

# Guidelines for the Case MSTP

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## 1. Introduction

This document provides guidelines for students in the Case MSTP. It includes information about the general program structure, academic requirements and MSTP activities. The program requirements have been developed with the best interests of students in mind, and it is important that students understand and adhere to these guidelines.

## 2. Overview of the MSTP

The MSTP includes three major phases of training:

1. During the first two years, students complete the first two years of the medical school curriculum (Med years 1 and 2, including early clinical experiences), do at least three research rotations, take graduate courses and choose their PhD graduate program and thesis lab. During the summers before Med years 1 and 2, students will do research rotations. During each of the fall and spring semesters of Med years 1 and 2, students take a graduate course or do a research rotation.
2. During the PhD thesis phase, students complete all requirements of their PhD thesis program. They also may participate in the MSTP Clinical Tutorial.
3. The final phase is the return to the medical school curriculum (Med years 3 and 4). The focus here is clinical training, but research electives can be taken for part of Med year 4.

Although each of these three phases has a different focus, there is opportunity for students to pursue both research and clinical training in each phase. An important feature of the Case MSTP is the integration of scientific and clinical training (e.g. graduate courses in the MD phase and MSTP Clinical Tutorial during the PhD phase).

## 3. Schedule of Courses

Each semester at the time of registration, all 1st and 2nd year MSTP students must consult with the MSTP Co-Director (Dr. Dubyak) on course selection and/or rotations. Approval for the academic plan must be obtained each semester. Courses outside of those relevant to the MSTP (e.g. dance or music classes) may be taken only if they will not interfere with fulfillment of MSTP requirements, and the MSTP cannot provide tuition support for such classes.

During fall and spring semesters of year 1 and the fall semester of year 2, MSTP students are graded for graduate courses that represent components of the MD curriculum (IBIS 401, 402, 403, 411, 412 and 413). These grades are for graduate school purposes and do not affect standing in the medical school. This system provides the benefit of graded course credits that can be used toward the PhD degree. During these semesters, additional credits are added for other graduate courses and research rotations as selected by the student and approved by the Co-Director. Students **MUST** take a graduate course (3 or 4 credits) or MSTP 400 (3 credits) in each of these semesters.

A summary of a typical course sequence is provided in the following table.

<b>Semester</b>	<b>Course</b>	<b>Graduate School Credit Hours</b>	<b>Graded (G) or Pass/Fail (P/F)</b>
Year 1 Summer	MSTP 400	0	P/F

Year 1 Fall	IBIS 401	4 (3 if a 4-credit grad course is taken)	G
Year 1 Fall	IBIS 411	2	G
Year 1 Fall- CHOOSE ONE	Grad course	3-4	G
	MSTP 400	3	P/F
Year 1 Fall	Total	9	
Year 1 Spring	IBIS 402	4 (3 if a 4-credit grad course is taken)	G
Year 1 Spring	IBIS 412	2	G
Year 1 Spring- CHOOSE ONE	Grad course	3-4	G
	MSTP 400	3	P/F
Year 1 Spring	Total	9	
Summer	MSTP 400	0	P/F
Summer	Total	0	
Year 2 Fall	IBIS 403	4 (3 if a 4-credit grad course is taken)	G
Year 2 Fall	IBIS 413	2	G
Year 2 Fall- CHOOSE ONE	Grad course OR	3-4	G
	MSTP 400	3	P/F
Year 2 Fall	Total	9	
<p>Year 2 Spring:</p> <p>Start up of graduate courses in mid-late January</p> <p>Finish MD classes that will end in early March, enter PhD lab.</p> <p>Complete graduate course, early May</p> <p>Take up to 4 weeks of time excused from lab research to prepare for and take the USMLE Board part I exam</p> <p>Resume full-time commitment to the lab in early June</p>			
Year 2 Spring	IBIS 404	0	P/F
Year 2 Spring	IBIS 414	0	P/F
Year 2 Spring	Grad course	3-4 (as indicated by graduate program)	G
Year 2 Spring	**** 601	5-6 (as indicated by graduate program)	P/F

Year 2 Spring	IBMS 500 Ethics	0	P/F
Year 2 Spring	Total	9	
Summer	RSCH 750	0	P/F
Summer	Total	0	
Year 3 Fall	Grad course(s)	(as indicated by graduate program)	G
Year 3 Fall	**** 601	(as indicated by graduate program)	P/F
Year 3 Fall	Total	9	
Year 3 Spring	Grad course(s)	(as indicated by graduate program)	G
Year 3 Spring	**** 601	(as indicated by graduate program)	P/F
Year 3 Spring	Total	9	
Complete qualifying examinations and thesis proposal by summer following year 3 (BME requirements different, see graduate program guidelines)			
Summer	RSCH 750#	0	
Summer	Total	0	
Year 4 Fall	Grad course(s)	(as indicated by graduate program)	G
Year 4 Fall	**** 701	(as indicated by graduate program)	P/F
Year 4 Fall OPTIONAL (year- long)	MSTP Clinical Tutorial	0 (2 weeks credit for 4 <sup>th</sup> year MD clinical elective if entire year is completed)	Not graded
Year 4 Fall	Total	9	
Year 4 Spring	Grad course(s)	(as indicated by graduate program)	G
Year 4 Spring	**** 701	(as indicated by graduate program)	P/F
Year 4 Spring OPTIONAL (year- long)	MSTP Clinical Tutorial	0 (2 weeks credit for 4 <sup>th</sup> year MD clinical elective if entire year is completed)	Not graded
Year 4 Spring	Total	9	
Year 5 Fall	Grad course(s)	(as indicated by graduate program)	G
Year 5 Fall	**** 701	(as indicated by graduate program)	P/F

Year 5 Fall OPTIONAL (year-long)	MSTP Clinical Tutorial	0 (2 weeks credit for 4 <sup>th</sup> year MD clinical elective if entire year is completed)	Not graded
Year 5 Fall	Total	9	
Year 5 Spring	Grad course(s)	(as indicated by graduate program)	G
Year 5 Spring	**** 701	(as indicated by graduate program)	P/F
Year 5 Spring OPTIONAL (year-long)	MSTP Clinical Tutorial	0 (2 weeks credit for 4 <sup>th</sup> year MD clinical elective if entire year is completed)	Not graded
Year 5 Spring	Total	9	
Additional PhD phase year if necessary- schedule as for Year 5			
All PhD requirements, including publication requirement and thesis dissertation defense, must be completed before starting Med year 3			
Year 6 Begin early July or early November	3rd year medical curriculum (registered as MD student, no graduate school credit)		MD program clerkship evaluations
Year 7 End in early May	4th year medical curriculum (registered as MD student, no graduate school credit)		MD program clerkship evaluations

## Notes:

1. This is only a typical schedule. Schedules may vary with different students and different graduate programs.
2. MSTP students are registered as graduate students in all phases except the last two years.
3. MSTP 400 is the course for Research Rotations. **MSTP students are required to rotate in a minimum of 3 different laboratories by the end of fall semester of year 2.**
4. In addition to coursework for the MD program, students must take a rotation or graduate course each semester through the fall semester of year 2.
5. IBIS 401-404 are the core biomedical course components of the first two years of the MD curriculum, and IBIS 411-414 provide the clinical training in years 1 and 2.
6. Later years in PhD phase resemble year 4. Coursework is usually finished so that all time may be spent on 701 Dissertation Research.
7. Students must satisfy all qualifying examination and thesis proposal requirements of the graduate program to advance to candidacy for the PhD degree before registering for 701 Dissertation Research. A total of 18 credits of 701 is required.
8. Students must complete all PhD requirements, including the publication requirement and thesis dissertation defense, before starting Med year 3. The thesis defense must be scheduled well in advance with the Graduate School to meet requirements. After

completion of the PhD phase, students enter Med year 3 and are no longer registered as graduate students.

9. Students may start Med year 3 in July, November or March. The July start date allows completion of the full maximum amount of clerkships, including the required minimum of clinical clerkships plus additional electives that may be spend in either clinical electives or research. The November start date pares 4 months off of the time between the start of Med year 3 and graduation (and USMLE part 2), reducing elective time but allowing all requirements to be met. This is possible because MSTP students can receive 4 months credit toward Med year 4 research electives from their PhD work. Students starting Med year 3 in July or November of year “0” graduate in May of year “2”. Students may also start Med year 3 in March. With start in March of year “0”, all possible portions of the MD curriculum will be completed approximately 4 months before May graduation in year “2”. Therefore, stipend support by the MSTP will end in approximately January of year “2” since all aspects of the MD and PhD training will be completed. On the other hand, the March start allows plenty of time prior to USMLE part 2 and allows students to begin Med year 3 at the same time as 2/3 of the MD students (1/3 of MD students begin Med year 3 in July after a 4 month research block).

#### **4. Program Administration**

The MSTP is run by both faculty and students. The MSTP Council is a body of students that plans and runs certain aspects of the program. The Administrative Director (Kathy Schultz) and Program Assistant (Bart Jarmusch) have many important roles and provide day-to-day management of the program. They are often the first people that students contact for advice or help. The Co-Director, George Dubyak, is involved in decisions at all levels of the program and is the primary advisor for students in the first two years of the program. The Director, Cliff Harding, is responsible for all aspects of the program and is available to advise students at any stage. The MSTP Steering Committee makes decisions on MSTP policy, planning, student admissions, mentor approval and evaluation of students. The members of the Steering Committee are appointed by the Director and include representatives of major training programs affiliated with the MSTP. The Steering Committee members are also advisors for students in their graduate programs. A separate Policy Review Committee serves as an overview board for the program and is responsible for appointing the Director and considering major issues that confront the program. The Director and Policy Review Committee report to the Dean of the School of Medicine.

#### **5. Advisory System**

The Case MSTP has a “three-deep” advising system, meaning that there are at least three levels of advising resources in each of the major phases of the program.

Arrival planning: A month or so prior to his/her arrival to CWRU, each new student will be contacted by Dr. George Dubyak, the MSTP Co-Director, who will provide advice on research rotations and coursework. Incoming students will also be assigned a current MSTP student as a mentor, who will be available to answer questions, respond to concerns and provide overall support during the first two years of the program. Kathy Schultz and Donna McIlwain provide invaluable advice to students who are planning a move to Cleveland.

In the first two years: The Co-Director is the primary advisor for students in the first two years of the program. Dr. Dubyak tracks student progress and advises each student on choice of rotation or graduate course for each semester. For detailed, field-specific questions, Dr. Dubyak may direct students to other MSTP Steering Committee members with expertise in specific scientific areas, and MSTP students are encouraged to contact Steering Committee members directly whenever

their expertise and advice are needed- this is an expected part of their contribution to the MSTP. For issues with the MD program, students also have their designated Society Dean as an advisor. The MSTP Director, Dr. Clifford Harding, is available to advise all students in any phase of the program.

In the PhD phase: The primary advisor is the thesis mentor. Members of the student's Thesis Committee, which must contain one of the basic science representatives to the MSTP Steering Committee, are a second source of advice. For clinical curriculum planning and MSTP Clinical Tutorial during the PhD phase, students receive advice from Dr. Debra Leizman (Director of the MSTP Clinical Tutorial) and their Society Dean. The MSTP Director, Dr. Clifford Harding, follows each student's progress and is available to help whenever difficulties arise.

In the last two years: The primary advisor is the MD program Society Dean, who will advise on matters concerning the clinical curriculum and residency planning. Drs. Leizman, Armitage and Harding are additional sources of advice on these topics for MSTP students.

General resources and contact information: Kathy Schultz and Bart Jarmusch can provide contact information for all advisors. Joe Corrao, the Medical School Registrar, has long provided personalized, supportive and extremely valuable logistical advice and help to MSTP students, particularly as they plan their curriculum for Med years 3 and 4.

## **6. Academic Requirements**

The Case MSTP is designed to emphasize the interests of the students, and our goal is to provide maximum support for student success. If a student is having difficulty, our desire is to provide support and help to alleviate the situation. Students who are having difficulties are encouraged to consult the Co-Director or Director as soon as possible to obtain advice.

MSTP students must fulfill all academic requirements of both the medical and graduate schools as well as certain requirements that are specific to the MSTP. MSTP students are expected to achieve superior performance in medical school and graduate school. Students who make unsatisfactory progress must meet with the Co-Director and/or the Director to discuss the situation and make plans for improvement of academic performance. The Co-Director and/or Director will try to help with counseling, advice on academic strategies and considerations for special circumstances. Students should be aware that significant academic underperformance will necessitate review of the student by the MSTP Steering Committee with the student in attendance at the committee meeting. In this case the Steering Committee will try to help the student overcome academic difficulty if that appears feasible. However, significant academic underperformance may result in removal of a student from the MSTP (this requires a majority vote of the Steering Committee). If a student is removed from the MSTP, he/she may remain in medical school and/or graduate school if requirements for these schools are met, but without support from the MSTP.

## **7. Calendar/Vacations/Leaves**

Since students in the first two years are full members of the medical school class (registered through the Graduate School) and also take graduate classes, they follow both the medical school and the graduate school calendars, which are not synchronized. The Medical School starts in early July, at which time students are registered for the summer semester in the graduate school. Fall semester for the Graduate School starts in late August. For the spring semester, the MD curriculum commences in early January, and the graduate school semester begins in mid January.

Aside from the short vacations provided by the academic calendars, students can take up to two weeks of vacation per year. The first two-week vacation may occur after completion of the Year 1

spring semester, provided the summer research rotations have been identified and approved by the Co-Director. At the end of the second academic year, students can again take two weeks vacation if they have identified their PhD research lab and project, and if these have both been approved by the Steering Committee. All plans for more extensive vacation or leave must be submitted to and approved by the Director or Steering Committee (as well as the PhD mentor during the PhD research years) and may require a leave of absence without stipend or benefits.

In the event of serious injury, NIH policy allows us to provide paid sick leave for an appropriate period up to 30 work-days (~6 weeks). Paid maternity or paternity leave of up to 30 work-days (~6 weeks) is also allowed. The source of support for paid leave will be the source from which support was derived immediately prior to the start of the leave (MSTP, PhD mentor). Beyond the 30 work-day period, MSTP support is not guaranteed, but students may take leave without stipend or benefits if necessary. Details of health issues are confidential and do not need to be disclosed to the MSTP administration if privacy is desired, but it is best if students who anticipate necessity of a health, maternity or paternity leave discuss this with the MSTP Director as far in advance as possible to facilitate planning. Individual considerations may include determining the impact of leave on progression through the MD curriculum, how to re-enter the curriculum, etc.

## 8. Entering the Program

Incoming MSTP students are expected to enter the program on July 1. It may be possible to start a few days later, but ALL STUDENTS MUST BE PRESENT IN TIME TO ATTEND THE MSTP SUMMER RETREAT OR THE START OF MEDICAL SCHOOL CLASSES IN EARLY JULY, WHICHEVER IS FIRST. Incoming students are strongly encouraged to move to Cleveland a week or so before their start date.

