

**BIOMEDICAL SCIENCES TRAINING PROGRAM**

**HANDBOOK FOR STUDENTS AND FACULTY**

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**PURPOSE OF THIS HANDBOOK**

The Biomedical Sciences Training Program (BSTP) provides interdisciplinary training for first year students at Case Western Reserve University. This handbook provides information on the procedures and expectations for BSTP students in their first year. Briefly, students in the program do research rotations in the laboratories of program faculty. In December of the first year, students choose a thesis advisor. Students then become a member of one of the constituent training programs and earn their Ph.D. degree in that program. BSTP students also take a comprehensive course (C3MB) during the fall semester.

The handbook is intended for two groups of readers. One group is the first-year BSTP students. For this group, the handbook describes what to expect in the first year, and will help in interpreting the flood of information about courses, research rotations, and thesis advisor selection that will be encountered. The second group of intended readers is the training faculty. It is our hope that faculty members will use this information as a guide to the organization and rules of the program, allowing them to participate as mentors of research rotations.



## ADVISING SYSTEM

Student advising is carried out by the BSTP Student Affairs Director (Dr. Michael Harris) and the director of each of the participating Ph.D. programs. Each entering BSTP student is assigned an advisor who is the director of one of the Ph.D. programs. This advisor will advise the student about coursework, research rotations, and the selection of a thesis advisor. For these reasons, it is essential for each student to develop a solid working relationship with this advisor or one of the other academic advisors. Every attempt is made to match each student with an advisor who is familiar with research opportunities in the student's areas of interest. However, it is important that the student not feel bound or limited by this assignment. As the student's interests develop, s/he may find it more useful to consult with other faculty advisors. Students are not obligated to select a thesis advisor, or even a rotation supervisor, from the advisor's department or program.

Students should be in regular contact with their advisors. Students should speak with their advisors when they join the program and when they change rotations. In addition, students should inform their advisors about rotation progress either in person or by email. Students who encounter difficulty in their courses or have problems with a rotation should discuss this with their advisor sooner rather than later. Advisors can help more effectively the sooner they know!

Contact information for the advisors can be found on the BSTP web site.

## BEGINNING THE PROGRAM

Incoming graduate students are strongly encouraged to arrive in early July. This gives students the opportunity to become familiar with CWRU and complete a research rotation before classes begin in the fall. All students must be on campus for the beginning of the fall semester at the end of August.

During the summer, there will be get-togethers for new BSTP students and faculty members in the BSTP Training Programs. This gives new students a chance to meet other students and faculty in an informal setting. This is intended to broaden students' knowledge of the research opportunities available to them and to help them meet other members of the community.

During the weeks prior to the beginning of the fall semester the program has many important activities for new students. These include:

1. An orientation to introduce the BSTP and review the procedures and rules of the program.
2. A preliminary exam based on chapters 1-6 of Molecular Cell Biology by Lodish or 1-3 of Alberts et al., Molecular Biology of the Cell. The purpose of this exam is to make sure that students have the background required for their coursework in the fall semester.
3. Orientations by the individual programs that participate in the BSTP. The purpose of these mandatory orientations is to introduce students to the research areas represented in each program.

## RESEARCH ROTATIONS

The purposes of the research rotations are to allow students to select thesis advisors and to provide exposure to a variety of research problems and laboratory techniques. Each student must do at least three rotations that are at least 4-6 weeks long. However, there is time for students to do more than three rotations. If the student is interested in joining a lab, a longer rotation is preferred. If a student decides that s/he is probably not interested in joining a lab, a shorter rotation is appropriate. When new students first meet with their academic advisors, they should create tentative schedules for the rotations.

During their rotations, students should participate in all lab activities to get an idea of what it will be like to be a member of the lab. These activities include lab meetings, journal clubs, and departmental seminars.

Students must be involved in a rotation at all times. Students are expected to devote 20-25 hours per week to rotations during the fall semester. During the summer and when class is not in session, students should work in the lab at least 40 hours per week. In unusual circumstances, a student with academic difficulties may be allowed to postpone rotations. This can only be done with the prior approval of the BSTP Student Affairs Director.

Students are responsible for arranging rotations with BSTP faculty members. Because the principal purpose of the rotations is to enable students to select their thesis laboratories, students are encouraged to arrange rotations with training faculty who have an opening for a Ph.D. student. However, all BSTP training faculty members are eligible to serve as rotation supervisors. Students should always confirm that a particular faculty member is available to serve as a rotation supervisor during the period of the planned rotation.

