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1. Welcome

Welcome to MD-PhD training in the CWRU MSTP/CTSTP. Our MSTP and CTSTP are outstanding programs. We can be quite proud of the accomplishments of our students, the efforts of our faculty, and the collaboration of our institutions, which together have enabled these strong programs. We hope this document will serve as a useful guide to our program. If more information is needed, please contact Kathy Schultz, Administrative Director, at mstp@case.edu.

Sincerely,

Cliff Harding, Director
George Dubyak, Co-Director
Dominique Durand, Associate Director
Kathy Schultz, Administrative Director
Crista Moeller, Program Coordinator
Jane Vogelsberger, Program Assistant

2. Introduction

The CWRU MD-PhD program is the oldest in the country, launched in 1956, and has a rich history of training physician scientists. Our alumni include two Nobel Prize winners (Alfred Gilman and Ferid Murad) and many other prominent and productive physician-scientists.

MD-PhD training at CWRU is supported by the Medical Scientist Training Program (MSTP) and a sister program, the Clinical and Translational Scientist Training Program (CTSTP). The MSTP and CTSTP are integrated and seamless in implementation for MD-PhD training (the CTSTP spans additional scope in research training, developing combined degree training for DNP-PhD students and potentially DMD-PhD students; these programs have separate administrative arrangements and are not described here). For MD-PhD training, the distinction between the two programs is simply in the PhD programs that are covered by each program.

The MSTP is focused on training of students in basic biomedical science PhD fields, which MSTP students may then apply to translational biomedical problems. Training in MSTP-affiliated PhD programs covers topics in Biochemistry, Cancer Biology, Cell Biology, Genetics, Immunology, Microbiology, Neurosciences, Nutrition, Pathology, Pharmacology, Physiology & Biophysics, Virology, and other areas. The CTSTP offers MD-PhD training in Biomedical Engineering (including the Physician Engineer Training Program), Mechanical Engineering, Epidemiology (including Molecular and Genetic Epidemiology), Bioethics, and Systems Biology and Bioinformatics. Additional training opportunities in Clinical Investigation are under development. Thus, the CTSTP is a branch of the MSTP that provides research training in more clinical and translational fields. CTSTP students are full members of the MSTP and receive all of the support and highly developed program offerings of the MSTP. The MSTP is supported by an NIH T32 grant from the NIGMS. The CTSTP is supported by an NIH TL-1 grant (part of the CWRU School of Medicine CTSA award). The MSTP and CTSTP are administered through the MSTP/CTSTP office (Kathy Schultz, Administrative Director) and a joint MSTP/CTSTP Steering Committee.

The MSTP/CTSTP combination provides a vibrant training opportunity that supports the development of physician scientists through clinical and research training in a wide range of fields relevant to biomedical research, including PhD programs in the School of Medicine, School of Engineering and School of Arts and Sciences. Students and mentors are members of many departments, divisions and centers at CWRU and its affiliated institutions. Participating research laboratories are located at the CWRU campus, the Cleveland Clinic, University Hospitals Case Medical Center, Louis Stokes Cleveland Department of Veterans Affairs Medical Center, and MetroHealth Medical Center. Clinical training occurs at all CWRU-affiliated hospitals. These extensive research and education resources provide enormous training opportunities for our
This document provides guidelines for students in the Case MSTP/CTSTP. For brevity, we often refer to the program simply as “MSTP”, but for all issues except PhD program-specific activities or specific training grant identities, the text applies to both the MSTP and CTSTP. The document includes information about the general program structure, academic requirements and program 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.

3. Overview of the MSTP/CTSTP

The MSTP/CTSTP includes three major phases of training that integrate research and clinical 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. In the first summer, students start medical school classes in July and complete a part-time research rotation. During the summer between Med years 1 and 2, students do 1 or 2 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 participate in the MSTP Clinical Tutorial, which is longitudinally integrated into their research time.