STUDENTS ARE ENCOURAGED TO ARRIVE EARLIER TO START A RESEARCH ROTATION IN JUNE; THE START DATE FOR SUCH EARLY ARRIVAL IS FLEXIBLE, AND STIPEND SUPPORT WILL BE INITIATED EARLY.

MSTP office staff will be available to facilitate moving and transition to the program. They will help newcomers with practical necessities (location of housing lists, e-mail account, ID card, health insurance coverage) and administrative requirements (summer registration, training grant appointment forms, payroll enrollment).

The MSTP Administrative Director, Kathy Schultz, will register all entering students for a zero credit research course (MSTP 400) for their first summer at CWRU. Summer registration is essential to initiate the matriculation in the Graduate School and give access to the student benefits (stipend, health care, ID card, e-mail account... etc).

The MSTP Summer Retreat, held in July, provides an important orientation to the program and includes sessions and workshops for program and professional development. **Attendance is required for all students in the first two years and PhD phase, and is strongly encouraged for students in Med years 3 and 4.**

The Co-Director, Dr. Dubyak, advises all students in the first two years and must approve selection of research rotations and graduate courses. All students must take a research rotation or a graduate course in each semester through the fall semester of year 2.

Laboratory Safety Training: All students must take Chemical and Biological Safety training classes provided by Case Department of Occupational and Environmental Safety (DOES, <http://www.case.edu/finadmin/does/oes.html>). These classes include the OSHA Lab Standard Training, Bloodborne Pathogen training and others that may apply (e.g. Radiation Safety; Formaldehyde, Benzene, Methylene Chloride and Vinyl Chloride safety training). Students cannot participate in lab work until all relevant training is obtained. The OSHA and Bloodborne Pathogen

training may be done during Medical School orientation. Safety retraining must be repeated on an annual basis; in many cases this can be done on-line. For more information contact the Department of Occupational and Environmental Safety at 368-2907. In some cases immunizations will be required for work with pathogens or human tissues or blood. Students using radioactive isotopes will need to obtain a radiation safety badge.

## 9. Research Rotations

The principal goals for the research rotations are to provide a foundation for selection of a PhD thesis mentor and to provide exposure to a variety of research problems and laboratory techniques. While rotating, students should participate in all lab activities (research, lab meetings, journal clubs, seminars, etc) to get an idea of what it will be like to be a member of the lab. During a research rotation a student should work on a substantive project and ideally should aspire to generate publishable data. The student and rotation mentor should discuss the student's time commitment before beginning the rotation and design a rotation project of appropriate scope.

All students must complete research rotations with three different MSTP-approved mentors by Fall Semester of the 2<sup>nd</sup> year and submit rotation reports and rotation evaluations for each to the MSTP office. The duration of each rotation should be 4-6 weeks full-time or 8-12 weeks part-time during the academic year. Students may choose to do longer rotations if they desire.

Choosing a rotation mentor: A list of MSTP-approved mentors is provided on the MSTP website, which provides links to faculty web pages, and students are encouraged to use this list as a starting point for rotation selection. Students should choose mentors who indicate potential availability of a slot in their laboratory at the projected time of PhD study. Students may request to have a new mentor added to the MSTP-approved list, but such requests must be communicated to Dr. Dubyak far in advance to allow time for MSTP Steering Committee review of the proposed mentor. This system is designed to insure that rotation time is spent in laboratories that are suitable for PhD study.

Sources of information for choosing a rotation mentor include MSTP advisors (Dr. Dubyak, Dr. Harding, MSTP Steering Committee members), the MSTP website and linked faculty web pages, student and faculty presentations at MSTP retreats, Lepow Medical Student Research Day and Graduate Student Research Day. In addition, the graduate programs have orientation sessions in the fall to provide an opportunity for BSTP and MSTP students to meet faculty.

If a student identifies his/her PhD thesis mentor after one or two rotations, he/she should still complete rotations with three different mentors to obtain additional research and technical expertise, and to provide alternatives should interests or circumstances change.

The Co-Director, Dr. Dubyak, must approve all rotations, but arrangements for research rotations are made between the student and the faculty mentor. Students are encouraged to discuss potential rotation placements with Dr. Dubyak and seek additional advice from appropriate MSTP Steering Committee members or the Director.

Rotation reports and evaluations: At the end of each rotation students are required to write a short rotation report and meet with the mentor to complete the rotation evaluation form. The report and evaluation should be delivered to the MSTP office and Dr. Dubyak within two weeks after the end of the rotation. Also, the abstract summarizing the rotation project should be emailed to the MSTP office ([mstp@cwru.edu](mailto:mstp@cwru.edu)) for NIH reporting.

The rotation report should be 2-3 double-spaced typewritten pages, or more as necessary, and should include the following points:

1. Abstract: Summarize the project results in approximately 100-200 words.

2. Rationale: Outline the problem under investigation, describe what new information will be provided by the research, and indicate how this information will be useful.
3. Methods and Results: Indicate the experimental approach, outline the procedures, present data and figures, and describe clearly how the data is analyzed.
4. Discussion: Relate the results to the rationale for the research, existing literature and other pertinent information. Project any further experiments. Indicate what you learned from the rotation beyond simply the techniques that you mastered.
5. Literature citations.

The Rotation Evaluation Form (see Appendix) is available from the MSTP office or Dr. Dubyak.

**MSTP 400:** MSTP students will be registered in MSTP 400 for zero credits for the summer terms starting years 1 and 2. Students will be registered in MSTP 400 for 3-4 credits in fall and spring semesters in which they do a research rotation (which may occur in fall or spring of year 1, or fall of year 2). MSTP 400 is graded Pass/Fail. The requirements of this course are completion of rotations on a schedule consistent with MSTP guidelines and the timely completion of rotation reports and evaluations. Reports and evaluations are due within two weeks after completion of the rotation, when the rotation experience is still fresh in the student's mind. If possible, reports and evaluations for summer rotations should be turned in by the end of the summer term. Since the summer term usually ends at the end of July, students may find it difficult to complete the report and evaluation for a summer rotation by that time. Students who cannot finish their rotation reports by the end of the summer term will receive an "incomplete" to give them time to complete their summer rotations and turn in the evaluation forms and reports. However, the latest date to change a grade of "Incomplete" (I) to "Pass" (P) for summer term MSTP 400 is around the first week of November by CWRU registrar rules. Thus, reports and evaluations must be submitted by November 1 for summer rotations or rotations completed by the end of September, or the student will receive an "F" for MSTP 400. June 1 is the deadline for submission of rotation reports and evaluations for school year rotations. All reports and evaluations for rotations completed by the end of September of year 2 must be turned in by November 1 of Med year 2, and all reports for fall rotations in year 2 must be turned in by early January, or the student will not receive a passing grade in MSTP 400.

## 10. Choosing a Thesis Research Advisor

The choice of a research advisor is perhaps the most important decision of the student's first two years of medical school because the thesis laboratory is the setting for the most crucial learning experiences in the PhD years of the MSTP. Important factors include the quality of the projects underway in the laboratory, the level of the advisor's involvement, the character of the advisor's relationship with the student, and the influence of postdoctoral fellows and other students in the lab. These factors, 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 precisely this reason, our program emphasizes the role of research rotations as opportunities to sample several potential thesis labs.

### Who can be a thesis advisor?

MSTP-approved mentors are listed on the Case MSTP website. To become an MSTP-approved mentor, a faculty member must be approved by the MSTP Steering Committee. The purpose of this requirement is to insure that students do their thesis research in active, productive laboratories that will provide an excellent training environment.

There are two categories of mentors, senior mentors and initial mentors.

Requirements to be a senior mentor:

1. Membership in one of the MSTP-affiliated PhD training programs, including Biochemistry; Biology; Biomedical Engineering (including the Physician Engineer Training Program); Cell Biology; Chemistry; Genetic and Molecular Epidemiology; Genetics: Molecular, Developmental and Human Genetics (including Developmental Biology); Mechanical and Aerospace Engineering; Molecular Biology; Molecular Virology; Pathology (including the Cancer Biology Training Program, Immunology Training Program, and Molecular and Cellular Basis of Disease Training Program), Neurosciences (including Developmental Biology), Nutritional Sciences, Pharmacological Sciences, and Physiology and Biophysics.
2. A dynamic, high quality research program as evidenced by multiple factors, including grant funding and a significant record of publications (including publications with senior author status). Candidates should be a principal investigator on one or more NIH research grants (R01 or equivalent) or other similar externally-funded peer-reviewed grants.
3. A good training record with prior PhD students.
4. Resources and space for a PhD-phase MSTP student.

Requirements to be an initial mentor: The above criteria are applied, but approval may be granted as an initial mentor to promising young faculty with strong research track records who are new Assistant Professors and are not yet funded, or to faculty who are already funded but who have not yet trained a PhD student. At the time of approval, initial mentors will be required to identify a senior mentor who is willing in principle serve as a co-mentor for students placed in the initial mentor's lab. These co-mentors will be expected to actively co-mentor students and take significant responsibility for the training outcome of students. At the time of placement of a student in your lab, it will be possible to designate a new MSTP-approved co-mentor if existing co-mentors are not optimal matches for the student and project. The initial mentors will not be publicly identified as a separate set of mentors, but they and the MSTP Steering Committee will know that co-mentors are needed for placement in their labs. When initial mentors achieve the requirements for senior mentor status, they will be considered senior mentors.

Initial mentors may not have more than one MSTP student doing PhD work in their lab without prior application for an exception from the MSTP Steering Committee. This means that after placement of one PhD phase MSTP student, Initial Mentors should not take rotating students until the first student completes the PhD or the mentor's request for an exception to allow a second student is approved.

### How to choose a thesis mentor

Students should do a rotation with a prospective thesis mentor before making a commitment for PhD thesis placement with the mentor. Students should ask prospective rotation mentors whether they expect to have a slot available for a student at the expected start of the student's PhD phase. A firm commitment may not be possible, since MSTP students have 1.5 years to select a laboratory. It may be difficult for mentors to tell a first year student whether a slot will be available when the MSTP student would matriculate into the lab. Therefore, it is crucial that students consult with potential mentors both before they rotate and again at the end of the rotation and within the year prior to initiating PhD thesis research. At the exit interview near the end of each rotation, the student and supervisor 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 may be tentative in character because the MSTP requires

the student to continue with other rotations and the faculty member may want to remain available to supervise other rotating MSTP and BSTP students.

As the rotation process over the first two years continues, the views expressed initially at the exit interview with a potential mentor 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. Ultimately the selection of the thesis research advisor occurs primarily by negotiation between the student and mentor. Therefore, once an MSTP student has a serious interest in a lab, it is crucial that s/he discusses this with the potential PhD mentor. This lab selection must be mutually agreeable, and a commitment must be made for funding, space and resources to support the student. Final placement with a PhD mentor is subject to review by Drs. Dubyak and Harding, and the MSTP Steering Committee. Therefore, students are strongly advised to consult with Dr. Dubyak and other MSTP advisors on a regular basis (before and after rotation).

#### Finalizing placement with a PhD mentor

When a student and mentor have decided to commit to one another, they should seek approval from the MSTP as early as possible. The MSTP will request updated funding, CV and training information from the PI, as well as the specific source(s) of funds that will support the student.

#### Other considerations in selecting a rotation and potential PhD mentor

1. There is a limit of two PhD phase MSTP students in one laboratory at the same time. Three PhD phase MSTP students may be allowed in one lab at the same time if the mentor has an exceptional track record of prior MSTP student training.

Note: Once a lab has 2 MSTP students, the faculty mentor should only take rotating MSTP students if approved by the MSTP Steering Committee for a third student, unless graduation of an existing student is anticipated prior to the PhD phase of the rotating student. Once a lab has 3 MSTP students, the faculty mentor should NOT take rotating MSTP students, unless graduation of an existing student is anticipated prior to the PhD phase of the rotating student.

2. Only one MSTP student may enter a lab per year. In unusual circumstances a lab may accept two MSTP students in a given year, but only if the mentor has an exceptional track record for student training and agrees to forgo acceptance of other students the following year.

#### Timing and entry into the PhD phase

Students should complete 3 rotations and finalize placement with a PhD mentor by fall of year 2. USMLE Step I and all academic requirements of year 1 and year 2 must be completed by the early June in year 2. MSTP students must commence full-time graduate work in the laboratory of the thesis mentor by this date.

## **11. The First Two Years**

MSTP students are registered as graduate students in the first two years. Each semester, students are responsible for completing registration and selection of their elected graduate course or MSTP 400 in time to meet the GRADUATE SCHOOL deadline (a calendar different from the medical school.) The Administrative Director, Kathy Schultz, will assist with registration. The Co-Director, Dr. Dubyak, will assist students in choosing appropriate graduate school courses.

## A. Year 1 Summer

Year 1 Summer Rotation: In the first summer, students are registered for MSTP 400 (0 credits), the research rotation course, and they begin the MD curriculum in early July. Students do a part-time research rotation in the flexible afternoon time. Because the summer is short, and this rotation is part-time, it may provide only a superficial exposure to the laboratory. For this reason, students are encouraged to matriculate early (e.g. in June, with early start of stipend) and begin the research rotation before the start of the MD curriculum. Another option is to continue the first rotation into the fall semester, although this will preclude another experience in that semester. Students may decide to end the first rotation after only a short experience if a graduate course or another laboratory rotation is preferred in the fall semester. **STUDENTS AND MENTORS SHOULD REALIZE THAT THE AMOUNT OF AFTERNOON TIME AVAILABLE DURING BLOCK ONE OF THE MD CURRICULUM (JULY-MID AUGUST) IS LESS THAN FOR OTHER PARTS OF THE CURRICULUM, AND THE FIRST SUMMER TERM IS SHORT (~6 WEEKS). EXPECTATIONS FOR THE SUMMER ROTATION NEED TO BE ADJUSTED ACCORDINGLY. IN MOST CASES AN EARLY START IN JUNE OR CONTINUATION OF THE ROTATION INTO THE FALL WILL BE NECESSARY TO HAVE SUFFICIENT TIME FOR A ROTATION.**

Because the medical and graduate school calendars do not synchronize, the content for IBIS 401, for which students register in the fall semester, includes parts of the MD curriculum in both the summer and fall.