To assist students in selecting research rotations, each student receives a list of all BSTP training faculty, together with a short description of their research interest (Keyword List). Students also receive a list of faculty members with openings in their labs (Slot List). In addition, the BSTP web site has a listing of all BSTP faculty ([www.cwru.edu/med/BSTP/faculty.html](http://www.cwru.edu/med/BSTP/faculty.html)) with links to faculty members' home pages. Students are encouraged to consult this information in planning rotations. As soon as a tentative rotation schedule has been completed, a copy should be provided to the BSTP coordinator and academic advisor. The student may freely revise this tentative schedule as her or his interests evolve.

During a research rotation a student should work on a substantive project and should aspire to generate publishable data. Rotating students are also expected to participate in all the activities attended by other students in the lab (e.g. group meetings, department seminars and journal clubs). Because rotating students place considerable demand on faculty time, faculty are discouraged from hosting more than one rotating student at a time. It may be helpful for the student and rotation supervisor to discuss the rotation and the student's time commitment prior to beginning the rotation to assist the supervisor in designing a rotation project of suitable scope. A student should not be pressured by a rotation supervisor to prolong a rotation in order to get more complete results. If this should happen, the academic advisor can intervene on the student's behalf.

Students must keep the BSTP office informed of where they are rotating. As soon as a new rotation is started, a Rotation Status Report (included in this document) must be filed with the BSTP office. The form may be submitted in person or by email.

Finishing a rotation: In order to complete a rotation successfully, students must do the following:

1. Prepare a rotation report (see below).
2. Ask the rotation supervisor to prepare a Faculty Rotation Evaluation Form (included in this document and available in the BSTP office). The student should provide the faculty member with this form.
3. Meet with the rotation supervisor to discuss the rotation and the report ("exit interview"). The rotation supervisor will grade the rotation report either satisfactory (S) or unsatisfactory (U). It is also very helpful if the student and advisor hold a frank discussion of their intentions during this meeting (see below).
4. Submit copies of the Faculty Evaluation Form and the rotation report to the BSTP office and the student's academic advisor. The academic advisor must sign the report and send a copy to the BSTP office.

**Important!!** A rotation has not been completed successfully until these steps have been followed. Students must complete 3 rotations, along with the reports and paperwork by the end of the fall semester. Students who fail to complete these reports will receive a grade of F for the fall semester of BSTP 400.

The Rotation Report: Because the research rotations are an important part of the academic program, every student is required to present a written report on each rotation. The report should be at least 2 - 3 double-spaced typewritten pages, and should include the following points:

1. A rationale. Outline the problem under investigation, describe what new information will be provided by the research, and indicate how this information will be useful.
2. A description. Indicate the experimental approach, outline the procedures, and describe clearly how the data is analyzed.
3. A discussion. Describe the results that were obtained, and relate the results to the rationale for the research. Discuss any further experiments that could be done. Indicate what you learned from the rotation beyond simply the techniques that you mastered.
4. Literature citations. Provide documentation of independent study associated with the project. The literature citations should follow the format of a relevant journal.

## COURSES

In the fall semester, BSTP students take the Core Curriculum in Cell and Molecular Biology (C3MB). This integrated course offers an introduction to modern cell and molecular biology. This course covers both prokaryotic and eukaryotic biology, including basic genetics, macromolecular biosynthesis, regulation of gene expression, cell structure/function/growth, and cell signaling. This provides a foundation for graduate research in all of the participating programs of the BSTP. Students who perform poorly on any of the exams in this course will be assigned an upper-level graduate student tutor for help with the remainder of the semester.

Students with strong backgrounds may, with the approval of the BSTP Student Affairs Director, be exempted from part of the Core Curriculum. These are typically students with Masters degrees. These students will select other courses in the fall semester.

Students must register for 9 credit hours in the fall semester. This is the minimum number of credit hours for full time students. Most students register for the Core Curriculum (CBIO 453 and 455, 4 credits each) and 1 hour of research rotation (BSTP 400). Students may not register for more than 9 hours without their advisor's

permission. Once registered, students cannot add or drop courses without the permission of their academic advisor since it will impact on both tuition and stipend

Satisfactory Progress: The BSTP only considers grades of B or better to be satisfactory. Research rotations are graded Satisfactory. Students must maintain a Grade Point Average (GPA) of 2.50 or higher at the end of 12 semester hours that receive quality point grades (A= 4. B = 3. C = 2 ...). This is a higher standard than the University minimum for the initial period of study, but is consistent with the University's standard of a 3.0 GPA overall for award of the Ph.D. If at the end of the first year, a student has received two grades of C, s/he is considered to be making unsatisfactory progress and may be separated from the program. A grade of Unsatisfactory in the research rotations may also lead to separation from the program.