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).
4. Schedule of Courses

Each semester at the time of registration, all first and second 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.
<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Graduate School Credit Hours</th>
<th>Graded (G) or Pass/Fail (P/F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 Summer</td>
<td>MSTP 400</td>
<td>0</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 1 Fall</td>
<td>IBIS 401</td>
<td>4 (3 if a 4-credit grad course is taken)</td>
<td>G</td>
</tr>
<tr>
<td>Year 1 Fall</td>
<td>IBIS 411</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>Year 1 Fall-CHOOSE ONE</td>
<td>Grad course</td>
<td>3-4</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td>MSTP 400</td>
<td>3</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 1 Fall</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Year 1 Spring</td>
<td>IBIS 402</td>
<td>4 (3 if a 4-credit grad course is taken)</td>
<td>G</td>
</tr>
<tr>
<td>Year 1 Spring</td>
<td>IBIS 412</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>Year 1 Spring-CHOOSE ONE</td>
<td>Grad course</td>
<td>3-4</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td>MSTP 400</td>
<td>3</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 1 Spring</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>MSTP 400</td>
<td>0</td>
<td>P/F</td>
</tr>
<tr>
<td>Summer</td>
<td>Total</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year 2 Fall</td>
<td>IBIS 403</td>
<td>4 (3 if a 4-credit grad course is taken)</td>
<td>G</td>
</tr>
<tr>
<td>Year 2 Fall</td>
<td>IBIS 413</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>Year 2 Fall-CHOOSE ONE</td>
<td>Grad course OR</td>
<td>3-4</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td>MSTP 400</td>
<td>3</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 2 Fall</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Year 2 Spring:
Start graduate course in mid January (tuition supported by PhD home department)
Finish MD classes by early March.
Take approximately one month to study for and take USMLE Board part I. The maximum allowable period for completing this exam is 8 weeks after completion of the last Med year 2 exam.
Start full-time in laboratory research
Complete graduate course, early May
Alternative arrangements, such as starting lab work right after Med year 2 and shifting USMLE
Board part I later may be arranged with permission of the PhD mentor, but the time spent away from lab research should not exceed 8 weeks, and the board exam should be completed before the end of June.

Students must discuss timing of transition with their PhD mentor. To clarify these issues, the student, mentor and department chair/financial authority will all sign the MSTP Mentor Agreement form.

<table>
<thead>
<tr>
<th>Year 2 Spring</th>
<th>IBIS 404</th>
<th>0</th>
<th>P/F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2 Spring</td>
<td>Grad course</td>
<td>3-4 (as indicated by graduate program)</td>
<td>G</td>
</tr>
<tr>
<td>Year 2 Spring</td>
<td>**** 601</td>
<td>5-6 (as indicated by graduate program)</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 2 Spring</td>
<td>IBMS 500 Ethics</td>
<td>0</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 2 Spring</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>RSCH 750</td>
<td>0</td>
<td>P/F</td>
</tr>
<tr>
<td>Summer</td>
<td>Total</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year 3 Fall</td>
<td>Grad course(s)</td>
<td>(as indicated by graduate program)</td>
<td>G</td>
</tr>
<tr>
<td>Year 3 Fall</td>
<td>**** 601</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 3 Fall</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Year 3 Spring</td>
<td>Grad course(s)</td>
<td>(as indicated by graduate program)</td>
<td>G</td>
</tr>
<tr>
<td>Year 3 Spring</td>
<td>**** 601</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 3 Spring</td>
<td>Total</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>RSCH 750#</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>Total</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year 4 Fall</td>
<td>Grad course(s)</td>
<td>(as indicated by graduate program)</td>
<td>G</td>
</tr>
<tr>
<td>Year 4 Fall</td>
<td>**** 701</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
</tr>
<tr>
<td>Year 4 Fall (take at least 1 year in a patient-based specialty)</td>
<td>MSTP Clinical Tutorial</td>
<td>0 (2 weeks credit for 4th year MD clinical elective if entire year is completed)</td>
<td>Not graded</td>
</tr>
</tbody>
</table>