AVOIDING SCHEDULE CONFLICTS FOR MD AND PHD COURSEWORK IN THE FIRST TWO YEARS: The flexible afternoon schedule of the MD program generally allows MSTP students to take graduate school courses without conflicting with the MD curriculum, with the following caveats:

1. Clinical training in the first two years will occupy one afternoon/week. Students will generally be assigned one day of the week for this activity and keep that day assignment throughout the year. An exception is made for MSTP students to solve potential conflicts with graduate school course schedules. If your clinical activity day conflicts with a graduate school course, you may switch to a different day for your clinical activity.
2. Clinical immersion weeks. The penultimate week in each 12-week block in the first two years will be a clinical immersion week. Full time clinical work will be scheduled morning and afternoon for the entire week. MSTP students will be given special permission to leave the clinical activities to attend graduate school courses. Because some of the clinical immersion weeks will occur outside of the graduate school semesters, it is anticipated that clinical immersion weeks will conflict with graduate school classes in only about two weeks per year, so the impact will be minimal.
3. Block 1 has a number of afternoon activities, so the first summer research rotation will have to be planned with flexibility for schedule and expectations.
4. At the end of each block (1-6) in the first two years there will be an assessment session, usually Friday afternoon.

## B. Year 1 Fall and Spring

Fall and spring of Med year 1, MSTP students register for 9 credit hours/semester. See Table 1 in Section 3.

### Fall Semester, Med Year 1:

1. IBIS 401: 4 credits (MD core curriculum blocks 1 and 2)
2. IBIS 411: 2 credits (MD clinical curriculum blocks 1 and 2)
3. A grad course (3 credits) or MSTP 400 Research Rotation (3 credits). Note: If a 4-credit grad course is taken, credit for IBIS 401 will be reduced to 3 credits.

NOTE: Students should plan the sequence of their research rotations to complete at least 3 by fall semester of year 2. Since students who intend to enroll in many of the School of Medicine-based PhD programs may need to take a course in the spring semester, the fall may be a good time for a research rotation. Each student must consider the course schedule for his/her prospective PhD program (or check them for more than one program if undecided), since some graduate programs, especially those based in the Schools of Engineering or Arts and Sciences, may have different schedules. If MSTP 400 is taken, a rotation report must be completed at the end of each rotation.

#### Spring Semester, Med Year 1:

1. IBIS 402: 4 credits (MD core curriculum blocks 1 and 2)
2. IBIS 412: 2 credits (MD clinical curriculum blocks 1 and 2)
3. A grad course (3 credits) or MSTP 400 Research Rotation (3 credits). Note: If a 4-credit grad course is taken, credit for IBIS 402 will be reduced to 3 credits.

NOTE: Students are advised to take a graduate course in their prospective graduate program this semester. Most of the School of Medicine-based PhD programs that participate in the BSTP PhD core curriculum offer a graduate program-specific core course in the spring semester. It may be important to take such a course to progress well in advanced coursework in later semesters. **BE FOREWARNED: IT IS IMPORTANT TO GET THIS OUT OF THE WAY TO KEEP FLEXIBILITY FOR SPRING OF YEAR 2, E.G. TO HAVE THE POSSIBILITY OF JUSTIFYING TAKING ALL 601 CREDITS THAT SEMESTER TO HAVE MORE FLEXIBILITY FOR STUDYING FOR BOARDS.**

### **C. Year 2 Summer**

Students register for MSTP 400 (0 credits) for Research Rotations. Students may spend the entire summer in one lab or may do two shorter rotations. A rotation report must be completed at the end of each rotation.

### **D. Year 2 Fall**

MSTP students register for 9 credit hours.

1. IBIS 403: 4 credits (MD core curriculum blocks 1 and 2)
2. IBIS 413: 2 credits (MD clinical curriculum blocks 1 and 2)
3. A grad course (3 credits) or MSTP 400 Research Rotation (3 credits). Note: If a 4-credit grad course is taken, credit for IBIS 403 will be reduced to 3 credits.

NOTE: Students must choose their PhD lab placement by the end of the fall semester. If the student has not completed three rotations or has not yet chosen a PhD mentor, a research rotation should be done this semester. If MSTP 400 is taken, a rotation report must be completed at the end of each rotation.

### **E. Year 2 Spring: Completion of Med year 2 and Transition to PhD phase**

1. IBIS 404: 0 credits (MD core curriculum completion).
2. IBIS 414: 0 credits (MD clinical curriculum completion).
3. A grad course (3-4 credits).
4. 601 Research in the student's chosen PhD program to complete a 9-credit course load.

5. Complete USMLE Boards part I by one month after the end of the spring graduate school semester (i.e. complete Boards by approximately June 10) and resume full time work in the PhD lab.

## **F. Year 2 Spring: Important notes for curriculum planning**

Students are advised to take a graduate course in their prospective graduate program this semester, especially if they have not already completed the core courses for their PhD program. Most of the School of Medicine-based PhD programs that participate in the BSTP PhD core curriculum offer a graduate program-specific core course in the spring semester. It may be important to take such a course to progress well in advanced coursework in later semesters. If a student has already taken this course in year 1, an advanced requirement or elective should be taken. It may be possible to obtain an exception and take only 601 (9 credits) to provide a more flexible schedule to accommodate studying for board exams, but this will require permission from the PhD advisor and MSTP Co-Director. The student must consult the PhD advisor and the Co-Director in advance to plan this transition.

The MSTP Steering Committee has reviewed proposals for adaptations to the MSTP curriculum to respond to MD curriculum changes. Student input was considered by the committee.

The committee decided that the spring semester MD year 2 schedule for MSTP students should include the following:

- completion of MD classes by ~end of first week of March
- completion of a 3-4 credit grad course in their PhD program (extending Jan-May)
- entrance into the lab with substantial commitment to research immediately after the end of the MD classes in early March

After the spring M2 semester, students should:

- take up to 4 weeks of time excused from lab research to study for and take the board examinations, beginning at the end of the spring semester in early May
- resume full-time commitment to the lab in early June (~June 10).

Rationale: This plan allows enough attention to grad school in spring of M2 semester to keep course progression on track, and it keeps board exams close to completion of M2 as desired by students.

A financial disadvantage to the mentors could be the stipend expense to cover 4 weeks of time off for studying for the boards. To compensate for this, the period of MSTP stipend coverage will be extended from end of March to end of April, at which time stipend coverage will be transferred to the PhD mentor. Mentors are expected to honor the need of MSTP students to take the allotted time off from their lab work for board study.

As decided several years ago, the spring semester will be considered a grad school-oriented semester for course registration. This is advantageous for accumulation of courses and credits towards the PhD degree.

Students will register for the same spring semester courses as in the past several years:

- zero credits IBIS 404 and 414 (end of the MD curriculum)
- zero credits IBMS 500 (Being a Professional Scientist)
- 3 or 4 credit grad course
- 5 or 6 credits 601 in their PhD department, to make a total of 9 credits for the semester

The tuition for the spring year 2 semester, which begins in January, will be borne by the PhD mentor's home department, as in recent years. Therefore, administrative acceptance of MSTP students into the PhD programs and their mentors' home departments will occur effective January, although the stipend will continue to be paid by the MSTP until end of April.

## **G. Grading of IBIS courses**

IBIS courses comprising the MD curriculum are graded in order to provide graded graduate school credits that can count toward the Ph.D., substantially enhancing MSTP student progress toward completion of the Ph.D. Students should focus on learning, not tests, but it is important to define the evaluation system.

For IBIS 401-403, grades will be based on performance on:

1. Summative Synthesis Essay Questions (SSEQS) at the end of each block.
2. NBME Formative Multiple-Choice Question Examinations at the end of each block.
3. Case Inquiry Group (IQ Group) Assessment. Facilitators are required to complete assessments of small group participants during the midpoint and at the end of each of block. Students will be assessed on observable behaviors such as teamwork, preparation, quality of questions and contributions, group dynamics/peer interaction, leadership, professionalism, attendance, etc. The Case Inquiry Group (IQ Group) facilitator assessment for each student's performance during the block will be factored into the judgment of whether or not students "meet criteria" for performance in the block.

For IBIS 401-403 grading, the NBME questions and SSEQS are will be major quantitative determinants. If students do not fully "meet criteria" for the Case Inquiry Group Assessment, this will be factored in.

IBIS 411-413 courses will cover Foundations of Clinical Medicine. Components include Foundations of Clinical Medicine Seminars, Patient Based Programs (Physical Diagnosis and Doctor Patient Communication), RAMP Logs. "Rotating Apprenticeships in Medical Practice" (RAMP), and the Clinical Immersion Week in each block. At regular intervals during the year, preceptors complete clinical evaluations charting students' performance and growing competence in core clinical skills. From the MD curriculum evaluation, students will receive an evaluation of "meets", "meets with targeted areas for improvement" or "does not meet expectation" for each element. Drs. Dubyak and Harding will assign IBIS 411-413 grades based on the MD program evaluation and in consultation with the clinical instructors. Students who meet expectations in all areas will receive an "A".

## **12. The PhD Phase**

### **A. Curricular components of the PhD phase**

Students transition into the PhD phase in spring of year 2. Subsequent semesters are devoted fully to PhD studies with the exception of optional MSTP Clinical Tutorial, which can be taken in any year after the third full year in the MSTP. Students register for courses to fulfill their PhD program requirements. As for all PhD students, MSTP students are required to maintain a "B" average in graduate courses.

All MSTP students are **required** to take a one-week Ethics course (# 25676 IBMS 500 - Being a Professional Scientist - 0 credits) during the spring semester of their 2nd year in the program. Students must register for this course during the regular spring semester registration of their first year in the PhD phase (even though the course does not meet until April-May). This course is designed to fulfill the NIH requirement for all PhD and MSTP training programs and is taught by faculty from the Center of Bioethics at CWRU.

MSTP Clinical Tutorial: During the PhD thesis phase, MSTP students are strongly encouraged to consider taking the optional MSTP Clinical Tutorial (described in a later section of this document). This is especially important for students who matriculated in 2005 or earlier, as their Med year 4 schedule will not allow much time for residency interviews unless credit for the MSTP Clinical Tutorial is used to satisfy part of the Med year 4 clinical elective time.

PhD program requirements: Students should be aware that specific requirements for obtaining the PhD degree (e.g. required coursework, preliminary examination or thesis proposal format) vary between different graduate programs. It is the student's responsibility to become familiar with these requirements. A maximum of 18 credits from the IBIS courses (MD curriculum) may be counted toward the PhD degree.

## B. Graduate Programs

The following programs are affiliated with the MSTP. These programs are degree-granting PhD programs unless otherwise noted. Some are tracks or training programs that are parts of one or more degree-granting program, as noted.

- Biochemistry
- Biology
- Biomedical Engineering
- Cancer Biology Training Program (through the Pathology PhD program)
- Cell Biology
- Chemistry
- Developmental Biology (through Genetics and Neuroscience PhD programs)
- Genetic and Molecular Epidemiology
- Genetics: Molecular, Developmental and Human Genetics
- Immunology Training Program (through the Pathology PhD program)
- Mechanical and Aerospace Engineering
- Microbiology and Molecular Biology
- Molecular Virology
- Neurosciences
- Nutritional Sciences
- Pathology (Molecular and Cellular Basis of Disease)
- Pharmacological Sciences
- Physician Engineer Training Program (PETP, through the BME PhD program)
- Physiology and Biophysics

### **C. PhD Thesis Work and Thesis Committee:**

In spring of year 2, the student will enter a PhD program with which the mentor is affiliated and follow the academic requirements of that program. Some advisors may hold appointments in more than one program. In this instance the student may choose which program to join, in consultation with the thesis advisor.

A thesis committee should be assembled as soon as possible, since it provides an important resource for advising that is critical early in the PhD phase. The thesis committee should contain one of the basic science representatives to the MSTP Steering Committee and one member with an MD degree (a single committee member can serve both roles). The student should inform the MSTP office of the members and chair of the committee. The MSTP Steering Committee member and the chair of the thesis committee will serve as liaisons to the MSTP.

Students are expected to complete the first thesis committee meeting no later than September of year 3 (PhD year 1), i.e. 6 months after entering the lab in March of year 2, even if their PhD program allows a later date for convening of the thesis committee. The main objective should be a review of thesis research plans, project design and student progress. A copy of the thesis committee report must be emailed to [mstp@case.edu](mailto:mstp@case.edu) by September to be available for MSTP Steering Committee review.

Students should pass their qualifying examination and/or thesis proposal within 12 months of entering the PhD phase; a 6-month extension may be granted if progress is otherwise satisfactory.

The student should have a thesis committee meeting at least once every 6 months. A copy of each thesis committee report should be sent by email to the MSTP office for the student's file, so the MSTP is kept informed of the student's progress. For example, the committee chair will often write a report after a committee meeting and should provide a copy of this to the MSTP (the student and the Steering Committee member on the thesis committee should help by suggesting this to the committee chair). The Administrative Director (Kathy Schultz) will track satisfactory completion of thesis committee meetings and will contact the student and Director if a thesis committee meeting is overdue. This is in addition to the monitoring provided by individual graduate programs.

The thesis project should be research-based and not a mere survey or descriptive analysis. We note that MSTP students do have special circumstances, since they must spend 4 years in medical school as part of their program. Given this extended time in the medical school part of the curriculum, the PhD mentor and thesis committee are encouraged to help the student select a project that has a realistic time frame for completion. Nonetheless, the project must have significant goals and meet the requirements for a PhD in the graduate program in which the student is enrolled.

### **D. Expectations for student progress in the PhD phase**

By completion of the PhD phase, students should have 2 or more first-authored primary research publications in peer-reviewed scientific journals. At least one first-authored primary research paper must be accepted for publication before completing the PhD phase.

MSTP students are required to satisfy the publication requirements of their PhD program (1 or 2 significant first-authored research publications in reputable scientific journals as judged by the thesis committee and PhD program). If the graduate program does not specify a publication requirement, the student must publish at least one significant first-authored research publication in a reputable scientific journal. It must be emphasized that this is a minimum requirement that falls below the expectations of the program. Students are expected to strive for higher levels of accomplishment. Most PhD programs require 2 publications, and MSTP students should aim for 3

or more first authored publications (the mean is 3 first authored research publications for MSTP students). Students are urged to organize their research to result in at least one publication a year or more prior to their expected PhD completion, as it is difficult to finish multiple publications on different aspects of a PhD project just prior to the PhD thesis defense.

Mentors and PhD programs that graduate students without meeting publication requirements will be reviewed for potential revocation of their affiliation with the MSTP.

It is important to focus on quality and impact of publications, not just quantity. In general, one high impact paper is more important than two lower impact papers. Publication requirements and timetables should NOT compromise the tackling of ambitious and significant research goals. Evaluation of students will be individualized with consideration of unique aspects of the thesis project, and the Steering Committee will consider the time barriers of well-conceived ambitious projects in formulating expectations for progress so that students will not be penalized for pursuing important and ambitious scientific goals. Students should all seek to tackle scientific problems of substantial significance in their PhD research.

The MSTP Steering Committee will periodically review progress of all students, including those in the PhD phase. Upon review of students, if progress appears inadequate, the Steering Committee will attempt to advise the student to help improve productivity and enhance chances of successfully completing the PhD. If progress is below standard, the Steering Committee may vote to remove a student from the MSTP. Such a decision by the MSTP would not necessarily remove a student from the PhD or MD degree program (standing in the degree programs are determined by the PhD program or the MD program). Students who are dismissed from a graduate program for academic reasons will be removed from the MSTP.

