	Fall	2	FC764 Professional Skills
	Spring	3	FC713 Foundations in Biomedical Sciences: Architecture and Dynamics of the Cell
	Spring	3	FC714 Foundations in Biomedical Sciences: Mechanisms of Cell Communication
	Spring	2	FC708 Professional Development Skills

In addition to the specific courses listed above, all PiBS students must take a statistics class; for some PiBS-affiliated programs, there is a specific course that is required while for other programs, students can choose from a variety of courses offered.

It is important to note that the PiBS coursework and rotations do not adhere to the posted Boston University schedule. See Table II for the dates classes start and the last dates for administration of final examinations (ask professors of each class for specific final examination dates). The dates for the laboratory rotations are listed in the section on rotations below.

Table II. PiBS DATES TO REMEMBER

Event	Date
Orientation	August 31, 2020
Fall semester starts	September 2, 2020
*Fall semester final exams end (Boston University calendar)	December 19, 2020
*Spring semester classes start (Boston University calendar)	January 25, 2021
*Spring semester final exams end (Boston University calendar)	May 8, 2021

*Note that not all GMS classes adhere to the Boston University calendar so be sure to check with course directors for information on courses you plan to take.

During the first year in the program, it is expected that students will register for up to 12 didactic course credits per semester. This will consist of the PiBS required courses listed in Table I (see Appendix #1 for course descriptions) as well as elective courses (see Appendix #2 for course descriptions). The latter are chosen in consultation with the advisor and may focus on a known area of interest or to explore a new area (which we strongly encourage)!

Once a student chooses a dissertation laboratory and a department/program of study, additional coursework will be dictated by the requirements of that department/program. All departments/programs require that the student submit, present and defend a dissertation based on original laboratory research performed under the direction of a member of the PiBS faculty (the faculty member must have a faculty appointment to one of the participating departments or programs as well as an appointment to the GMS faculty).

All graduate students are also required to attend Boston University's Program in Responsible Conduct of Research. See details at: https://www.bu.edu/researchsupport/compliance/responsible-conduct-of-research/.

Grades

GMS uses the following system of letter grades for evaluation.

A to B-	Pass with credit
C+ or below	Considered failure; no credit granted
P	Pass with credit; directed study, research courses at the 900 level as well as other courses deemed Pass/Fail
F	Fail; directed study, research courses at the 900 level as well as other courses deemed Pass/Fail
I	Incomplete, with additional work required
X	Unresolved status
J	Registration in same or continuing course in the following semester necessary (excluding summers)
AU	Audit, no credit
N	No credit granted toward a graduate degree
W	Withdrew after grace period
MG	Missing grade, grade not assigned

Incomplete Coursework and Failing Grades

When the work of a course has not been completed within the semester of registration, the grade of I is assigned. This automatically becomes an F unless coursework is completed within a specific timeframe to be determined in consultation with the course manager; this timeframe cannot exceed 1 year (12 months) from the time the grade of I is assigned. Grades of I or C+ or lower are interpreted as failures. A student receiving such grades in total of 8 credit hours is terminated. A student receiving a failing grade will not be permitted to take a make-up examination. Grades of C+ or lower must be remediated in required PiBS courses.

Additional Requirements and Guidelines

PiBS students are required to maintain a minimum cumulative grade point average (GPA) of B (3.0) or better in their courses. Students must maintain this GPA throughout their matriculation in graduate school; this includes the first year as well as subsequent years when the student joins a specific PiBS-affiliated program based on the choice of dissertation advisor. Students who fail to maintain a 3.0 grade point average will be placed on academic probation. The student has one year to remediate the deficiency and bring the total GPA to 3.0. If this is not achieved, the student will be dismissed from the program. Students on academic probation are not allowed to take Qualifying or Dissertation Defense examinations. Financial assistance is dependent upon the student remaining in good standing within the program.

All students are required to complete three laboratory rotations prior to choosing a laboratory in which to perform the dissertation research work. Students must be accepted into a dissertation lab and a department or program by June 30th of the first year in the program. Students who fail to do so will be dismissed from the program.

All students are required to be registered every semester at Boston University unless on an approved leave of absence as per GMS and University guidelines. Prior to assignment of a dissertation advisor, students' leave policies are dictated by the schedule of classes and rotations.

It is expected that all students conduct themselves in a professional manner. Prompt attendance is expected at all lectures and other events as arriving late is disruptive to others. Cell phones must be turned off and put away while in class. The opinions of all others (students, staff and faculty) should be respected. Criticism of different opinions is embraced but should be delivered in a caring and constructive manner.