Students who make satisfactory progress in the BSTP do not need to satisfy any further requirements or meet any higher standard to join any of the participating graduate programs.

Students normally choose their thesis advisors in December. If there are circumstances that prevent placement by this date, students will be allowed to do additional rotations. However, the BSTP Student Affairs Director must approve these rotations. No student will continue in the BSTP beyond March 15. **Failure to follow these guidelines may lead to a drop to part time status and the loss of stipend.**

### CHOOSING A THESIS RESEARCH ADVISOR

The choice of a research advisor is the most important decision of the first year because the thesis laboratory is the setting for the most crucial learning experiences in the upper years of graduate study. In choosing an advisor, students should consider, the area and quality of the research projects, the influence of postdocs and other students in the lab, the level of the advisor's involvement, and the character of the advisor's relationship with the student. All of these, combined with the student's own intelligence, determination, creativity, and initiative, will determine the success of the student's graduate education.

It is important to emphasize that there is no absolute scale for rating such intangible factors about the research lab; rather, they must be considered in light of the distinctive features of the student's personality and the student's approach to experimentation and learning. For this reason, our program emphasizes the importance of research rotations in selecting a thesis advisor.

Who can be a thesis advisor? To be a thesis advisor, a faculty member must be a member of one of the BSTP training programs. In addition, the faculty member must have a funded research program. There are some exceptions to this rule. For example, a junior faculty member who has not yet obtained his or her first funding can receive approval to take a student. Finally, the laboratory must have physical space for the student, either currently or in the near future. The purpose of these requirements is to ensure that students do their theses in active, productive laboratories.

For the reasons given above, a student should have carried out a research rotation with a faculty member before selecting this individual as a mentor. This is not an absolute requirement, however. In unusual circumstances, and with the consent of the prospective thesis advisor, a student may be allowed to select a lab without a rotation. In such an instance, the selection should be preceded by detailed discussions (about the lab and potential projects) between the advisor and the student, comparable in depth to those that would have occurred during a rotation.

The Slot List. The BSTP office maintains a list of faculty members who have openings for BSTP students (the Slot List). In the first version of this list, which is issued in June, faculty members may list openings as Definite or Probable. The latter category means that space and funding for a student are likely, but not certain. A revised slot list is issued in October that only has Definite slots. Students choose their thesis advisors from the faculty members on this revised list.



Mechanics of the rotation process. It is important for students and faculty to understand that selection of the thesis research advisor occurs primarily by discussion between the principals (students and faculty). The BSTP imposes some structure on the process to promote fairness and to resolve conflicts. However, lab assignments are made only if they are acceptable to both the student and the faculty member.

When the student and faculty member meet at the end of a rotation, they should have a forthright and frank discussion about the prospects for joining the lab. How interested is the student in the work in the lab? How willing is the advisor to have the student? These discussions must be tentative in character because the BSTP requires the student to continue with other rotations and expects the faculty member to remain available to supervise other rotating students. Even so, students understandably place great reliance on a positive exit interview as a sign that they could join the lab. Therefore, if the faculty member is not willing to have a student join his or her lab, this must be communicated explicitly to the student and to the student's academic advisor at the end of the rotation.

As students continue with their rotations, the views expressed at the exit interview are likely to evolve. It is important that, as a student's interests become more focused on a particular faculty member, the faculty member be kept informed, so that s/he can respond appropriately both to that student and to any other students interested in that lab. If a student continues to be interested in joining a faculty member's lab, it is particularly important for the student to stay in touch with that faculty member.

Advisor and Program Selection. Students select their advisors in late December. This process requires the agreement of the student and the advisor. In addition, the administrator and department chair of the department where the advisor has his/her primary appointment must approve the selection to certify that resources for the support of the student are available. The BSTP will provide a selection form that must be signed by the student, advisor, administrator, and department chair.

When students select their thesis advisors, they also select a Ph.D. training program. Students must select a program with which their advisor is affiliated. If a faculty member is affiliated with more than one program, the student may choose one of these programs.

Once all of the student selections have been made, the BSTP Student Affairs Director makes final assignments. These assignments will be completed by early January. In most cases, students will be assigned to their first preference, but there may be instances in which this is not possible. Typically such situation arises when two or more students seek to join the same lab. The BSTP policy regarding placing more than one student in a lab is the following:

1. One student per lab per year is preferred.
2. Two students can be placed in one lab in one year, if the faculty member has sufficient resources, is willing to take both students, and agrees not to take a student in the next year.
3. No more than two students can enter a lab in one year.