## **E. Timeline for the PhD phase**

Students will be reviewed regularly for progress with the following expectations

1. PhD year 1: Completion of qualifying examination and/or thesis proposal or substantial progress to achieve such completion within the next 6 months.
2. PhD year 2: Qualifying examination and/or thesis proposal must be completed. By the end of the year, coursework should be complete except for 701.
3. PhD year 3: Substantial progress toward PhD dissertation and publication of papers must be evidenced. By the end of year 3, students should have at least one first-authored paper published, submitted or very close to completion for submission.

Students should aim for completion of the PhD in 3-4 years. Most students take 4 years, but a significant number complete this phase in 3 years. A 5<sup>th</sup> year will be allowed, but extension of the PhD phase beyond 5 years should not generally occur and will require approval of the Steering Committee as an exception to the expected timetable. If a student must change his/her PhD mentor in the PhD phase, this should be done as early in the program as possible, generally within the first year of the PhD phase. After completion of the first year of the PhD phase, any change in PhD mentor will require approval by the Steering Committee as a special exception. After completion of PhD year 2 it is usually not possible to switch PhD mentors. The Steering Committee will consider special circumstances, e.g. departure of a mentor, and will make exceptions when appropriate.

## **F. Completion of the PhD phase**

All PhD requirements, including the thesis dissertation defense and publication requirement, must be completed before starting Med year 3. The thesis defense must be scheduled with Graduate Studies well in advance to meet their requirements. Students should

check the School of Graduate Studies calendar (<http://www.case.edu/provost/gradstudies/calendar.html#>) for relevant deadlines.

IMPORTANT: If a student defends early enough to potentially have the PhD degree conferred in May, the student should delay submission of PhD materials until a date (e.g. in May) that will result in conferral of the PhD degree in August, allowing continued status of the student as a graduate student until June 30. If a student does have the PhD degree conferred on the May graduation date, the student will not be able to maintain status as a graduate student in June, which may make payment of the student stipend impossible. Similarly, if a student will return in November, submission of PhD materials should be delayed sufficiently to maintain graduate student status in the fall semester.

The PhD mentor is responsible for the student stipend until the start of the clinical curriculum. Students should remain active in the laboratory until the end of this period, except for the normal amount of vacation allotted for each year.

A note on new policy for registration in the semester in which the degree will be conferred (CAUTION, this means you meet the deadlines for actual award of the degree and commencement ceremony for that semester, not just that you completed your defense and requirements for the degree in that semester). MSTP students who will have their PhDs conferred in the Summer semester do not have to register for graduate credit in the Summer if they return to medical school in July. MSTP students who will have their PhDs conferred in January do not have to register for graduate credit in the Fall if they return to medical school in November. MSTP students who will have their PhDs conferred in May do not have to register for graduate credit in the Spring if they return to medical school in March.

### **13. Important issues concerning training grant support or NRSA award support for MSTP students in the PhD phase**

There is a five-year limit for NIH pre-doc funding from T32 training grants or NRSA fellowships (a 6<sup>th</sup> year can be granted to MSTP students upon application to the NIH prior to the 6<sup>th</sup> year). We need to support students for Med year 3 and 4 (as well as Med year 1 and 2) from the MSTP T32 grant in most cases. Therefore, T32 support during the PhD phase must be limited to no more than two years, and the MSTP office must be notified of the exact period of such T32 support (so we will know if application for a 6<sup>th</sup> year extension is necessary). Failure to follow these rules will threaten our ability to support a student in Med years 3 and 4.

Students are encouraged to apply for an individual NRSA F30 PhD or MD/PhD fellowship award, which will provide additional support for their PhD phase, as well as the prestige of obtaining this award. Since an NRSA award also counts toward the 6-year maximum NIH training support, students may be limited to 2-3 years of support by this mechanism. ALL STUDENTS APPLYING FOR INDIVIDUAL NIH AWARDS (E.G. F30) MUST NOTIFY THE MSTP DIRECTOR PRIOR TO APPLICATION TO ESTABLISH A PLAN. IN GENERAL, GRANT APPLICATIONS SHOULD ASK FOR THE MAXIMUM PERIOD OF SUPPORT, BUT AS TRAINING PROGRESSES STUDENTS WILL NEED TO CONFIRM THAT ALTERNATIVE NON-NIH FUNDING WILL BE AVAILABLE IF THEY EXCEED TWO YEARS OF NIH TRAINING SUPPORT IN THE PHD PHASE (this does not count support on a research grant such as an R01).

SOME NIH INSTITUTES PROVIDE F30 AWARDS THAT CAN FUND MD/PhD TRAINING (I.E. MED YEAR 3 AND 4) AS WELL AS PHD TRAINING; IN THIS CIRCUMSTANCE THE MAXIMUM PERIOD OF SUPPORT SHOULD BE REQUESTED TO ALLOW SUPPORT OF MD AS WELL AS PHD TRAINING. If the NRSA award will fund part of the MD phase (e.g. Med year 3) as well as the PhD phase, it will usually be possible for the Director to find non-NIH funds to support Med year 4, allowing up to three years of support for the PhD phase.

In summary, applications for NRSA awards are strongly encouraged, but mentors and students must contact the MSTP Director before applying for an NRSA award to develop a plan that will not threaten funding for the student's support for Med years 3 and 4. NRSA applications should request the maximum period of funding, including funding for the MD phase if possible, but ongoing discussion with the Director after receipt of the grant is necessary to insure that all years of the award can be used.

## 14. MSTP Clinical Tutorial

Note: Forms for the MSTP Clinical Tutorial are included in an appendix.

The MSTP Clinical Tutorial is a longitudinal pre-clinical experience for MSTP students in the PhD phase. It is usually taken in the second and/or third years of the PhD phase and is to take only 2-3 hours per week.

The Tutorial is designed to meet unique needs of MSTP students and addresses two distinct goals. First, the Tutorial enhances clinical skills to promote successful entrance into Med year 3. The second goal, perhaps most unique to this course, is to provide a longitudinal opportunity to go back and forth between the research and clinical worlds to explore connections between basic biomedical research and clinical problems. This career development experience may clarify which clinical field meshes best with a student's scientific interests. Thus, the Tutorial may ease the choice of and transition into clinical residency as well as the entrance into Med year 3. While participation in the MSTP Clinical Tutorial is not mandatory, it is strongly encouraged.

The MSTP Clinical Tutorial also qualifies for clinical elective credit toward Med year 4. This is of particular help to students who start Med year 3 in November, especially for students who matriculated in 2005 or earlier (if these students start Med year 3 in November they will need Clinical Tutorial credit to place out of some Med year 4 coursework to allow timing flexibility for residency interviews).

The MSTP Clinical Tutorial can be tailored to the individual student's interests. Many students choose a general clinical experience, e.g. an internal medicine service, but others choose to work in a specialized clinical field related to their research interest. For example, a BME student doing research on imaging has worked with a radiology team, a student interested in shock and related pharmacology has worked in an ICU and a student with cardiovascular interests has worked with a cardiologist. This flexibility provides a unique chance to do related clinical and research work simultaneously, providing a glimpse of future possibilities for students who want to combine these activities later in their careers.

The Coordinator of the MSTP Clinical Tutorial will help arrange clinical placements for students, but students should realize that specialized clinical placement requests may be difficult for the Coordinator of the Tutorial to arrange. Therefore, students with specialized clinical desires are encouraged to help with the placement process by first contacting the Tutorial Coordinator, then helping to seek out potential clinical mentors themselves with advice from the Coordinator and other advisors, and then arranging final placement with the Tutorial Coordinator (see detailed instructions below).

If a student is not making appropriate and desirable rate of progress toward completion of the PhD degree, the MSTP Steering Committee will recommend and may require that the student defer participation in the MSTP Clinical Tutorial. Mentors should communicate such reservations to the MSTP Director or Steering Committee. Otherwise, PhD mentors are expected to accommodate participation of their MSTP students in the MSTP Clinical Tutorial.

Issues about Med year 4 clinical elective credit for the MSTP Clinical Tutorial

Students are expected to spend 60-90 hours in a year to obtain 2 weeks clinical elective credit. This translates to 2-3 hours per week in clinic over two semesters each of approximately 15 weeks duration in one academic year. Thus, the Tutorial occurs during the academic year, and the student does not need to spend a full 12 months on the Tutorial in a given year. It is important to realize that there must be a balance between the Tutorial and the compelling need to concentrate primarily on PhD thesis research. Accordingly, students should not substantially exceed the recommended time commitment to the MSTP Clinical Tutorial, and it is not possible to get more than 2 weeks clinical elective credit for the Tutorial in a single academic year. Since the program is organized around the academic year, most students start the Tutorial in early fall, and the MSTP Clinical Tutorial Coordinator will usually hold an organizational meeting near that time. Under some circumstances, it may be possible for a student to shift the timing (start early or late to finish early or late), but this should be discussed ahead of time with the MSTP Director as well as the Coordinator of the MSTP Clinical Tutorial. In summary, one academic year of participation in the MSTP Clinical Tutorial provides credit for 2 weeks of Med year 4 clinical elective.

### **Goals of the Clinical Tutorial**

1. Maintain and develop proficiency in interviewing and physical examination skills.
2. Explore the intermingling of research and clinical activities as dual parts of a medical scientist career.
3. Develop a comfortable and helpful clinical persona for interacting with patients and other members of the health care team.
4. Maintain perspective on and develop a stronger appreciation for the clinical setting and continuity of care.

### **Guidelines And Expectations For Clinical Tutorials**

1. The tutorial placement is for a full academic year. Less than one year of tutorial is not encouraged.
2. The primary responsibility of students in the research years is completion of the PhD thesis. Therefore, a good time to begin the clinical tutorial is in the second year of research. This allows the student to become comfortable in the laboratory during the first year, and also allows sufficient time to complete 1-2 years of tutorial before the thesis defense.
3. It is expected that students will not be required to learn procedures or to study in detail the diseases they may encounter in the clinic. However, these may be acceptable activities if discussed beforehand by the student and the mentor.
4. Students should spend no more than 2-3 hours per week in clinical tutorial participation, and schedules should be flexible enough to accommodate commitments that may arise around students' research (including classes, seminars, thesis committee meetings, etc.).
5. A student should be punctual in arriving at the designated starting time, and should inform their mentor well in advance if they must miss a clinic session. A maximum of three scheduled clinic sessions per semester are considered excusable absences. Otherwise an explanation must be provided on the tutorial evaluation form, even when the mentor cancels sessions.
6. An evaluation form (see Appendix) must be completed by the pre-clinical mentor and returned to the MSTP office (T401, 368-3404) for successful completion of a clinical tutorial. One evaluation at the conclusion of each tutorial is sufficient. PLEASE RETURN THE EVALUATION PROMPTLY, AS IT IS NECESSARY FOR THE STUDENT TO RECEIVE ELECTIVE CREDIT FOR THE TUTORIAL.

7. Students must complete an exit survey (see Appendix) and return it to the MSTP office at the conclusion of each tutorial. **THIS EXIT SURVEY IS NECESSARY FOR RECEIVING ELECTIVE CREDIT.**
8. Students and mentors will review these guidelines and the evaluation form together, sign the bottom of this form to signify acceptance of these guidelines, and return a copy to the MSTP office **BEFORE** beginning a tutorial. **THIS MUST BE DONE TO RECEIVE ELECTIVE CREDIT.**

### **Selection of a Clinical Mentor**

The key to a successful clinical tutorial is selecting a mentor who has enthusiasm for clinical teaching, an appropriate environment (e.g., clinic or office practice), and sufficient time. Dr. Debra Leizman ([dxl42@cwru.edu](mailto:dxl42@cwru.edu)), MSTP Clinical Tutorial Coordinator, can assist in finding a mentor. Students may suggest a possible mentor for approval or ask the tutorial coordinator for assistance in identifying a clinical mentor. As noted above, if a student has a very specialized request regarding his/her clinical placement, he/she should assist the Tutorial Coordinator in identifying an appropriate clinical mentor.

### **Summary: How to do a clinical tutorial--“7 easy steps”**

1. If you wish to do a tutorial, start planning during your first year in the lab, so that you may formally participate in the tutorial during your second and/or third year in the lab. Inform the MSTP office of your intent to do a Clinical Tutorial.
2. Contact the MSTP Clinical Tutorial Coordinator to choose a mentor. Alternatively, find a mentor who would be willing to do a tutorial with you, and then contact the Coordinator to inform her of your arrangement. The Coordinator may hold an organizational meeting in early fall.
3. Obtain a clinical tutorial packet from the MSTP office. In this packet, you will find three (3) documents: “Guidelines For Pre-clinical Mentors And Students,” “Evaluation Form,” and “Exit Survey.” Versions of these documents are included in the Appendix, but students should check with the MSTP Office for the most recent version.
4. Review the Guidelines with your pre-clinical mentor, and have them sign the bottom of the second page. Sign it yourself, and return it to the MSTP office. **YOU MUST RETURN THE SIGNED GUIDELINES BEFORE BEGINNING A TUTORIAL TO RECEIVE ELECTIVE CREDIT!**
5. Once you complete a tutorial, you should arrange to have a closure session with your mentor. At that time, give the mentor an evaluation sheet and ask him/her to return it to the MSTP office in the enclosed envelope. (You may deliver the evaluation yourself in the sealed envelope).
6. Complete the exit survey and return it to the MSTP office.
7. **STUDENTS NOT RETURNING AN EVALUATION FORM AND EXIT SURVEY WILL NOT BE ELIGIBLE FOR ELECTIVE CREDIT.**

If you wish to do more than one year of tutorial, you must register again for the tutorial. You should return separate guidelines, evaluation and exit survey for each year of tutorial. If you are doing the second year with the same mentor, you still must submit an evaluation or exit survey for each year of tutorial.

MSTP Clinical Refresher Course

In addition to the MSTP Clinical Tutorial, an MSTP Clinical Refresher Course will be offered if there is sufficient student demand. This course will benefit students who did not take the MSTP Clinical Tutorial or who took the Tutorial in previous years but desire additional clinical refresher training. The MSTP Clinical Refresher Course will not address the full range of career development goals included in the MSTP Clinical Tutorial, but it will serve as a timely means to enhance clinical skills for the start of Med year 3. This course includes part-time clinical exercises in the spring semester. The MSTP Clinical Refresher course does not qualify for clinical elective credit (i.e. it is a non-credit course).

## 15. Med years 3 and 4

MSTP students must complete ALL requirements for their PhD degree, including the thesis defense and publication requirement, PRIOR to starting the Med year 3 curriculum. During Med years 3 and 4, MSTP students are responsible for the same academic requirements as regular medical students.