Any accusations of academic misconduct will be subject to deliberation and potential sanctions as dictated by the GMS Academic Conduct Code and Disciplinary Procedures.

6. Rotations

Experience in a range of laboratory research environments is an essential part of a graduate student's education. Thus, the process of having students rotate through several laboratories is an integral part of PiBS. Rotations expose students to a range of techniques and approaches used within the various biomedical science disciplines. The rotations also serve to allow students the opportunity to get a first hand view of laboratories in which they might eventually conduct their dissertation research.

Students are expected to complete three laboratory rotations (two in the fall semester and one in the spring semester). The rotation dates for the fall semester are listed below (Table III). Students may petition to conduct one additional rotation after the third rotation (with approval of the Executive Committee). The faculty members hosting rotation students should be selected from the list of laboratories that have available positions for new students. No lab will host more than two PiBS students at any given time.

Table III. PiBS ROTATION DATES

Rotation	Start date	End date
#1	Sept. 21, 2020	Oct.30, 2020
#2	Nov. 2, 2020	Dec. 18, 2020
#3	Feb. 8, 2021	Mar. 12, 2021

The student is expected to spend 15-20 hours per week in the rotation labs, including attending laboratory meetings whenever possible. During the rotations, it is expected that students will participate in a research project and will keep proper documentation consistent with the policies of the host laboratory. Students may be asked to present the results of their rotation work to the laboratory group at the end of the rotation period. In addition, students will be expected to give a presentation to the PiBS community that will be planned at the end of each rotation. After the completion of each rotation, the faculty will evaluate, in writing, the student's performance during the lab rotation (see Appendix #3). The faculty member is expected to go over the evaluation with the student prior to submitting it to the Advising Committee. The Rotation Evaluation report will become part of the student's permanent record. In addition, it will contribute to the final grade for the student's "research" credits (FC951, FC952) during the semester(s) in which the rotations are performed.

7. Dissertation Advisor Assignment

The final assignment will be determined by the student, dissertation mentor and the director/chair of the sponsoring program or department.

8. Qualifying Examinations

All students must pass a written and oral qualifying examination. The qualifying examinations are designed and administered by the participating departments/programs which dictate the academic standards for allowing a student to take these exams.

9. Dissertation and Graduation

Once students pass their qualifying exams, an advisory committee will be assembled as per the guidelines of each department/program. The roles of the dissertation advisory committees are to both advise students and assess their progress throughout the dissertation research portion of the Ph.D. program. Expectations for the dissertation are dictated by each department/program in keeping with GMS guidelines.

Appendices

Appendix #1

PROGRAM IN BIOMEDICAL SCIENCES (PiBS) REQUIRED CLASSES

Fall semester

GMS FC 711 Foundations in Biomedical Sciences I: Protein Structure, Catalysis and Interaction
The first module of the Foundations in Biomedical Science course "Protein structure, catalysis and interactions" will provide students with a quantitative understanding of protein structure, function, posttranslational modification and the turnover of proteins in the cell. In addition, students will gain facility with thermodynamics, catalysis, kinetics and binding equilibria as they apply to proteins and also to other molecules in biological systems (e.g. nucleic acids, lipids, vitamins, etc.). This course is part of a series of four core integrated courses and additional elective courses aimed towards first year Ph.D. students in Graduate Medical Sciences. The four cores will be integrated in content and structure, and therefore are intended to be taken as a complete, progressive sequence. McKnight, Zaia. 3 cr, Fall sem. Sept. 3-Oct. 16; Tue, Thu, Fri 10:00am-11:50am.

GMS FC 712 Foundations in Biomedical Sciences II: Structure and Function of the Genome
The second module of the Foundations in Biomedical Sciences course will focus on the mechanisms of biological processes that influence the inheritance, regulation, and utilization of genes. Genetic and genomic, molecular, cell biological, and biochemical experimental approaches to understanding these processes will be explored. In addition, we will discuss the possibilities of utilizing these technologies in medical treatments. This course is part of a series of four core integrated courses and additional elective courses aimed towards first year Ph.D. students in Graduate Medical Sciences. The four cores will be integrated in content and structure, and therefore are intended to be taken as a complete, progressive sequence. Dasgupta. 3 cr, Fall sem. Oct. 20-Dec. 15; Tue, Thu, Fri 10:00am-11:50am.