In resolving conflicts over thesis advisor selection, the BSTP Student Affairs Director takes into account all pertinent information, including the strength of the preferences expressed by the students, the preference of the faculty member, and the alternative assignments available to each student. All assignments will be made with the consent of the students. No student will be assigned to a lab against his/her wishes.

In rare cases, a student may exhaust his or her options without being assigned to a lab. Such cases are handled on an ad hoc basis. If need be, students can be allowed time to consider additional laboratories. However, the student must be accepted in a laboratory by March 15. This situation is obviously less than ideal and can usually be avoided through appropriate rotation planning by the student in consultation with the academic advisor.

### EARNING THE PhD DEGREE

Once a student chooses a thesis advisor and a Ph.D. program, the student formally transfers from the BSTP to that Ph.D. program. Students then earn their Ph.D. in that program. As soon as students have joined a program, the graduate advisors in that program will help them select coursework for the spring semester. In addition, each student will select a prethesis committee that will advise the student as s/he works toward the degree. The degree has three components: i) the thesis, ii) coursework, and iii) the qualifying exam. First-author publication(s) in scholarly journals are also a requirement. The requirements of each program are slightly different, so students are encouraged to check them carefully.

### RESPONSIBLE CONDUCT OF RESEARCH

Understanding the ethical and moral aspects of scientific research is an important aspect of becoming a professional scientist. The NIH requires that trainees obtain instruction in the responsible conduct of research on topics including "conflict of interest, data sharing, responsible authorship, policies for handling misconduct, policies regarding the use of human and animal subjects, and data management." As a part of our training program, students are required to take IBMS 500, "Being a Professional Scientist", usually at the end of the first year. In most PhD programs, the curriculum includes sessions on responsible conduct of research for senior students.

### STUDENT EFFORT

Upon entering the graduate program, students are expected to devote themselves to the full-time pursuit of the Ph.D. degree. This includes participation in coursework, research, and seminars. Students should be working in the laboratory and should attend seminars even when classes are not in session. As discussed above, research rotations require 20-25 hours/week when classes are in session. At other times, students should spend at least 40 hours/week in the lab. If students are required to be away from the laboratory for any period of time they must receive permission from their academic advisor. Vacation time is limited to 2 weeks in addition to the official holidays for university staff.

As full time graduate students receiving a stipends from the University, students are held to a high degree of accountability. Consequently, students may not have other jobs while they are in the program.

### WHOM TO SEE ABOUT ACADEMIC AND ADMINISTRATIVE ISSUES

Many people are happy to provide advice to students about many aspects of graduate education. These includes educational issues (which courses should I take?), administrative issues (why wasn't I paid this month?), and institutional issues (what's the Graduate Student Senate?). In general, students should take the initiative to get help in their immediate environment first and work "up the chain" as needed.

#### **Educational Issues:**

BSTP students should consult: i) the advisor assigned to them, who is one of the Graduate Program Directors and/or the director of the course(s) where they are having difficulty. In most cases, tutoring sessions with senior graduate students can be set up, ii) the BSTP Academic Advisor (Dr. Michael Harris), and iii) the BSTP Director (Dr. Martin Snider) in that order. These individuals can help with issues concerning coursework, research rotations, and selection of a thesis advisor.

Help with learning and study skills can also be obtained from Educational Services for Students (ESS), which has experts in this area ([studentaffairs.case.edu/education](http://studentaffairs.case.edu/education)). They are located in 470 Sears Building ([essinfo@case.edu](mailto:essinfo@case.edu), 368-5230)

Students who have chosen a laboratory and have joined one of the training programs that participate in the BSTP should consult that program's Graduate Program Director, who will be an advocate in the program. The Director will advise you about which courses to select, and can be a resource as you consider lab rotations, thesis committee composition, or particular challenges in your graduate progression. A list of these directors is available in the BSTP office and on the BSTP web site. Each

PhD program has a Graduate Education Committee with faculty who help resolve difficulties and take suggestions about the program.

### **Administrative Issues:**

BSTP students should consult the BSTP Administrator, Deborah Nouredine, for all administrative issues. She can assist in solving problems concerning stipends, registration, ID's, health insurance, and visas. She can also tell you where to get other problems solved.