### A. When do MSTP students start the Med year 3 curriculum?

With the new Case MD curriculum, students may start the core components of Med year 3 at the beginning of any of the 4-month Core Blocks (July, November, March). A July start will allow ample time for electives and travel for residency interviews in Med year 4, but all requirements can still be completed with a November start. Students who start in July or November will complete their studies in time for May graduation of the second calendar year after the start of Med year 3. If a student chooses to start Med year 3 in March, this will result in early completion of the MD/PhD, and support from the MSTP will be ended approximately 4-5 months before the usual May graduation date (student status will end then, as will health insurance coverage unless the student makes his/her own arrangements for insurance).

Students may also start clinical rotations on a date in between the start dates for the Med year 3 core curriculum blocks. In this case, the student may take clinical electives that do not require completion of the clinical core curriculum as a prerequisite (the options for this are limited to a list of electives available from the Registrar, Joe Corrao). In addition, a "Bridge Week" clinical experience is offered in the week prior to the start of each Core Block. Students should consult the medical school registrar, Joe Corrao, as soon as possible to arrange these options. These features further expand the flexibility of timing for start of clinical training after completion of the Ph.D. thesis.

In the following text, Dr. Terry Wolpaw has clarified the clinical curriculum requirements for MSTP students who will start Med year 3 in November. For students who matriculated in 2005 or earlier, the Med year 4 schedule will be very tight with a November start for Med year 3, unless MSTP Clinical Tutorial was taken to provide additional clinical elective credit for Med year 4. Please note that minimum clinical rotation requirements (72 weeks) MUST be met for graduation. The scheme below assumes the worst-case scenario for amount of clinical credit prior to start of Med year 3 in November (i.e. none). Students matriculating in 2006 and later will have two extra weeks of clinical credit from Med year 2 (longitudinal clinical preceptorship). MSTP Clinical Tutorial provides 2 weeks of clinical credit per year it is taken. Please note that the schedule below leaves very little time for residency interviewing. **ALL STUDENTS ARE STRONGLY ENCOURAGED TO DO AT LEAST ONE YEAR OF MSTP CLINICAL TUTORIAL to make clinical curriculum arrangements easier. IF THIS IS NOT POSSIBLE, STUDENTS ARE URGED TO TAKE A CLINICAL ELECTIVE PRIOR TO STARTING THE MED YEAR 3 CORE CURRICULUM IN NOVEMBER.**

## MSTP Clinical Program

## Example: Return to Clinical Rotations in November, 2007

Mock schedule below, using two assumptions: 1) no longitudinal preceptorship was done in year two (this will be implemented for students entering med school in 2006); 2) no MSTP clinical tutorial was done (doing one or two years of tutorial would reap 2 or 4 weeks of clinical elective credit and add flexibility to the mock schedule).

The mock student must have 72 weeks of clinical rotations.

## MOCK SCHEDULE

10/29/07 – 11/2/07	Bridge/orientation	0 clinical weeks
11/05/07 – 3/07/08	Basic Core I	16
	(2 week December vacation)	
03/10/08 - 03/21/08	clinical elective	2
03/29/08 – 07/11/08	Basic Core II	16
07/14/08 – 10/31/08	Advanced Core	16
	(can be taken non-sequentially)	
11/03/08 – 11/28/08	AI	4
12/01/08 – 12/12/08	clinical elective	2
	(2 week December vacation)	
12-15 – 12/19 & 1/5 – 1/9/09	clinical elective	2
01/12/09 – 01/23/09	interview-vacation	
01/26/09 – 02/6/09	clinical elective	2
02/09/09 – 03/06/09	AI	4
03/09/09 – 04/03/09	clinical elective	4
04/06/09 – 05/01/09	clinical elective	4
05/14/09 – 05/15/09	off	
05/17/09	commencement	
TOTAL clinical weeks of study		72

**Comments and issues concerning the different dates for start of Med year 3**

Students often have questions about the relative advantages and disadvantages of starting Med year 3 at different times. July 1 is the “traditional” return date. November is the next most common choice. No students have yet returned in March (see caveats mentioned earlier in this section; students usually spend extra time on their research and start in July, but this date is available).

The following text provides some thoughts about concerns that students have expressed about starting as late as November.

1. Concern: “Students who start in November will be more behind their straight MD classmates if they start in November.” This is only partly true, since all of the straight MD students will take a research block sometime within the first three blocks (see diagram, below). Thus, despite the fact that the clinical curriculum will have been running for 8 months for a given class by November, no student doing a clinical block starting in November will have more than four months clinical experience. At the July start, half of the straight MD students in clinical cores will have 4 months experience, and 4 will have none. Furthermore, MSTP students can mitigate this issue by participating in clinical activities prior to the start of the clinical core blocks, including MSTP Clinical

Tutorial, CPCP, MSTP Clinical Refresher course, Clinical Bridge in the week prior to the clinical core block, or clinical electives that can be taken prior to the clinical core blocks (see above).

2. Concern: “Students who start in November won’t have enough time for vacation to go on interview trips for residencies. This is an issue, but it can be overcome by taking MSTP Clinical Tutorial during the PhD phase or clinical electives prior to the first core block. This is less of an issue for students who matriculated in 2006 or later, due to increased credit for clinical activities in Med years 1 and 2 in the new curriculum (see above).

3. Concern: “Students who start in November won’t have enough time for an Acting Internships (AI) before residency applications are due.” There is an issue here, but it can usually be defused by the flexibility allowed by the Advanced Core block in Med year 3. Students can schedule an AI during their third clinical block. Thus, November return would allow a student to complete a 4-week AI in August, and even potentially a second AI in September, prior to the time when materials for most residencies are due (mid-late October). Note that Ophthalmology, Pediatric Neurology and Neurosurgery have deadlines that are significantly earlier than other residencies, which could complicate this schedule for some students (please consult Joe Corrao).

The following diagram illustrates the scheme for Med year 3 curriculum blocks. The research blocks do not apply to MSTP students.

Research  16 weeks (March-July)	Basic Core 1 or 2  16 weeks	Basic Core 1 or 2  16 weeks	Advance Core  16 weeks Flexible scheduling
Basic Core 1 or 2  16 weeks	Research  16 weeks (July-November)	Basic Core 1 or 2  16 weeks	Advance Core  16 weeks Flexible scheduling
Basic Core 1 or 2  16 weeks	Basic Core 1 or 2  16 weeks	Research  16 weeks (November-March)	Advance Core  16 weeks Flexible scheduling

### B. How to schedule Med year 3

Medical School Communications: The student must check to make sure that the medical school advisors and registrar have the student’s correct current address and contact information (including email address).

You should contact the Medical School Registrar, Mr. Joe Corrao, by January if you expect to finish your PhD by summer or fall. He will inform you of the schedule and procedures for choosing the order and hospital location of your clinical rotations.

## 16. Career Planning and Residency Applications

### A. Advising for career planning and residency application

All MD students, including MSTP students, are assigned to one of four Societies headed by a Society Dean, who will provide advising for medical school, career planning and residency application. The Society Dean will become familiar with the record of all students in their Society and will be in a good position to advise students on many aspects of career planning, including the best strategies to use in applying to residencies and who to consult for more information on residencies in specific fields. Students should contact their Society Dean with any questions about planning for residency applications or other career planning decisions.

It should be recognized that the Society Deans are mostly involved in advising of MD students and may not emphasize the particular aspects of research-oriented residency training that are desired by most MSTP students. For this reason, the MSTP provides additional advising resources. Drs. Bearer, Leizman, Armitage and Harding are additional sources of advice on these topics for MSTP students. In addition, each spring the MSTP hosts a reception for graduating students, and these students are assembled into a panel to discuss their experiences and knowledge concerning residency application from the MSTP viewpoint. All students are encouraged to attend.

### B. Letters of Recommendation

1. The student's Society Dean will write a Dean's letter for use in application to residency programs. Students meet with their Society Dean to review and revise this letter. **STUDENTS SHOULD TAKE THIS TASK SERIOUSLY AND SPEND SIGNIFICANT EFFORT TO WORK WITH THE SOCIETY DEAN TO REVISE AND IMPROVE THE LETTER. THE SOCIETY DEAN MUST COMPOSE A TRUTHFUL ACCOUNT OF THE STUDENT'S ACCOMPLISHMENTS, BUT THE STUDENT IS ALLOWED CONSIDERABLE OPPORTUNITY TO INFLUENCE THE COMPOSITION OF THE LETTER. ESPECIALLY SINCE THE LETTERS FOR MSTP STUDENTS INCLUDE CONTENT THAT GOES BEYOND THAT OF THE TYPICAL MD STUDENT, IT IS IMPORTANT FOR STUDENTS TO ACTIVELY REVIEW THE DEAN'S LETTER AND SUGGEST REVISIONS. MORE THAN ONE MEETING WITH THE SOCIETY DEAN MAY BE NEEDED.**
2. The MSTP Director will write a MSTP letter of support to the Society Dean. This document will provide information on the student's MSTP progress up to completion of the PhD phase and will be used by the Society Dean as a source of information to be incorporated into the Society Dean's letter. The MSTP letter of support will not constitute a separate letter of recommendation, will not be mailed to any other institution, and therefore will not limit the student's number of other recommendations from faculty. It will be filed with the Medical School Registrar for documentation for future licensure of MSTP students and also will be accessible for review by students. **TO ENABLE PRODUCTION OF THIS LETTER, STUDENTS SHOULD SUBMIT ITEMS 2-5 FROM SECTION D (BELOW) TO THE MSTP OFFICE IN AUGUST.**
3. The student will need to obtain several letters of recommendation from faculty members. Suggestions for this process are indicated below.
4. Upon request, the MSTP Director or Co-Director may provide a letter of recommendation for a student. This letter will be different from the MSTP letter of support, as it will be written as a separate letter and will count as one of the student's letters of recommendation. If you will ask for a letter from an MSTP Director or Co-Director, you should contact this person at the beginning of Med year 4 (summer) to discuss your residency application plans and the need for a recommendation letter.

### **C. Letters of recommendation from faculty**

Students will need several letters of recommendation for residency application. The choice of who to ask for these letters is personal, and each student will need to make his/her own choices.

The exact requirements for letters of recommendation vary with the type of residency, and each student will need to determine the number and types of recommendations to obtain. Many residencies restrict the number of letters to three (or sometimes four) in addition to the Dean's letter. Others will accept more letters.

Students will provide their faculty letter writers with a completed ERAS Request for Letter of Recommendation/ Cover Sheet, and writers will submit letters to Mr. Corrao, Medical School Registrar. Most students waive the right to see their letters. Students will need to designate the letters to be sent to each residency to which you apply (you can send different letters to different residencies).

Here are some suggestions for choosing the faculty for letters of recommendation:

1. Most students will want two or more strong letters from clinical rotations, preferably 1-2 from the field of proposed residency. When selecting clinical mentors to write your letter, it is best to choose a mentor who gave you a very good evaluation and can be expected to write a strong letter for you. Make sure that the mentor knows you well enough; you can ask him/her if you are unsure.
2. MSTP students often request a letter from their PhD thesis advisor.

### **D. Materials to provide to the faculty person who will write your letter**

Each letter writer may have specific requests for information, but the following are recommended items to provide to those who will write letters:

1. CV including the following information:
  - A. All degrees awarded and universities that awarded them.
  - B. All awards or honors, including baccalaureate distinctions (cum laude, magna cum laude, summa cum laude, CWRU events (e.g. Lepow Medical Student Research Day, Graduate Student Research Day), awards at national or regional scientific meetings, etc. List any fellowships or grants, etc. Give dates and make clear which awards were earned during your time as an MSTP student.
  - C. Thesis title, thesis advisor(s) and field (graduate program) in which you received your PhD, as well as the home department if different from the PhD program name.
  - D. ALL publications (including any from prior to your matriculation in the program).
  - E. Include a separate list of abstracts and meeting presentations after the Publications (include journal citations for any published abstracts).
  - F. Other honors or distinctions? List them.
2. Personal statement that indicates what type of program you are applying to and why you chose that field (indicate research connections). Provide a description of your clinical and scientific interests, and your career goals.
3. Research summary (1-3 pages) and the title of your thesis.
4. Send the following e-mail, or something similar of your own wording, to the Medical School Registrar, Joseph Corrao ([joseph.corrao@case.edu](mailto:joseph.corrao@case.edu) , cc [kathryn.schultz@case.edu](mailto:kathryn.schultz@case.edu) ): I am e-mailing to give you my permission to release my medical school transcripts to the MSTP

Director, Co-Director or Administrative Director. These people may have access to my transcript and other academic records.

### **E. Other hints for residency application and interviewing**

Write your residency application to separate yourself from the crowd. Emphasize your research and academic accomplishments and goals. Since some materials may not fit in the ERAS application, mail any research summaries or other materials you want considered with your application directly to the residencies. Do this before visiting programs.

Bring materials with you to your interviews. The short version of your research summary will suffice for most interviews, since the interviewer will probably not be in your exact scientific field. However, you should bring the long version of your research summary, and perhaps other materials (e.g. reprints, etc) with you on interview trips. If you happen to meet someone who will appreciate the details, you can give him/her a copy of these materials.

### **F. The residency application process**

The Society Deans and Mr. Corrao schedule several meetings during Med year 3 to describe the residency application process and help prepare students for this process. You will want to plan your Med year 4 schedule with your residency plans in mind (this may dictate the selection and timing of acting internships or other rotations in fields of interest). Most students find it best to schedule an acting internship for sometime in July, August, or September of Med year 4. All medical students (including MSTP students) should meet with their Society Dean late in Med year 3 (preferred) or early in Med year 4 to discuss residency plans and their Dean's letter.

Most students also make appointments early in Med year 4 to meet with the chair of the department in the field they will enter for residency. The chair can give an evaluation of strong residency programs. If the student knows him/her well enough, he/she may also provide a letter of recommendation.

Older students are often the most helpful source of information in planning the residency application process. The MSTP has recently started a tradition of having a luncheon panel featuring graduating students who field questions from their junior colleagues about strategies and planning for the clinical year, residency applications and career planning. MSTP students should also consider contacting other fourth year medical students or former students who are already in a residency program in their area of interest. A list of recent graduates and their residency placements can be obtained at the MSTP office.

## **17. Case MSTP Support and Benefits**

The Case MSTP provides the following benefits.

1. Full tuition support for both MD and PhD training.
2. Stipend (currently \$23,500/year).
3. A laptop computer. The MSTP will subsidize purchase one laptop computer for you while you are in the program, subject to certain price limitations. In general, the program will support purchase of the least expensive of the computers recommended by the School of Medicine Department of Administrative Computing, but students may combine MSTP support with funds of their own to purchase a more expensive computer. See Appendix G for policy on computers.
4. Scientific Meetings: The program strongly encourages students to present their research at national or international meetings. MSTP travel support policy is to

provide up to \$300 per fiscal year for meeting expenses (including travel expenses) to MSTP students who submit an abstract and make a research presentation (talk or poster) to present work done in the CWRU MSTP at an appropriate national or international scientific meeting. The fiscal year is defined as July 1-June 30. The student and his/her mentor have the responsibility for support of expenses in excess of these limits. This support from the MSTP is primarily to be used by students in the PhD phase, but support can sometimes be provided for students in other phases (depending on budgetary considerations). To obtain MSTP support, the student should contact the Program Director in advance by sending an email requesting support and providing the following information: the name of the meeting, dates of the meeting and whether or not the student will be making a research presentation (attach title of presentation and abstract).