GMS FC 764 Professional Skills
The goal of this course is to develop skills in writing and oral presentations that students need for their professional lives. Students will be exposed to different forms of oral presentations and give weekly talks. Sessions are highly interactive. Gabel. 2 cr, Fall sem. Mon 10:00am-11:50am.

Spring semester

GMS FC 713 Foundations in Biomedical Sciences III: Architecture & Dynamics of the Cell
The third module of the Foundations in Biomedical Sciences course will focus on the movement of proteins and membranes with the cell, the secretory process, the cytoskeletal framework of the cell and the resulting cell-cell interaction and communication with the matrix. Molecular, cell biological, and biochemical experimental approaches to understanding these processes will be explored. In addition, we will discuss the possibilities of utilizing these technologies in medical treatments. This course is part of a series of four core integrated courses and additional elective courses aimed to-wards first year Ph.D. students in Graduate Medical Science. The four cores will be integrated in content and structure, and therefore are intended to be taken as a complete, progressive sequence. Trinkaus-Randall, Zoeller. 3 cr, Spring sem. Jan. 19-Mar. 5; Tue, Thu, Fri 10:00am-11:50am.

GMS FC 714 Foundations in Biomedical Sciences IV: Mechanisms of Cell Communication
The fourth module of the Foundations in Biomedical Sciences course will focus on the mechanisms of cell communication. This module will begin by discussing overarching concepts before examining the specific types of molecules that initiate and transduce signals. Examples of cell signaling and subsequent cellular responses will then be considered in different contexts to provide a framework on which future learning can be applied. As the module progresses, the complexity of the systems explored will increase from individual cells to multicellular environments such as tissues, organs, and organisms. In addition, normal processes as well as the dysregulation of cell-cell communication is disease will be studied. This course is part of a series of four core integrated courses and additional elective courses aimed towards first year Ph.D. students in Graduate Medical Sciences. The four cores will be integrated in content and structure, and therefore are intended to be taken as a complete progressive sequence. Symes. 3 cr, Spring sem. Mar. 16-Apr. 30; Tue, Thu, Fri 10:00am-11:50am.

GMS FC 708 Professional Development Skills
This course proposes to extend the students' education beyond the traditional biomedical course content. Today's world of science is complex and today's student is faced with a wide variety of options to consider. The course begins to expose students to basic skills that all scientists must master (*e.g.* presentation skills), to issues of compliance/ethics & the law as well as to their personal professional development, the latter highlighted by students' working on an individual development plan by participating in the "myIDP" project. The course draws on a wide variety of experts throughout the university. Schreiber. 2 cr, Spring sem. Wed 10:00am-11:50am.

Appendix #2

PROGRAM IN BIOMEDICAL SCIENCES (PiBS) ELECTIVE CLASSES

Note that some elective classes require that a certain number of students enroll for the course to be taught.

The following classes are offered as electives during the first year in PiBS. Not all of the classes are offered every year and might depend upon enrollment. Some of the classes may be requirements for some of the participating departments/programs. Each department/program has designed a curriculum that will allow students who enter the program at the end of the first year in PiBS to complete these requirements after acceptance into a dissertation lab and department or program *i.e.* the choice of department or program isn't dictated by the program-specific requirements fulfilled during the first year.

Fall semester

GMS BI 777 Techniques in Biomedical Research
This course will complement the Foundations in Biomedical Sciences PhD curriculum and focus on both fundamental and advanced experimental approaches employed in biomedical research laboratories. Specific topics covered in include: scientific and experimental design, cell culture/gene transfer, protein isolation and analysis, DNA and cloning, PCR/CRISPR technologies, DNA-protein interactions & chromatin, quantitative PCR, lipids, transgenic and knockout mice, mass spectrometry and applications, flow cytometry, microarray & next generation sequencing, and histology/confocal microscopy. Layne. 2 cr, Fall sem. Wed 9:00am-10:50am.

GMS BY 762 Foundations of Biophysics and Structural Biology I
This graduate level course provides a thorough grounding in the theory and major experimental methods of Biophysics and Structural Biology. The course covers x-ray diffraction, crystallography, electron microscopy and image processing. Atkinson. 2 cr, Fall sem. Mon 1:00pm-2:50pm.

GMS BY 776 Macromolecular Assemblies I
This graduate level course covers the concepts of the assembly of biomacromolecules, their structure and stabilizing forces, and biological function as related to structure. Examples are drawn from protein and protein-nucleic acid assemblies, and membrane proteins. Shipley. 2 cr, Fall sem. Wed 1:00pm-2:50pm.