Complete qualifying examinations and thesis proposal by summer following year 3 (BME requirements different, see graduate program guidelines)
<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Credit Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 4 Fall</td>
<td>Grad course(s)</td>
<td>9</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Year 4 Spring</td>
<td>**** 701</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Year 4 Spring</td>
<td>MSTP Clinical Tutorial</td>
<td>0 (2 weeks credit for 4th year MD clinical elective if entire year is completed)</td>
<td>Not graded</td>
<td></td>
</tr>
<tr>
<td>Year 5 Fall</td>
<td>Grad course(s)</td>
<td>9</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Year 5 Fall</td>
<td>**** 701</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Year 5 Fall</td>
<td>MSTP Clinical Tutorial</td>
<td>0 (2 weeks credit for 4th year MD clinical elective if entire year is completed)</td>
<td>Not graded</td>
<td></td>
</tr>
<tr>
<td>Year 5 Spring</td>
<td>Grad course(s)</td>
<td>9</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Year 5 Spring</td>
<td>**** 701</td>
<td>(as indicated by graduate program)</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Year 5 Spring</td>
<td>MSTP Clinical Tutorial</td>
<td>0 (2 weeks credit for 4th year MD clinical elective if entire year is completed)</td>
<td>Not graded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional PhD phase year if necessary- schedule as for Year 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All PhD requirements, including publication requirement and thesis dissertation defense, must be completed before starting Med year 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 6</td>
<td>3rd year medical curriculum</td>
<td></td>
<td></td>
<td>MD program clerkship evaluations</td>
</tr>
<tr>
<td></td>
<td>Begin early July or early November</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 7</td>
<td>4th year medical curriculum</td>
<td></td>
<td></td>
<td>MD program clerkship evaluations</td>
</tr>
<tr>
<td></td>
<td>End in early May</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 401-403 are the core biomedical course components of the first two years of the MD curriculum, and IBIS 411-413 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 the core curriculum for Med year 3 in early July, September, October, November or March, but in practice the July through November period represents the target for graduation in year X + 2. Starting by early September preserves flexible time for residency interviews in Med year 4 to a degree similar to that experienced by straight MD students; starting in early October or November will make time for residency interviewing tighter. Further flexibility in the start date for clinical training may be obtained by scheduling a clinical elective prior to the first core clerkship; this may allow a start in clinical training some weeks before the dates mentioned above.

10. **Maximum and minimum periods of clinical training:** 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 spent 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 “X” graduate in May of year “X+2”. Students may also start Med year 3 in March, but this is generally not preferred. With start in March of year “X”, all possible portions of the MD curriculum will be completed approximately 4 months before May graduation in year “X+2”. Therefore, stipend support by the MSTP will end in approximately January of year “X+2” since all aspects of the MD and PhD training will be completed. MSTP students who are ready to complete their PhD in the spring semester generally choose to stay in the lab through June and start Med 3 in July (rather than start Med 3 in March), thereby maximizing research productivity while still achieving the maximum amount of clinical training.

5. **Program Administration**

The MSTP is run by a collaboration of students, faculty and staff. The MSTP Council is a body of students that plans and runs certain aspects of the program. The Administrative Director (Kathy
Schultz) and Program Coordinator (Crista Moeller) and Program Assistant (Jane Vogelsberger) manage many aspects of the program. They are often the first people who 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 (and CTSTP). 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.

6. 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. The MSTP office can 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 and Harding are additional sources of advice on these topics for MSTP students.

**General resources and contact information:** The MSTP staff can provide contact information for all advisors; this information is also available on the MSTP website. The Medical School Registrar can provide valuable logistical advice and help to MSTP students, particularly as they plan their curriculum for Med years 3 and 4.

7. 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.

8. Calendar/Vacations/Leaves

MSTP notes on calendar and vacations: Since students in the first two years are full members of the medical school class 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. Since the different graduate and MD program calendars provide different options for vacation and holiday, MSTP students may determine the best time for vacation in their schedule, respecting their academic commitments, but vacation time is not to exceed the total of 2 weeks of vacation in addition to the 10 university and floating personal vacation days specified in the policy for CWRU graduate students (text below). Requests for exceptions 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. Students should plan their vacation time to avoid disruption of training activities (e.g. courses, clinical commitments, research projects).

Planning for leave with the MSTP: 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 plans 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.

CWRU graduate student vacation, sick leave and parental leave policies:

Policies for vacation, sick leave and parental leave for graduate students are governed by CWRU and School of Medicine policies. Trainees who receive full-support stipends from PhD programs are required to pursue their training on a full-time basis, devoting each day of the normal work week, plus any additional time required by their research projects and academic courses. To retain productivity and academic progress, it is strongly recommended that trainees enrolled in classes not take vacation while class is in session.