5. National MD/PhD Student Meeting: Each year, one or two students are offered the opportunity to attend the National MD/PhD Student Meeting (in Colorado) and the American Physician Scientists Association meeting (in Chicago) with travel expenses paid by the MSTP.

## **18. MSTP Activities**

The Case MSTP is a vibrant program with numerous rewarding program activities. The Summer and Winter Retreats are required of all MSTP students. Others activities are optional, but students are strongly encouraged to participate in MSTP Council and MSTP programmatic events. Such participation provides significant opportunity for professional development and recognition.

### **A. Summer Retreat**

All students must attend the annual MSTP Summer Retreat (for students in Med years 3 and 4, attendance is encouraged but optional). This retreat is a two-day event focusing on professional development and program planning for the upcoming academic year. The retreat features include:

1. Scientific presentations by faculty (a featured outside keynote speaker and Case faculty).
2. Scientific presentations by students.
3. Workshops that enhance professional skills (e.g. grant writing, preparation of scientific manuscripts, developing presentation skills) or educate students in common technical approaches (proteomics, microarray gene expression analysis, generation and use of transgenic mice, etc).
4. Discussion of Case MSTP programmatic issues and planning of MSTP events in the coming year. This includes discussion of the organization and activities of MSTP Council.
5. Orientation for new students.
6. Recreation and Conviviality.

### **B. Winter Retreat**

This is a one-day event scheduled in January or February. All students in the first two years and PhD phase are required to attend. Students in Med years 3 and 4 are encouraged to attend. Mentors and Steering Committee members also attend. Students in their research years present their thesis work (completed or in progress) by oral or poster presentation.

## C. Research Symposia

MSTP students are encouraged to present their research at two annual CWRU student-sponsored symposia. The Annual Graduate Student Symposium is organized by students of the biomedical graduate programs and features poster or oral presentations by PhD students, including MSTP students. The Lepow Medical Student Research Day is held each spring for medical students and MSTPs to present their research. Both meetings are open to attendance by all students and faculty in the School of Medicine. These symposia feature a nationally recognized keynote speaker, and students have the opportunity to interact extensively with the noted scientist. Prizes are awarded by a faculty committee for outstanding student presentations. The prizes provide both monetary motivation and an honor that can be cited on a student's CV and residency recommendation letter, so MSTP students are urged to participate in these events. Students in their first two years of the MSTP program are encouraged to attend, since these venues provide an excellent opportunity for students to explore the diversity of our training environment and observe the work that is ongoing in the labs of different MSTP mentors.

## D. MSTP Student Council

MSTP Student Council coordinates many activities of the Case MSTP. The Council meets once each month to discuss activities that are run by different student committees. The overall goals of the MSTP Student Council are to identify objectives for the program, to allow students to initiate programs to enhance the MSTP, to encourage increased student involvement in the operation of the MSTP, and to enhance development of leadership skills of MSTP students. The president, vice president and secretary are all elected for a one-year period. Committees are led by 1-3 committee chairs who take charge of committee activities and coordinate the involvement of other students in the committee activities. All students are welcome and encouraged to participate in the various committees and to attend the student council meetings. The MSTP Council Charter is attached as an Appendix.

Recent Council committees have included the following:

1. Monthly Dinner Meeting Committee. This committee is responsible for planning monthly dinner meetings, selecting topics, speakers, and menus. The series is organized by students and is attended by students, Steering Committee members and research mentors. Invited speakers (students, faculty, alumni and outside speakers) address issues pertinent to research, professional issues, career development or other topics of interest. The informal environment at these gatherings promotes social and professional interactions.
2. Agre Society. The Agre Society at Case Western Reserve University serves to advance understanding of biomedical research by clinical residents, fellows and MSTP students. The society's activities involve residents and fellows from clinical training programs at Case-affiliated hospitals (Internal Medicine, Pediatrics, Surgery, Pathology, and Genetics), MSTP students in all phases of the program and associated faculty. The main focus of the Agre Society is a series of informal monthly dinner meetings. The design of the Agre Society promotes interactions between MSTP students, residents and fellows with interests in biomedical research, allowing these groups to enrich each other with their different experiences and viewpoints. The program helps clinical residents and fellows to learn about research and identify potential mentors within the wider Case research community. It also helps MSTP students to understand the clinical context of their research and enables them to form contacts with people at more advanced stages of training.

The society is named for Peter Agre, MD, a medicine resident in the University Hospitals of Cleveland/VA program in the mid 1970's who won the Nobel Prize in Chemistry in 2003 for the discovery of aquaporins. The Agre Society is sponsored by the Case/UHC Department

of Medicine and is run jointly by the Department of Medicine and MSTP Council. For more information, contact the MSTP office ([mstp@cwru.edu](mailto:mstp@cwru.edu)) or R. Tyler Miller, MD, Department of Medicine.

3. Communications/Newsletter Committee. This committee is responsible for publishing the biannual newsletter.
4. Web Page Committee. This committee is responsible for generating content for the Case MSTP website.
5. Summer Retreat Committee. This committee plans the summer retreat.
6. Intro to MSTP: This committee is in place to help first year MSTP students adjust to the program and CWRU.
7. Physician-Scientist Visiting Lecturer: This committee is in charge of planning the visit of a prominent physician/scientist who will come to give a seminar and visit in depth with MSTP students in small groups to discuss the intersection of science and medicine and career development issues for physician scientists.
8. Community Service Committee: Plans events for involvement of MSTP students in community service.
9. Social Committee: This important committee plans fun events throughout the year!
10. Student Representative to Faculty Council: One student is selected to represent the MSTP on Faculty Council.
11. MSTP Women's Committee: Women in the MSTP organize luncheons or other meetings to discuss issues that face women pursuing careers in science. Students may invite a successful woman scientist who provides a role model as a physician scientist.
12. Other committees may be formed at the discretion of Council.

### **E. MSTP Women's Group**

The MSTP Women's Group provides support for women's issues in the MSTP. Dr. Cynthia Bearer, M.D., Ph.D., Co-Director, will work with women in the program to coordinate activities with women who are students, alumni or MD/PhD faculty to enhance career development and support. These activities may be coordinated through MSTP Council or as independent activities.

### **F. Other Activities**

A winter holiday reception and summer picnic are held each year as social gatherings for all MSTP students, faculty and staff members (spouses and children are invited). We also hold a spring lunch for discussion of the residency application process, which is led by graduating MSTP students.

## Appendix A: Evaluation of Rotations

To: MSTP Students  
From: George R. Dubyak, Co-Director, MSTP  
Re: Evaluation of Rotations

Attached is a "Rotation Evaluation Form" that is to be used in evaluating your research rotations. This is very similar to a form used in evaluating the BSTP student rotations, so most rotation mentors are probably familiar with the procedure. We have implemented a formal review process so that both the students and MSTP directors and Steering Committee have better feedback about how MSTP students are performing in the research component during the first two years of medical school. Also, this will enable us to better advise you in making your PhD mentor selections.

A typical MSTP rotation should be equivalent to a 4-6 week full time summer rotation. Of course, during the academic year this would be spread out over a longer period of time. After you have rotated in a laboratory it is expected that you will (1) give an oral lab presentation of your project; (2) write up a short report of your rotation (2-3 pages double spaced including an abstract/summary, which is needed for the MSTP NIH training grant). The report should be submitted with the evaluation form to the rotation mentor at or near the end of the rotation. The mentor will review the report and fill out the attached form. Then you should have an "exit" interview with the mentor to discuss the rotation, going over the evaluation and report. The interview is meant to be constructive and to give useful feedback to you. It is expected that the research advisor will be honest and indicate the degree to which he/she is interested in having you as a student in his/her lab. You may also want to indicate your degree of interest to the PI. After both you and the mentor have signed the form, you should return it with a copy of your report to the MSTP office (SOM T401). You should also email a copy of the abstract/summary of your report to the Co-Director ([george.dubyak@case.edu](mailto:george.dubyak@case.edu)) and to the MSTP office ([mstp@cwru.edu](mailto:mstp@cwru.edu)) so it can be pasted directly into the NIH training grant.

Evaluation forms signed by the student and mentor should be submitted for at least three rotations. Typically the rotation report and evaluation should be completed and returned to the MSTP office within two weeks of the end of the rotation. These are required to get credit for the rotation. Timely submission of these materials, as outlined in Academic Requirements of the MSTP, is required to get a grade of "Pass" in MSTP 400. If you have any questions, please feel free to contact Dr. Dubyak (368-5523; [george.dubyak@cwru.edu](mailto:george.dubyak@cwru.edu)) or Kathy Schultz (368-3404; [mstp@cwru.edu](mailto:mstp@cwru.edu)).

**ROTATION EVALUATION: MEDICAL SCIENTIST TRAINING PROGRAM**

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

FACULTY NAME \_\_\_\_\_ DEPT. \_\_\_\_\_

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

1. Did the student spend the expected time per week in the lab? Yes \_\_\_\_\_ No \_\_\_\_\_

(Summer: Full time for 4-6 weeks; School year: ~20 hrs/week for 8-12 weeks)

2. Did the student learn any new techniques? Yes \_\_\_\_\_ No \_\_\_\_\_

3. Did the student get any new results or data? Yes \_\_\_\_\_ No \_\_\_\_\_

4. Did the student do a lab group meeting presentation or other presentation of their rotation project? Yes \_\_\_\_\_ No \_\_\_\_\_

5. How would you rate the students overall performance in this rotation?

Poor \_\_\_\_\_ Average \_\_\_\_\_ Good \_\_\_\_\_ Excellent \_\_\_\_\_

6. Based on this student's performance and compatibility with the laboratory as a whole would this student be suitable for placement in your laboratory? Yes \_\_\_\_\_ No \_\_\_\_\_

7. Comments. Please address the following questions (**continue on back if necessary**):

What are the strengths of the student? What areas need improvement? Other comments or information?

\_\_\_\_\_  
Faculty Signature

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
MSTP Co-Director

After the student and faculty member have reviewed and signed this form, it should be returned, along with the report, to the MSTP office, T401, School of Medicine. Students should submit a rotation evaluation within two weeks of the end of the rotation.

## Appendix B: MSTP Clinical Tutorial

The MSTP clinical tutorial is a longitudinal clinical experience for PhD-phase MSTP students with the following goals.

1. To enhance interviewing skills, physical examination skills and ability to interact comfortably and effectively with patients and professionals in clinical settings in preparation for clinical clerkships.
2. To explore relationships between research interests and clinical issues that may be combined in the career of a medical scientist, and to gain insight into which clinical fields mesh best with the student's own scientific interests.

### Guidelines And Expectations For Clinical Tutorials

1. The tutorial placement should be for a full academic year, starting in ~October and extending through ~May. Students should NOT do Clinical Tutorial in the first year in the PhD phase. Students may do one or two years of Clinical Tutorial, but not more than two years. If Clinical Tutorial is taken for two years, students are encouraged to choose a different mentor and different clinical field for the second year.
2. The primary responsibility of students in the research years is completion of the thesis. Therefore, it is recommended that the clinical tutorial begin in the second year of research. This allows the student to become comfortable in the laboratory during the first year, and also allows sufficient time to complete 1-2 years of tutorial before the thesis defense.
3. Tutorials are often conducted in an ambulatory setting that allows ample opportunity to conduct patient interviews and physical examinations. Other types of clinical setting are possible. Students are encouraged to choose Tutorial settings that will enable them to explore clinical fields and specialties that they may enter, but general medicine placements may also be fruitful. Note that the Clinical Tutorial may substitute for the CPCP requirement only if it is based in a patient-based setting. Clinical settings that are not sufficiently patient-based (e.g. Pathology, Radiology) may be chosen for Clinical Tutorial, but they will not satisfy the CPCP requirement (a second year of Clinical Tutorial in a patient-based setting would satisfy the CPCP requirement, as would enrollment in CPCP during the PhD phase).
4. It is not always necessary for students to learn procedures or to study in detail the diseases they may encounter in the clinic, but these activities may be included; expectations should be discussed in advance by the student and the mentor.
5. Students should spend no more than 2-3 hours per week in the clinic, and schedules should be flexible enough to accommodate commitments that may arise around students' research (including classes, seminars, thesis committee meetings, etc.).
6. A student should be punctual in arriving at the designated starting time, and should inform their mentor if they must miss a clinic session. A maximum of three scheduled clinic sessions per semester are considered excusable absences. The student should arrive in appropriate professional attire, prepared to function in the clinical setting. Guidance may be obtained from Dr. Leizman or the clinical mentor.
7. At the end of each Tutorial, an evaluation form must be completed by the clinical mentor and returned to the MSTP office (SOM T401, 368-3404, mstp@cwru.edu). PLEASE RETURN THE EVALUATION PROMPTLY, AS IT IS NECESSARY FOR THE STUDENT TO RECEIVE ELECTIVE CREDIT FOR THE TUTORIAL.

8. Students must complete an exit survey and return it to the MSTP office at the conclusion of each tutorial. THIS EXIT SURVEY IS NECESSARY FOR RECEIVING ELECTIVE CREDIT.

Students and mentors will review these guidelines and the evaluation form together, sign the bottom of this form to signify acceptance of these guidelines, and return a copy to the MSTP office BEFORE beginning a tutorial. THIS MUST BE DONE TO RECEIVE ELECTIVE CREDIT.

Student's Name: \_\_\_\_\_

Mentor's Name: \_\_\_\_\_

Mentor's e-mail address: \_\_\_\_\_

Mentor's phone number: \_\_\_\_\_

Department/Division/Clinical setting: \_\_\_\_\_

Student's Signature: \_\_\_\_\_

Mentor's Signature: \_\_\_\_\_

Please sign and return to MSTP office.