GMS GE 701 Principles of Genetics and Genomics
This course will serve as a foundation for understanding the heritable basis of numerous biological traits, the relationships among genes, and the regulation of their expression. Focus on the ability to use genetic systems to probe these problems, and therefore will heavily explore the experimental aspects of these investigations. Includes discussion of the impact of the genome sequences' availability on the practice of modern science. Use of case study approach to investigate the rich variety of scientific insights gained through genetic studies of cell-cell communication, aging, addiction, obesity, and others. Dasgupta. 4 cr, Fall sem. Tue, Thu 1:00pm-2:50pm.

GMS MI 713 Comprehensive Immunology
Comprehensive introduction to immunologic principles and application to current problems. This course consists of both interactive lectures and discussion sessions often involving contemporary literature. Emphasis is placed on the integration of innate and adaptive immune systems. While formal prior immunology training is not required, a sound basis in genetics and biochemistry is strongly recommended. Browning. 4 cr, Fall sem. Mon, Wed 4:00pm-5:50pm.

GMS MM703 Cancer Biology and Genetics
This course will cover topics in human tumor biology including: Tumor progression, invasion, and metastasis; Viruses, immunodeficiency, and cancer; Chemical carcinogenesis; Signal transduction; Anti-oncogenes and familial cancer syndromes; Apoptosis and cancer; Cell cycle control; DNA repair; Principles of Cancer Therapy; Immunotherapy of Cancer; Anti-angiogenesis therapy; and modern molecular diagnostic techniques. Flynn, Ganem. 2 cr, Fall sem. Wed 10:00am-11:50am.

GMS MM725 Biology of the Lung and Pulmonary Disease
This course will cover topics in basic lung biology including cellular components and functions in the respiratory system and how the processes of immunity and development influence lung structure and function. The course will apply this basic biology to cutting edge developments in pulmonary diseases including the acute respiratory distress syndrome, pneumonia, asthma, pulmonary hypertension, pulmonary fibrosis, chronic obstructive pulmonary disease and lung cancer. Mizgerd, Quinton. 2 cr, Fall sem. Wed 1:00pm-2:50pm.

GMS OB 763 Basic Processes in Oral Biology
This course examines biological processes at the cellular and molecular levels. Provides a basis to understand the events that regulate inflammation; wound healing; bone formation and resorption; salivary proteins, the relevance to mineral homeostasis and anti-microbial activity; tooth development, eruption, and movement; and oral immune system and oral immunology protective and destructive aspects of oral tissues. Mochida. 2 cr, Fall sem. (followed by the 2 cr, Spring sem. class; OB 764) Mon 5:30pm-7:20pm.

Spring semester

GMS BY 763 Foundations of Biophysics and Structural Biology II
This graduate level course provides a thorough grounding in the theory and major experimental methods of Biophysics and Structural Biology. The course covers thermodynamic and spectroscopic methods, computational biology and structural NMR. Atkinson. 2 cr, Spring sem. Mon 1:00pm-2:50pm.

GMS BY 777 Macromolecular Assemblies II
This graduate level course covers the concepts of the assembly of biomacromolecules, their structure and stabilizing forces, and biological function as related to structure. Examples are drawn from assemblies of lipoproteins, phospholipids, and membrane proteins. Shipley. 2 cr, Spring sem. Wed 1:00pm-2:50pm.

GMS FC 706 Molecular Metabolism
Prereq: consent of instructor. This optional module of the Foundations in Biomedical Sciences curriculum focuses on the biochemical, cellular and molecular mechanisms that regulate cell and tissue-specific fuel metabolism. The course will present an integrated view of biochemistry and the control of cellular and organismal functions with regard to nutrient utilization. Classes include small group discussions of key papers. Mechanisms that allow cells to survive variations in nutrient supply (starvation, feeding, nutrient excess/stress) and how these mechanisms contribute to metabolic derangements contribute to disease pathogenesis (e.g. diabetes, obesity, cancer) will be discussed. This class is taught in conjunction with NU756; students registered for FC706 participate in a portion of the lectures. Deeney. 2 cr, Spring sem. Tue, Thu 4:00pm-5:50pm (likely time).