Holidays. Graduate students are entitled to observe University closings for holidays and other recognized events. The University recognizes 8 named holidays, 1 university designated holiday and 1 personal floating holiday.
Vacations. Graduate students are allowed two weeks of vacation per calendar year (10 traditional work days). Vacation days can be accrued from one year to the next year only with the approval of the advisor in advance, (e.g. to allow for international travel). Please note that in graduate school, the times between academic terms and the summer are considered part of the active training period and are not to be regarded as vacation time. The student will continue to receive stipend during the vacation period. Additional vacation time within reasonable limits may be taken if approved by the student’s designated advisor but must be consistent with the student’s ability to maintain strong curricular and research momentum. Discussion of vacation plans with the advisor should occur at least 4 weeks prior to the vacation.

Sick Leave. Graduate students are entitled to two weeks (10 traditional work days) of sick leave per year, with no year-to-year accrual. Sick leave may be used for medical conditions related to pregnancy and childbirth. Under exceptional circumstances, additional sick leave days may be granted following receipt of a written request from a physician, and approval by the Program.

Parental Leave. Graduate students are entitled to one month parental leave per annum for the adoption or birth of a child. Either parent is eligible for parental leave. Parental leave must be approved by the Program. It is permissible to add parental leave and paid sick leave together to allow for 6 weeks leave for the adoption or birth of a child. The Kirschstein NRSA grants policy allows stipend for up to 60 calendar days of parental leave, “when individuals in comparable training positions at the sponsoring institutions have access to this level of paid leave for this purpose.” Accordingly, training grants and fellowships will cover the period of parental leave allowed by CWRU.

Unpaid leave. Students who require additional leave (beyond what is stipulated above) must seek approval from their Program for an unpaid leave of absence. Approval for a leave of absence must be requested in advance by the student. The student should provide documentation for the leave request and obtain approval from their Program. Conditions for the leave and approval must be submitted to the School of Graduate Studies. Continued coverage of health insurance is allowable within the guidelines of University Health Services and with approval by the Program and Dean of Graduate Studies.

9. 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, WHICHERVER 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 transition to the program. They will help newcomers with administrative requirements, including summer and fall registration, training grant appointments, payroll enrollment, e-mail accounts, and ID cards. Information about practical necessities, such as housing, parking, laptop computer ordering, and health insurance coverage is available through the student’s School of Medicine iApply account.

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](http://www.case.edu/finadmin/does/oes.html), 368-2907.). 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). 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.

Students cannot participate in lab work until all relevant training is obtained, and they must check with their rotation mentors to determine what safety training is required for that particular lab. 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.

### 10. 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 the fall semester of the second 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) 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 is included in Appendix A of this document. Students can also e-mail the MSTP office and request a copy.

MSTP 400: MSTP students will register for zero credits of MSTP 400 for the summer terms starting years 1 and 2. Students will register for 3-4 credits of MSTP 400 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.

11. 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;

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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; Epidemiology, including Genetic and Molecular Epidemiology; Genetics; 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, Nutrition, Pharmacology, Physiology and Biophysics, and Systems Biology and Bioinformatics.

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 for a senior mentor with an exceptional track record of prior MSTP student training, but this requires petition to the MSTP Steering Committee for approval. For initial mentors, there is a limit of one MSTP student in the laboratory; a second student may be placed only with prior petition and approval by the MSTP Steering Committee.

Note: Once a senior mentor has two MSTP students, or an initial mentor has one student, the faculty mentor should only take rotating MSTP students if approved by the MSTP Steering Committee for an additional student, unless graduation of an existing student is clearly 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; this requires approval by the MSTP Steering Committee.

These rules are designed to protect students by preventing over-commitment of mentors.

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.
12. The First Two Years

MSTP students are registered as both graduate and medical 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 must register 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, 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. THIS ROTATION MAY SIMPLY BE A SHORT EXPERIENCE. IN OTHER CASES, AN EARLY START IN JUNE OR CONTINUATION OF THE ROTATION INTO THE FALL WILL ALLOW A MORE EXTENSIVE ROTATION IF DESIRED BY THE STUDENT. 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.
Block schedule for the first two years of the MD curriculum