**MSTP**  
**School of Medicine T401**  
**phone 368-3404 fax 368-5295**  
**mstp@case.edu**

**MSTP Clinical Tutorial Evaluation Form***(to be completed by Mentor and returned to MSTP office when the student has finished the tutorial)*

Student's Name \_\_\_\_\_ Dates of tutorial \_\_\_\_\_ to \_\_\_\_\_

Mentor's Name \_\_\_\_\_ Clinical setting \_\_\_\_\_

HISTORY	Exceeds		Meets		Beneath	Not observed
consistently elicits complete or appropriate histories	5	4	3	2	1	0
includes pertinent positives and negatives	5	4	3	2	1	0
has improved during the term of this tutorial	5	4	3	2	1	0
skill consistent with level of training/peers	5	4	3	2	1	0
prepared for entry into clerkship	5	4	3	2	1	0
<b>PHYSICAL EXAMINATION</b>						
exam complete and accurate	5	4	3	2	1	0
has improved during the term of this tutorial	5	4	3	2	1	0
skill consistent with level of training/peers	5	4	3	2	1	0
prepared for entry into clerkship	5	4	3	2	1	0
<b>DIAGNOSTIC REASONING/PROBLEM SOLVING</b>						
reasons well in clinical situations	5	4	3	2	1	0
applies knowledge to clinical situations	5	4	3	2	1	0
has improved during the term of this tutorial	5	4	3	2	1	0
skill consistent with level of training/peers	5	4	3	2	1	0
prepared for entry into clerkship	5	4	3	2	1	0
<b>PRESENTATION SKILLS</b>						
oral presentations organized, accurate and concise	5	4	3	2	1	0
written presentations organized, accurate, and concise	5	4	3	2	1	0
has improved during the term of this tutorial	5	4	3	2	1	0
skill consistent with level of training/peers	5	4	3	2	1	0
prepared for entry into clerkship	5	4	3	2	1	0

INTERPERSONAL INTERACTIONS/PROFESSIONAL CONDUCT

respectful, attentive and friendly with patients and families	5	4	3	2	1	0
cooperative with health care team, a team player	5	4	3	2	1	0
displays professional conduct and demeanor (incl. attendance)	5	4	3	2	1	0
has improved during the term of this tutorial	5	4	3	2	1	0
skill consistent with level of training/peers	5	4	3	2	1	0
prepared for entry into clerkship	5	4	3	2	1	0

Additional comments (may be appended on separate sheet if desired):

Mentor's signature \_\_\_\_\_ Date \_\_\_\_\_

Please sign and return to MSTP office.

**MSTP**  
**School of Medicine T401**  
**phone 368-3404 fax 368-5295**  
**mstp@case.edu**



## **Appendix C. MSTP Council Charter**

### **Members of the Council:**

Each class between years 1-6 will elect 1-3 representatives to the council. Each class after year 6 will be encouraged to have 1-3 representatives on the council. The term of office for a representative will be one year. No limit will be placed on the number of terms any person is able to serve. Council will welcome participation from students other than those elected, who will serve as non-voting members.

It will be announced at the August monthly meeting that each class will need to choose their representatives by the September Council meeting. Each class will be responsible for choosing their own representatives, either by accepting volunteers, holding an election, or by asking the MSTP Director to appoint representatives.

The MSTP Director will attend Council meetings as a non-voting member, and Associate and Co-Directors are also encouraged to attend. The Director will authorize financial support and coordinate logistical support by the MSTP administrative staff to promote Council activities and initiatives.

### **Officers**

The leadership of the council will consist of a President, Vice President and Secretary.

The responsibilities of the President include calling meetings, setting the agenda for the meetings, distributing the agenda prior to the meetings, running the meetings, and communicating with the MSTP Director and Steering Committee.

The responsibilities of the Vice-President include assuming the responsibilities of the other officers in their absence and coordinating the activities of the standing committees with the various committee chairs.

The responsibilities of the secretary include recording the minutes of the meeting, distributing the minutes of the meeting to the MSTP as a whole within a week of the meeting, presenting those minutes at the next meeting, and organizing any correspondence required by the council.

It will be the responsibility of outgoing officers to serve incoming officers in an advisory role during the fall semester. Particularly, outgoing officers will assist in developing the goals of council for the upcoming year, setting the council calendar, and transferring other duties to incoming officers. A meeting of outgoing and incoming officers during the fall semester will serve this purpose

### **Election of Officers**

At the September council meeting, the members of the council will nominate members of the council for the various leadership positions. If a position is sought by more than one person, an election for that position will be held at the September monthly meeting.

The term of office for each position is one year. Any member of the council is eligible to hold any of the offices except for president. The president must be chosen from a member of the third year class or higher, and must have served as an MSTP Council representative for at least one year

### **Relationship of Council to the Committees**

The committees and committee chairs for each year are formed at the first meeting of Council in each academic year, in August or September.

Each committee is required to send one member to each Council meeting to report on the activities of their committee to the Council. The committees will make recommendations to the Council concerning any actions they wish to take. After discussion, Council will vote on whether to accept, reject, or table the recommendation for further discussion.

The Council will be responsible for setting up at the beginning of each year a planning calendar that includes a time frame for recommendations from each committee. The Vice President of the Council will be responsible for coordinating this time frame with the committee chairs.

The Council has the power to form limited committees as needed for any special projects that arise during the year. The formation of these committees will be overseen by the Vice President of the council.

### **Format of Council Meetings**

The meetings are open to any member of the MSTP body, although only council representatives have a vote.

The agenda of the meeting will include the following elements:

- Establishment of quorum: Quorum shall consist of one more than half of those representatives expected to attend the meeting. A representative that informs the Council President prior to the meeting that he/she will not be attending the meeting does not count in the establishment of quorum.
- Setting and approving the agenda for the meeting
- Reading and accepting the minutes of the previous meeting
- Committee Reports
- Director's business to the council
- Any miscellaneous or special business

## **Appendix D.**

### **Summary of MSTP Council and other Programmatic Functions**

MSTP Council positions, committees and their functions:

#### **EXECUTIVE POSITIONS**

##### **1. President of MSTP Council**

The president will serve as the point person for the Director to approach concerning new initiatives, student activities and coordination of events in the MSTP. The President may recruit assistance from other students to assist in coordinating events. The President must be chosen from a member of the third year class or higher, and must have served as an officer or committee chair in MSTP Council for at least one year.

The responsibilities of the President include calling meetings, setting the agenda for the meetings, distributing the agenda prior to the meetings, running the meetings, and communicating with the MSTP Director and Steering Committee. The president can also call additional meetings or create ad hoc committees as needed.

##### **2. Vice President of MSTP Council**

The Vice-President assumes the responsibilities of the other officers in the case of their absence. The President and Director may delegate responsibility for coordinating certain events to the Vice-President. The vice-president will also help organize the MSTP Monthly Meeting activity hosted by each class according to the established schedule.

##### **3. Secretary for MSTP Council**

The responsibilities of the Secretary include recording, presenting as necessary, and posting on the web-page the minutes of each meeting. The secretary will also be in charge of communicating with Dr. Tyler Miller and publicizing Agre Society meetings to MSTP students (More information about Agre Society under committee positions). In addition, the secretary organizes any correspondence required by the council.

4. **Class officers for the following classes:** M1, M2, P1, P2, P3, P4/5. The class officer will be responsible for communicating, coordinating and encouraging participation of his/her classmates in MSTP events, including planning of the monthly meeting activity assigned to the class.

#### **Election of Officers**

At the first Council meeting in the fall, the Council will solicit volunteers or nominations for the various leadership positions and then hold an election. Ballots will be cast anonymously and tallied by the president. A majority is required to win an election; if a majority is not reached in the first round of voting, there will be a runoff between the top two candidates. The term of office for each position is one year.

## COMMITTEE LEADERSHIP AND REPRESENTATIVE POSITIONS

The function of the committees is to organize events and programs concerning the MSTP community. Each committee will be led by one or more chairs. Chairs will have responsibility for planning and coordination of committee functions and recruitment of students to functions. The committee will also involve all interested MSTP students. New committees may be formed and pre-existing committees may be dissolved by popular vote of the Council. Committee chairs give a brief report on activities and plans at each Council meeting. Chairs require approval by the Director for outside speakers or any large expenditures. The Council gives input and aid to each committee as necessary.

1. **MSTP Monthly Meeting:** Most MSTP events will be consolidated within the umbrella of monthly meeting. These events will include program functions, e.g. Holiday Party in December, Winter Retreat in January, and the applicant Revisit in March. In addition, each class will be in charge of organizing one monthly meeting activity, such as inviting a speaker or having a clinical skills workshop (eg. Learning how to suture, draw blood, CPR).  
The schedule will be as follows: Sept (Optional, Women's group sponsored event or 4th/5th yr. PhD), Oct (1st yr PhD), Nov (2nd yr MD), Dec (Holiday Party), Jan (Winter Retreat), Feb (2nd yr PhD), March (Revisit), April (1st yr MD), May (Celebration for graduating students, hosted by 3rd yr. PhD). The VP will be in charge of oversight for these events (eg. reminding the class), but most of the planning and organization should be done by the class assigned for the month, led by the class officer.
2. **Web Page Committee:** Maintains the Case MSTP webpage. Develops content and implements changes in consultation with Council, MSTP Director and Administrative Director.
3. **Summer Retreat Committee:** Plans the summer retreat (plans agenda, invites speakers, coordinates choice of venue, etc) in consultation with Council, the Director and Administrative Director. The burden of logistical arrangements such as reservations (venue, lodging, meals) is taken care of by the Administrative Director. First year students should play a leading role on the committee, but the membership should include at least one member from the upper classes who will provide guidance and advice.
4. **Into to MSTP Committee:** Plans social activities for first year students to get together and get to know each other. The MSTP office will provide financial support (need to request approval). This committee may be led by the first year class officer and/or other first year student(s).
5. **Newsletter Committee:** Produces the Case MSTP newsletter. This can involve writing content, taking pictures, soliciting pictures and written content from others (and editing it if needed). The Newsletter will be distributed by the MSTP Office to all MSTP students, mentors and alumni.
6. **Agre Society Liason:** (The duties of this position are now fulfilled by the Secretary). The Agre Society is sponsored by the Department of Medicine. It meets monthly with a speaker who is generally a physician involved in research, and the audience is MSTP students and research-oriented clinical fellows and residents. Topics often include discussion of career development. The MSTP Liason will communicate with the faculty planner from the Department of Medicine (Dr. Tyler Miller) and integrate input from Council and arrange communications and calendar postings to publicize the meetings.
7. **Community Service Committee:** Organizes community service activities for the MSTP. Past examples include working on Habitat for Humanity projects, serving meals at the

Ronald McDonald house, working with the Boys' and Girls' club, sponsoring a campus-wide toy drive.

8. **Social Committee:** Organizes social events including the Holiday Party and fun social events during interview and recruitment visits that include current students and applicants. If the budget allows, a MSTP group outing voted on by Council can be organized with some cost subsidized by the MSTP (Previous activities include whirleyball and paintball).
9. **Student Representative to Faculty Council:** Faculty Council oversees all faculty affairs and serves as the liaison between the faculty and the administration of the University and the School of Medicine. It is composed of elected faculty representatives from each department in the School of Medicine. The MSTP Representative attends Faculty Council Meetings that occur every other month and reports to the MSTP on any discussions that may affect the MSTP program or students.
10. **Representative to Graduate Student Senate (GSS):** GSS is the student council for the graduate students at Case Western. MSTP will have at least one voting Senator and one alternate selected from the first or second year classes. Any additional participation and attendance to GSS meetings by other MSTP members is also encouraged.

### Election of Committee Chairs

At the first Council meeting in the fall, Council will solicit volunteers and nominations for the Committee chair positions. Since two or more chairs may share responsibility for a committee, elections may not be necessary. If proposed by the President or another Council member, Council may vote on a resolution to limit the number of chairs in a particular committee. If indicated, a vote will then be held to select the chair(s) of a committee.

### Non-elected positions and activities (appointed by the Director or the Steering Committee, or assembled ad hoc by the students):

1. **Recruitment Committee:** Helps organize participation of students in the recruiting process (more description pending).
2. **MSTP Women's Group:** Forum for MSTP women to address women's issues, network with role models, etc. Assembled ad hoc and run by women in the MSTP. Faculty Advisor: Cynthia Bearer, M.D., Ph.D.
3. **American Physician Scientists Representative.** In 2006-2007, MSTP Council proposed that the MSTP Steering Committee choose a student to attend the APSA meeting. This person will then serve as the APSA representative for that year. The Steering Committee will consider service to the MSTP through MSTP Council leadership (e.g. President or Past-President of Council, or other role) as well as other professional criteria (e.g. scientific accomplishment).
4. **Winter Retreat Planners:** One or more students and an MSTP mentor are appointed by the Director to work with the Director and Administrative Director to plan and execute the Winter Retreat. The Winter Retreat Planners choose the Winter Retreat Speaker in consultation with the Director, MSTP Council and MSTP Steering Committee (suggestions are solicited from all students and mentors).
5. **National MD/PhD Student Meeting:** The Steering Committee chooses one or two students to attend the annual National MD/PhD Student Meeting in Colorado to present their research, network with MD/PhD students from other programs, hear outstanding

talks and meet with famous biomedical researchers. The primary criterion for selection of students is scientific accomplishment in the Ph.D. phase. A secondary criterion is service to the MSTP through Council or other activities.

6. **Recruiting Functions:** Current MSTP students are critical to the recruitment of future students. Applicants benefit greatly from the opportunity to meet with Case MSTP students to discuss the program.
7. **Annual Graduation Luncheon and Panel Discussion**, “How to apply for and choose a Residency Program”, with graduating students as panelists. This event occurs in approximately April. It is organized as one of the monthly meetings.
8. **Grant writing information** is provided in an annual workshop at the MSTP Summer Retreat (the exact topic varies from year to year so it is not too redundant). In addition, information is available on the websites of the Case MSTP and Case School of Medicine Graduate Education.

## Appendix E. Tax treatment of MSTP stipends

Note: CWRU and the CWRU MSTP cannot provide tax advice. The following text reflects notes taken during a workshop at the 2003 MSTP Retreat at which a tax advisor spoke. Although we believe the following text to be valid, the accuracy of the following information and its applicability to individual tax situations cannot be guaranteed by the program. Students are advised to use this as a starting point to clarify issues about income taxes and to verify and extend this information by consulting IRS publications and/or a qualified tax advisor.

Many MSTP students have not had significant experience with income tax and the filing of tax returns. Also, the tax considerations for MSTP stipends are sometimes confusing and the implementation of reporting of income to the IRS varies in different stages of the program. Therefore, the MSTP students chose to have a workshop on income tax treatment of MSTP stipends at the summer 2003 retreat. The following notes reflect the presentation by the tax advisor who came to the retreat.

Scholarship phase: This applies when the student is paid from a T32 training grant, NRSA training award or other foundation training grant.

Employee phase: This applies when a student is paid off a research grant or university account that is not a training grant.

Note: All students will be supported on the MSTP T32 grant (scholarship phase) for PART of the MD training years, but will be on other accounts (employee phase) for other parts of the MD training years. For the PhD phase, the source of support will vary and may include both scholarship and employee phases. Note that you may have status in a different category during different parts of the year.