The individual graduate programs have administrators who support the work of all members of the departments. They maintain grant and personnel records, arrange for purchases, and provide important information about University policies and procedures. Do not hesitate to ask for assistance. They can help with the mechanics of course registration, irregularities in stipend payments, key access etc. Most programs have one person who handles these issues for graduate students.

If you are supported by a training grant, the director and administrator can provide useful information.

### **Other Places to Get Help**

*University Counseling Service ([studentaffairs.case.edu/counseling](http://studentaffairs.case.edu/counseling)). Graduate study may be stressful and psychological issues (e.g. depression and anxiety) can arise for some students. The University Counseling Service offers a sensitive and supportive environment that helps students deal with these issues. Their offices are staffed with psychologists, social workers, and consulting psychiatrists and the services are free. They are located in 201 Sears Building ([counseling@case.edu](mailto:counseling@case.edu), 368-5872). During the evening and on weekends, call 216-844-8892 and ask to speak with the University Counseling On-Call staff member.*

*Use these resources below after you have tried to get help using the resources listed above.*

*Office of Graduate Education, School of Medicine (SOM room TGI, <http://casemed.case.edu/gradprog/index.html>). Dr. Alison Hall, Director of Graduate Education at the School of Medicine can help with difficult issues or offer advice on problems that are specific to the School of Medicine.*

#### ***Office of Graduate Studies (<http://www.case.edu/provost/gradstudies/>)***

*You can find information for all graduate students at CWRU. You can also download the University's Graduate Student Handbook, which contains helpful information and important forms. (<http://www.case.edu/gradstudies/downloads/GraduateStudentHandbook09-10.pdf>)*

*Dean Denise Douglas, Associate Dean, School of Graduate Studies can also help resolve difficult problems and conflicts.*



CALENDAR OF THE YEAR

- MAY-JUNE Academic advisors are assigned to incoming students and the preliminary slot list is distributed.
- JULY-AUGUST Students arrive; meet with BSTP Student Affairs Director and academic advisor; start rotations; meet faculty
- AUGUST Continue rotations; formal BSTP orientation; Preliminary exam; registration; individual program orientations, start classes
- OCTOBER Final Slot List is issued
- DECEMBER Students select thesis advisors and Ph.D. programs
- JANUARY Advisor selection is finalized. Students choose courses for spring semester. Spring semester begins.



SCHOOL OF MEDICINE

CASE WESTERN RESERVE  
UNIVERSITY

**BIOMEDICAL SCIENCES TRAINING PROGRAM  
ROTATION STATUS**

**Date** \_\_\_\_\_

**STUDENT NAME:** \_\_\_\_\_

**PRESENT ROTATION IS #:** \_\_\_\_\_

**IN THE LAB OF:** \_\_\_\_\_

**IN THE DEPT. OF:** \_\_\_\_\_

**ROTATION STARTED:** \_\_\_\_\_

**ROTATION IS EXPECTED TO END ABOUT:** \_\_\_\_\_

**I HAVE COMPLETED AND TURNED IN: \_\_\_\_\_  
ROTATION REPORTS\***

**\*Student should submit rotation report no later than 2 weeks after the completion of a rotation.**



**BIOMEDICAL SCIENCES TRAINING PROGRAM  
ROTATION EVALUATION**

ROTATION ADVISOR \_\_\_\_\_ DEPARTMENT \_\_\_\_\_

STUDENT NAME \_\_\_\_\_

DATES OF ROTATION \_\_\_\_\_

1. Did the student spend the expected 20-25 hours per week in the lab?

YES \_\_\_\_\_ NO \_\_\_\_\_

2. Did the student learn any new techniques?

YES \_\_\_\_\_ NO \_\_\_\_\_

3. Did the student get any new results or data?

YES \_\_\_\_\_ NO \_\_\_\_\_

4. How would you rate the student's overall performance in this rotation?

POOR \_\_\_\_\_ AVERAGE \_\_\_\_\_ GOOD \_\_\_\_\_ EXCELLENT \_\_\_\_\_

5. Based on this student's overall performance and compatibility with the laboratory as a whole, this student

IS \_\_\_\_\_ IS NOT \_\_\_\_\_ MAY BE \_\_\_\_\_ suitable for placement in my laboratory.

6. Comment on the student's strengths and weaknesses for graduate study (continue on back if necessary):

\_\_\_\_\_  
ROTATION ADVISOR SIGNATURE

\_\_\_\_\_  
STUDENT SIGNATURE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
ACADEMIC ADVISOR

After student, rotation advisor and academic advisor have reviewed and signed this form, it should be returned with the rotation report to the BSTP Office, Room TG1, School of Medicine