The Foundations of Medicine and Health

<table>
<thead>
<tr>
<th>July - 2012</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
<th>Block 5</th>
<th>Block 6</th>
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<tbody>
<tr>
<td></td>
<td>Becoming A Doctor</td>
<td>The Human Blueprint</td>
<td>Food to Fuel</td>
<td>Homeostasis</td>
<td>Host Defense and Host Response</td>
<td>Cognition, Sensation, and Movement</td>
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<td></td>
<td>5 weeks</td>
<td>11 weeks</td>
<td>11 weeks</td>
<td>14 weeks including 1 Introductory Foundation Week</td>
<td>14 weeks including 1 Introductory Foundation Week</td>
<td>Feb - 2014</td>
</tr>
<tr>
<td></td>
<td>Community Health-Related Experiences</td>
<td>Endocrinology, Reproduction, Development, Genetics, Molecular Biology, Cancer Biology</td>
<td>Gastrointestinal, Nutrition, Energy Metabolism, Biochemistry</td>
<td>Cardiovascular, Pulmonary, Renal, Cell Regulation, Pharmacology, Cell Physiology</td>
<td>Immunology, Microbiology, Blood, Skin, Auto-immune, 1 Intro Week of Musculoskeletal</td>
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<tr>
<td></td>
<td>Professionalism, Population Health, Intro to Medical Anatomy &amp; Histopathology, Bioethics, Epidemiology, Biostatistics, Health Disparities</td>
<td>1 Week Clinical Immersion</td>
<td>1 Week Clinical Immersion</td>
<td>1 Week Clinical Immersion</td>
<td>1 Week Clinical Immersion</td>
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LONGITUDINAL THEMES THROUGHOUT YEARS 1 AND 2

Structure: A longitudinal block that is integrated throughout the 6 blocks covering Anatomy, Histopathology, & Radiology

Pharmacology

Foundations of Clinical Medicine: Tuesday FCM Seminars, Medical Communication, Physical Diagnosis (PD), Patient-Based Experiences (RAMP, CFCP)
B. Year 1 Fall and Spring

Fall and spring of Med year 1, MSTP students register for 9 graduate credit hours/semester. See Table 1 in Section 3. The School of Medicine Registrar will register MSTP students for the appropriate medical school courses.

Graduate Credits for 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.

Graduate Credits for 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 with interests in School of Medicine-based PhD programs (particularly those that participate in the BSTP for straight PhD students) are advised to take a graduate course in their prospective graduate program in the spring semester of year 1. The 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 this semester 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.

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 graduate credit hours in addition to the registration through the medical school.

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. A grad course in the PhD program selected by the student (3-4 credits).
2. 601 Research in the student’s chosen PhD program to complete a total of 9 graduate credits.
3. IBMS 500 (Being a Professional Scientist, zero credits).
4. USMLE Boards part I (with ~ 1 month off for studying and taking the boards).

NOTE: 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.

IMPORTANT: Timing of events in Year 2 Spring:

1. Start graduate course in mid January (tuition supported by PhD home department)
2. Finish MD classes in early March.
3. USMLE Board part I: Most students delay start of laboratory work 4-6 weeks (8 weeks maximum) to complete USMLE Board part I. Alternative arrangements, such as starting lab work in March and shifting USMLE Board part I later may be arranged with permission of the PhD mentor, but the time spent away from lab research should not exceed 8 weeks, and the board exam should be completed before the end of June.
4. Start full-time in laboratory research.
5. Complete graduate course, early May

Students must discuss timing of transition with their PhD mentor. To clarify these issues, the student, mentor and department chair/financial authority will all sign the MSTP Mentor Agreement form.

The spring semester will be considered a grad school-oriented semester for course registration. Administrative acceptance of MSTP students into the PhD programs and their mentor’s home departments will occur effective January. This is advantageous for accumulation of courses and credits towards the PhD degree. The tuition for this semester will be paid by the PhD home department, not the MSTP. The MSTP will cover the stipend of students until the end of April (or the end of May when possible). Note that this means the transfer of financial responsibility for tuition and stipend occur at different times.

PPOS

The School of Graduate Studies requires that students in their second year complete a Planned Program of Study (PPOS) in SIS. Until students complete the PPOS, they will have a Grad Records hold on their SIS account, and will not be able to register for spring semester.

An example of a completed PPOS is in Appendix L. A few things to note:
1. You must include courses you’ve already taken, including the IBIS courses, and the correct number of credit hours. You can see these in your Course History, which is in the Academic pull-down list in SIS.
2. You must also include courses you plan to take. These can be changed later if you change your mind.
3. Include 601 research credits, but not 701.
4. When you log into SIS, the screen defaults to your medical school “career”. On this page, the tab for "My program" does NOT appear. You have to go to "My planner" and change the "Institution/Career" from medicine to graduate. Then the "My program" tab appears so that you can complete the PPOS.
5. George Dubyak will approve the PPOS in the spring semester of year 2.