### Implications:

#### Scholarship phase:

1. No W2, still need to report stipend income (not tuition support) and pay federal and state taxes on this income.
2. No withholding; may need to make quarterly estimated tax payments if tax liability will be >\$1000.
3. Can decrease reported income by amount of school expenses for REQUIRED items (e.g. required textbooks).
4. May not have to pay local taxes on this income (check).
5. No contributions necessary for Social Security and Medicare.

#### Employee phase:

1. Will have income reported on a W2.
2. Will have withholding.
3. May deduct unreimbursed professional expenses (subject to usual limitations).
4. Will have to pay local taxes as well as state and federal.
5. Will have to pay Social Security and Medicare (will be automatically deducted).

### **Other notes about income taxes:**

During Scholarship phase: Fellowships/Scholarships are subject to income tax to the extent that they exceed tuition and required course-related expenses. Basically, this means that you need to

report and pay taxes on your stipend less documented expenses for required materials for your courses (required textbooks, stethoscope and other required items). Optional materials you obtain to help with your coursework do not count. MSTP students should retain copies of receipts and documents pertaining to their scholarship and salary and any course-related expenses. Since CWRU does not withhold taxes or report earnings to the IRS during scholarship phase(s), you will need to estimate your tax liability in advance of the April 15 annual filing and payment deadline. If you will owe \$1,000 or more in taxes beyond amounts already withheld or paid to the IRS for a given calendar year, you may need to make quarterly estimated tax payments to avoid a penalty from the IRS.

Related publications and forms can be obtained from the IRS website:

*[http://www.irs.ustreas.gov/prod/forms\\_pubs/index.html](http://www.irs.ustreas.gov/prod/forms_pubs/index.html)*. For example, see Publications 505 and 520 as well as the standard tax forms (1040 or related forms).

## Appendix F. USMLE Boards, Licensing Requirements and the 7-year Rule

Current Ohio regulations for receiving an Ohio license to practice medicine include the passage of USMLE steps 1, 2, and 3 exams within a seven-year period. A limited exception to this rule may be granted by the Ohio State Medical Board to applicants in MD/PhD programs. The doctoral degree must be in a field of biological sciences tested in the Step 1 content. These fields include, but are not necessarily limited to, anatomy, biochemistry, physiology, microbiology, pharmacology, genetics, neuroscience, and molecular biology. Fields not excepted include, but are not necessarily limited to, business, economics, ethics, history and other fields not directly related to biological science. A limited exception to this rule may also be granted to an applicant who suffered from a significant health condition which by its severity would necessarily cause a delay to the applicant's medical study. Regardless, all three steps must have been passed within a ten-year period. The regulations make no provision for an exception to the ten-year rule.

Note that each state has different rules for medical licensure. Most have a rule similar to the 7-year rule with a possible extension to 10 years as described above, but students should check on requirements for the state(s) in which they intend to practice.

Students take Step I in May or June of the 2nd year of medical school, and usually take Step II during the autumn of the 4th year, and Step III late in the 1st year of internship/residency. MSTP students will take (on average) nearly four years to complete the PhD portion of the program. Thus, after they re-enter medical school they would complete Step II approximately 5 1/2 years after Step 1. Step III would be completed 1 1/2 years after Step II during the first year of residency. Thus students who take longer than 4 years to complete the PhD will need to request an extension for completion of Step III from the Ohio Medical Licensing Board or the board of the state in which they get their future license. We note that the rules for completion of the USMLE Steps I, II, and III vary from State to State and many students will be taking Step III during their residency out of State. It is the student's responsibility to keep abreast of the USMLE rules for other States when applying for their residencies.

Alumni of the Case MSTP should contact the Administrative Director, Kathy Schultz, if a letter of support from the program is needed to document MD/PhD training for application for an extension to ten years.

## Appendix G: MSTP Course Listings

### Types of courses for Case MSTP students

1. Graduate courses that include portions of the year 1 and year 2 MD curriculum (IBIS 401-404 and IBIS 411-414). Official course description below.
2. MSTP 400 (Research rotation). Official course description below.
3. Graduate school courses. Course descriptions provided by participating departments (see the Case Registrar website).
4. IBMS 500 (REQUIRED ethics course). Official course description below.
5. MSTP Clinical Tutorial (no graduate school credit, clinical elective credit for the MD program, see description in MSTP Guidelines).
6. Years 3 and 4 of the MD curriculum.

### Course descriptions for required graduate courses

#### **IBIS 401. Integrated Biological Sciences I (1-9)**

A three-semester sequence encompassing anatomy, biochemistry, physiology, pharmacology, pathology, microbiology and related areas of biomedical science. Prereq: Consent of MSTP Co-Director.

#### **IBIS 402. Integrated Biological Sciences I (1-9)**

Continuation of IBIS 401. Prereq: Consent of MSTP Co-Director.

#### **IBIS 403. Integrated Biological Sciences I (1-9)**

Continuation of IBIS 402. Prereq: Consent of MSTP Co-Director.

#### **IBIS 404. Integrated Biological Sciences I (0-9)**

Continuation of IBIS 402. Prereq: Consent of MSTP Co-Director.

#### **IBIS 411. Clinical Science I (2)**

Clinical science curriculum for MSTP students. Prereq: Consent of MSTP Co-Director.

#### **IBIS 412. Clinical Science II (2)**

Continuation of IBIS 411. Prereq: Consent of MSTP Co-Director.

#### **IBIS 413. Clinical Science III (2)**

Continuation of IBIS 412. Prereq: Consent of MSTP Co-Director.

#### **IBIS 414. Clinical Science III (0-2)**

Continuation of IBIS 413. Prereq: Consent of MSTP Co-Director.

#### **MSTP 400. Research Rotation in Medical Scientist Training Program (0-9)**

All students must complete research rotations in a minimum of three different MSTP-approved laboratories and submit rotation reports and rotation evaluations for each to the MSTP office. All

three of the rotations must be completed before the beginning of the PhD phase. The main purpose of research rotations is to aid the student in selecting a laboratory for their thesis work. Prereq: Consent of MSTP Co-Director.

**IBMS 500. Being a Professional Scientist (0)**

The goal of this course is to provide graduate students with an opportunity to think through their professional ethical commitments before they are tested, on the basis of the scientific community's accumulated experience with the issues. Students will be brought up to date on the current state of professional policy and federal regulation in this area, and, through case studies, will discuss practical strategies for preventing and resolving ethical problems in their own work. The course is designed to meet the requirements for "instruction about responsible conduct in research" for BSTP and MSTP students supported through NIH/ADAMHA institutional training grant programs at Case. Attendance is required.

## Appendix H: Computer Policy

The MSTP will subsidize purchase one laptop computer for each student during his/her tenure in the program, subject to certain price limitations. The computer must be purchased through the Department of Administrative Computing. In general, the program will support purchase of the least expensive of the computers recommended by the School of Medicine Department of Administrative Computing, but students may combine MSTP support with funds of their own to purchase a more expensive computer.

Students should be aware that computers purchased with MSTP funds are considered property of CWRU, and a student who does not complete the program may be required to return the computer or reimburse the program for the amount provided by the MSTP. Students who complete the program keep their computers.

Students are responsible for maintenance and repair of their computers (but may use the support and warranty provided through the School of Medicine Department of Administrative Computing).

If purchase of an additional computer is necessary during the course of the program, that purchase is the responsibility of the student. In this case, the student should consult the School of Medicine Department of Administrative Computing to determine the models that will satisfy requirements for the School of Medicine.

MSTP students must purchase one of the specific computer models on a list provided by the Department of Administrative Computing to insure that all student computers are compatible with the medical school electronic curriculum, electronic tests and the support system provided by the School of Medicine (which insures that computer issues will be resolved quickly to allow completion of curriculum and tests that are dependent on the computer).

Current URLs for the School of Medicine Department of Administrative Computing for computer support are:

<http://casemed.case.edu/computing.cfm>

[http://casemed.case.edu/admin\\_computing/](http://casemed.case.edu/admin_computing/)

The websites indicating computer policy and acceptable models are:

[http://casemed.case.edu/admin\\_computing/student\\_services/class2011/index.cfm](http://casemed.case.edu/admin_computing/student_services/class2011/index.cfm)

Please note that the specific policies and computer models are subject to change. When considering a computer purchase, students should contact David Pilasky Director of Administrative Computing via email: [CaseMEDhelp@case.edu](mailto:CaseMEDhelp@case.edu)

The following text is excerpted from the Department of Administrative Computing website

[http://casemed.case.edu/admin\\_computing/student\\_services/class2011/policy.cfm](http://casemed.case.edu/admin_computing/student_services/class2011/policy.cfm)

### **Computer Policy for Medical Students Entering in the Summer of 2007 Provided by Administrative Computing, Case School of Medicine**

The School of Medicine requires that all medical students have a newly purchased notebook computer. The School of Medicine will determine the models and specifications required. The School of Medicine will purchase the notebook computers and students will be required to reimburse the school for the purchase.

This year students have the option of purchasing one of four models:

- Dell Latitude D620
- Dell Latitude D820
- Apple MacBook
- Apple MacBook Pro

The main differences between the two Dell models and the two Apple models are screen size, price and processor speed on the Apples.

Due to operating system requirements for certain courseware applications, the School of Medicine electronic exam system and National Board of Medical Exam (NBME) exams, students purchasing either Apple model will be required to purchase and have installed Apple BootCamp and Microsoft WindowsXP Pro.

Students will be allowed to select the make and model of the notebook computer that they want by going to their iApply website between April 16th and May 23rd. All students having selected and committed to a purchase by that date will receive the best quantity discounted rate available at that time. Students choosing to wait longer to place their order will be required to pay the price at the time of order and may not be able to receive the quantity discount. In addition, students electing to order after May 23rd may not receive their notebook computer in time. Loaner notebooks will be provided to late add students on a first-come first-served basis. There is no guarantee that all students will be able to receive a loaner notebook depending on demand.

Students will not be allowed to make their own notebook computer purchase, nor will they be allowed to substitute a notebook computer that they already own for the notebook computer required by the school. This ensures a high level of compatibility and the highest level of technical support for all students.

For questions, please contact David Pilasky, Director of Administrative Computing via email: [CaseMEDhelp@case.edu](mailto:CaseMEDhelp@case.edu)

## Appendix I: Information for F30 or F31 applications

1. Ask for the maximum period of support allowed (5 years for most of you, see point 2). BE AWARE THAT THE GRANT CAN COVER TRAINING IN THE THIRD AND FOURTH YEARS OF MEDICAL SCHOOL AS WELL AS THE PHD PHASE. The MSTP provides a bonus supplement to the stipend of students who obtain such funding during the phases that are supported by the MSTP (e.g. Med years 3 and 4). Your department may also pay such a supplement during the PhD phase.

2. Kathy Schultz will tell you how long you were supported on the MSTP T32 (usually one year or less). List this for question 24 on PHS form 416. To determine your period of eligibility for F30 (how many years you can ask for), subtract that number of months from 6 years, then round up to the next higher whole year. Request that period of support for question 21 on page 3 of PHS form 416. After the award, the grants management will work with you to restrict total funding on T32 and F30 grants to a maximum of 6 years (as an MD-PhD student, for straight PhD students the max is 5). Thus, post-award grants management will take care of adjusting for the partial years of potential excess time caused by rounding up on the initial application. This is the best way to do it, as the activities proposed by year on page 3 of PHS form 416 is not that detailed and not conducive to specifying part years or part months. Most students will have had one year on the MSTP T32 and will be able to ask for 5 years of F30 support. \*\*\*Unless the proposed training period becomes absurdly long (e.g. >6 years of PhD phase), don't ask for less than the maximum allowable by the formula I indicate, even if you think you will finish before then. You can always return unused portions of the grant.

3. Tuition and Fees budget numbers: Section D on Checklist for PHS form 416: Ask Kathy Schultz for tuition numbers that are anticipated for the period when your grant will become active. It is reasonable to assume 5% annual inflationary increase for the tuition. PLEASE USE THE MEDICAL SCHOOL TUITION FIGURE FOR THE LAST TWO YEARS OF PROPOSED BUDGET. IT IS HIGHER THAN THE GRADUATE SCHOOL TUITION.

4. Some of you have asked about how to specify research vs. clinical activities for the years of training (page 3 of PHS form 416). In general, the reviewers will want to see research training activity, so bring this out whenever possible, but you should ask for support for clinical training as well as research in the context of combined MD-PhD training, and the programs do allow that. Just don't miss the opportunity to include research in a year when it might be there. For example, if the budget year will include a mixture of clinical and research (e.g. the end of your PhD and the beginning of Med year 3), then put down an appropriate mixture of research and clinical (you may need to figure out where the budget year will fall in calendar months). You can also include a small amount of clinical time (5-10%) during the PhD phase if you intend to do MSTP Clinical Tutorial. The reviewers may like to see that you have a well-developed plan for MD-PhD training that includes some clinical even while focusing on the research in the PhD phase.

\*\*Remember, for med year 4 you might do research electives (I recommend that you propose this). I would write in your training plan that you intend to do some research electives that year (don't worry, you won't be locked into this plan). If you propose this, you might put Med year 4, the last year of your training, as something like 60-70% clinical, 30-40% research.

4. Indicate that the CWRU MSTP T32 does not provide financial support for all phases of MD-PhD training, and that you do not have current funding from the CWRU MSTP T32, so there is no question of overlap. This needs to be stated explicitly. I recommend that the mentor's letter of support clarify this issue of non-overlap.

5. Tell Cliff Harding and Kathy Schultz when the grant is awarded, since it will affect your period of eligibility for T32 support in Med years 3 and 4. We can accommodate paying you off of other sources for any parts not covered by the F30 itself, but we need to know in advance for planning purposes.

## **Appendix J: Stipend supplement for students who obtain extramural funding**

In 2006, the MSTP and most Departments acting as home departments for PhD training for MSTP students agreed to supplement the stipend of any PhD or MD-PhD student who obtained an individual extramural fellowship award of sufficient magnitude.

The general proposal (from Alison Hall) follows:

PhD students in laboratory-based programs are encouraged to apply for independent fellowship funding (for example, an NRSA from the NIH) and will be provided with development programs to acquire this professional skill. Students who earn a fellowship that provides at least 75% of the current stipend amount will have the stipend matched to the Case BSTP stipend level and awarded a stipend bonus of \$2,000 for the years of that fellowship from departmental funds.

While almost all departments seem to be following this policy, please note that the MSTP cannot guarantee that all home departments will follow this policy and cannot guarantee that a supplement will be provided during the PhD phase.

In most cases, stipend supplementation cannot be made retroactively, and this policy does not apply to periods prior to 2006.

Important point on MSTP supplementation of stipend: For certain types of fellowships, especially NIH F30 and F31 grants that fund MD-PhD training, the period of support may include clinical training in Med years 3 and 4. For any period within Med years 3 and 4 that is covered by such fellowship support, consistent with the above policy, the MSTP will supplement the stipend of the MSTP student. Note that the MSTP is not the entity that provides the supplement during the PhD phase; that is the PhD home department.