GMS FC 715 Translational Genetics and Genomics
Modern human genetics has evolved at a tremendous pace, with the promise of an affordable complete genome sequence for every individual just around the corner. While the raw information has increased exponentially, its translation to patient care has not kept pace. We will discuss exciting recent advances in human genetics and genomics, with illustrative examples of their translation into improvements in diagnosis and treatment of patients. We will also discuss ethical and societal challenges of this rapidly evolving field. Our course is aimed at first or second year Ph.D. students, and will be taught by faculty in a variety of departments through traditional lectures and discussion sections. Students will be evaluated on their ability to explain the translational research process and demonstrate how individual research findings build on one another to move a field forward to ultimately impact patient care. 3 cr, Spring sem.

GMS FC 717 Physiology of Specialized Cells
Prereq: consent of instructor. This course is one of the elective course modules (Module V) of the Foundations in Biomedical Sciences curriculum. Knowledge of cellular and molecular physiology is critical to understanding the higher order of functioning of tissues, organs, and organs systems. The objective of the course is to discuss the specialized adaptations of cells that help them to function in their respective tissues and organs. This course will also provide a framework to bridge the gap between the biochemistry and the molecular and cellular biology that students have acquired in the core modules (I through IV) and organ physiology and pharmacology that will be addressed in the second year. Gabel. 3 cr, Spring sem.

GMS FC 762 Critical Thinking in Cell and Molecular Biology
Prereq: consent of instructor. The primary goal of this course is to use the framework of the scientific literature to develop Critical Thinking Skills to generate novel hypotheses with a focus on establishing novel biological mechanisms and pathways. Critical Thinking skills will be used to examine research findings and theories to

uncover inconsistencies, bias, or faulty logic. The student will be expected to build on their careful evaluation and analysis of the papers to create a novel hypothesis each week and design a single experiment to address their question. The weekly course discussion will be student led and this will facilitate the development of teaching skills. Generally the papers to be discussed will be an older, classic paper, which established an important new concept and a newer paper that builds on that theme. Grading is based on weekly participation in class discussions, presentations, and a concise final written assignment. Layne. 2 cr, Spring sem. Mon 9:00am-10:50am.

GMS NU 756 Molecular, Biochemical and Physiologic Bases of Nutrition: Macronutrients
Prereq: at least one semester each of Biochemistry and Physiology and permission of the instructor. Regulation of lipid, carbohydrate, and protein digestion, absorption, transport, tissue and cellular metabolism. Integration of macronutrient metabolism in response to alteration in nutritional status (e.g. starvation, obesity) on a whole body and tissue-specific basis. Mechanism regulating macronutrient metabolism in response to stresses such as exercise and aging and disease. A discussion session will teach students to critically evaluate research papers, provide knowledge of seminal papers in the field, and introduce students to research approaches and state of the art methods (e.g. assessment of metabolic flux using stable isotopes, euglycemic clamps, metabolomics). Deeney. 4 cr, Spring sem. Tue, Thu 4:00pm-5:50pm (likely time).

GMS OB 764 Basic Processes in Oral Biology
This course examines biological processes at the cellular and molecular levels. Provides a basis to understand the events that regulate inflammation; wound healing; bone formation and resorption; salivary proteins, the relevance to mineral homeostasis and anti-microbial activity; tooth development, eruption, and movement; and oral immune system and oral immunology protective and destructive aspects of oral tissues. Mochida. 2 cr, Spring sem. (follows the 2 cr, Fall sem. class; OB 763) Mon 5:30pm-7:20pm.

Appendix #3

Program in Biomedical Sciences (PiBS)
Rotation Evaluation Form

Student:_____.

Faculty Member:_____.

Rotation Dates: _____.

The purpose of this evaluation is to give the student honest constructive feedback on his/her performance during the lab rotation. Please note the lab rotations are pass/fail so this evaluation does not dictate a specific grade. Rather, it is important to identify both the student's strengths as well as areas he/she can improve upon in the future. Please do so by filling out the following form and then discussing it with the student.

Please rate the student's performance on a 1 to 5 scale (1 being the best) in the following areas:
Knowledge of the field:____
Work ethic: ___
Ability to learn (new techniques, analyses etc): _____
Communication skills: _____
Ability to work with others: _____
Overall performance: _____

What were the student's strengths that he/she should aim to continue to enhance?

***What areas should the student try to improve*?**

What new techniques did the student learn?

Evaluation of presentation/final report:

Would you consider having the student join your lab for his/her dissertation work?

Is there anything else you want to add about the student's overall performance in the laboratory rotation?

This form was filled in by_____.
(Rotation Advisor) (Date)

This completed form was discussed with_____.
(Student signature) (Date)

This form was submitted to the PiBS Advising Committee _____.
(Date)