**Health Care Coverage**

Students in year 2 must be sure to ask their PhD or program advisor about registering for summer semester. Unlike the summer between years 1 and 2, in the second summer students are not registered for med school courses. Students must be registered for either summer or fall semester by July 1 of the third year in order to maintain health care coverage after June 30.

**F. 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".
13. 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 and one or two years of the longitudinal MSTP Clinical Tutorial, which can be taken after completing one year in the PhD phase. 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 an ethics course (IBMS 500 - Being a Professional Scientist - 1 credit) in the spring semester of their 2nd year in the program. 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. Students may defer taking this course to a later semester only if there are irreconcilable conflicts, and such deferral requires permission from the Program Director and a firm commitment on the part of the student to take IBMS 500 during the next spring semester (and to make sure that schedules are checked well in advance to prevent conflicts). THIS IS AN NIH REQUIREMENT.

MSTP Clinical Tutorial: MSTP students are required to participate in clinical training integrated into the PhD phase. Students are strongly encouraged to do this through the MSTP Clinical Tutorial (described in a later section of this document), but CPCP, coordinated through the medical school, will also satisfy the requirement.

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 graded 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. Underlined programs are degree-granting PhD programs. Others are tracks within a degree-granting program. Asterisked programs are part of the CTSTP; others are MSTP-affiliated programs.

- Biochemistry
- Biomedical Engineering (BME)*
- Cancer Biology Training Program (through the Pathology PhD program)
- Cell Biology
- Developmental Biology (through Genetics and Neuroscience PhD programs)
- Epidemiology and Biostatistics* (includes Molecular and Genetic Epidemiology)
- Genetics and Genome Sciences
- Immunology Training Program (through the Pathology PhD program)
- Molecular Biology and Microbiology
- Molecular Virology
- Neurosciences
- Nutrition
- Pathology (Molecular and Cellular Basis of Disease)
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). If the student’s PhD advisor is a member of the Steering Committee, a second Steering Committee member must be selected to fill this role on the thesis committee. 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 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 5th 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. After students enter PhD5 year they must have a thesis committee meeting every 4 months.

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 for relevant deadlines.

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.

Students are expected to remain active in laboratory research until the end of the period of support by their thesis mentor, EVEN IF THAT PERIOD EXTENDS BEYOND SUCCESSFUL COMPLETION OF THE PHD. For example, a student may successfully defend a PhD thesis in March to meet the deadline for May PhD graduation, yet remain active in the mentor’s lab through June. This can be a very productive period where students complete experiments indicated by the reviews of the manuscripts they submit prior to their defense, complete additional projects and papers, or help with new or ongoing projects that will result in additional co-authored manuscripts.

Many MSTP students don’t make the deadline for completion of their PhD thesis defense in time to receive the PhD at May commencement ceremonies, and it is common to target a defense date in June that will allow official conferral of the PhD in the summer semester (August graduation date). The graduation date (May vs. August) is generally not of concern to MSTP students, but the May date provides ceremonial events that are not recapitulated on other graduation dates.

NOTE ON REGISTRATION FOR AUGUST or JANUARY PhD GRADUATIONS: Unlike straight PhD students, MSTP students do NOT have to register for graduate credit in the summer semester if their official PhD graduation is in August and they return to medical school in July. Likewise, MSTP students who will have their PhDs conferred in January do not have to register for graduate credit in the fall semester 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 semester if they return to medical school in March (this last scenario does not usually happen).

14. Important Issues Concerning Training Grant 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, and a 6th year can be granted to MD-PhD students upon application to the NIH. The MSTP T32 (or CTSTP TL1) typically supports students for Med years 1 and 2, as well as Med years 3 and 4. 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 6th year extension is necessary). Failure to follow these rules will threaten our ability to support a student in Med years 3 and 4.

15. Required Steps for F30/F31 Applications by MSTP/CTSTP Students

Students are strongly encouraged to apply for an individual NRSA F30/F31 PhD or MD/PhD fellowship award; ideally all MSTP/CTSTP students will do so. Students benefit from the prestige of the award (important for residency and fellowship applications), additional budget for training-related expenses and travel, a possible bonus to their stipend (see Appendix J), and in some
cases, with unique support for MD phase. The mentor and research program also benefit from the additional support.

ALL STUDENTS APPLYING FOR INDIVIDUAL NIH AWARDS (E.G. F30 or F31) MUST NOTIFY THE MSTP DIRECTOR (Cliff Harding) AND ADMINISTRATIVE DIRECTOR (Kathy Schultz) PRIOR TO APPLICATION TO ESTABLISH A PLAN, AND SHOULD REFER TO APPENDIX I.

Some NIH institutes provide F30 awards that can fund both the PhD and the MD phase. For these applications, the maximum period of support should be requested to allow support of MD as well as PhD training.

As of March 2014, the following restriction on the timing of applications applies.

For all applicants other than DDS/PhD, DMD/PhD, and AuD/PhD degree candidates: To be eligible, an applicant 1) must have matriculated into a dual-degree program no more than 48 months prior to the due date of the initial (-01) application; and 2) must have identified a dissertation research project and sponsor(s). Exceptions to the first eligibility criterion will be considered when the applicant has taken an official leave of absence from the dual-degree program. In addition, over the total duration of F30 support, at least 50% of the award period must be devoted to full-time graduate research training leading to the doctoral research degree.

The NIH will allow students who matriculate in year 0 in July to submit for the August submission date, about 49.5 months after their start.

Please see Appendix I for information on preparing F30/F31 applications.

16. MSTP Clinical Tutorial

Note: Guidelines and forms for the MSTP Clinical Tutorial are included in Appendix B.

Students are required to take the MSTP Clinical Tutorial for one year in a patient-based clinical specialty (not Radiology or Pathology). Students may take a second year of MSTP Clinical Tutorial in any clinical specialty, including Pathology and Radiology. The MSTP Clinical Tutorial is a longitudinal pre-clinical experience for MSTP students in the PhD phase. It is taken after the first year of the PhD phase and should take 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.

The MSTP Clinical Tutorial also qualifies for clinical elective credit toward Med year 4.

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, Debra Leizman, MD, holds an informational meeting each fall to help arrange clinical placements for students. Students with specialized clinical desires are encouraged to help with the placement process by suggesting potential mentors for Dr. Leizman to contact. Kathy will communicate with students unable to attend the meeting. 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, particularly a second year of 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. 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.

**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.

**Other clinical preparation for Med year 3**

**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. 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).
17. 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.

The Med year 3 and 4 curriculum is summarized below.

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**3rd Year**

March 2014 through June 2015

*Three Basic Clinical Core Rotations & MD Thesis Research Project*

Basic Clinical Core Rotations: Two 12-Week and two 8-Week Basic Clinical Core Rotations, each at one hospital: UH Case Medical Center & VA, Metro Health, or Cleveland Clinic – students submit preferences of timing and location to the Registrar.

Description: The Clinical Core Rotations encompass 40 weeks of clinical experiences that also incorporate basic science objectives. Students experience both breadth and depth in clinical care, along with basic science integration, through clinical experiences that are developmental and provide opportunities to reinforce, build upon, and transfer knowledge and skills. The rotations include family medicine, internal medicine, surgery, pediatrics, obstetrics & gynecology (OB/GYN), neurology, and psychiatry. Clinical Rotations Individual Evaluation System: Honors, Commendable, Satisfactory, and Unsatisfactory

The scheduled order of the Basic Clinical Cores and Research Block are based on YOUR preferences of timing and location.

<table>
<thead>
<tr>
<th>Clinical Core 1</th>
<th>Clinical Core 2</th>
<th>Clinical Core 3</th>
<th>Clinical Core 4</th>
<th>MD Thesis Research Block</th>
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<td>12 weeks</td>
<td>12 weeks</td>
<td>8 weeks</td>
<td>8 weeks</td>
<td>16 weeks</td>
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<td>Internal Medicine, Family Medicine, Geriatrics</td>
<td>OB/GYN &amp; Pediatrics</td>
<td>Neurology &amp; Psychiatry</td>
<td>Surgery &amp; Emergency Medicine</td>
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</table>

**Elective/Board Study Block**

8 weeks
Reading or Clinical Electives with 4-6 weeks Board Study Time

USMLE Step 1 can be taken before or after a Clinical Core or Research Block
Fourth Year: Advanced Clinical & Scientific Studies

• **Time to:** Take more clinical electives (locally or away) in preparation for residency applications
  Prepare and complete residency applications
  Travel to residency interviews

• **Two Acting Internships:** One in Internal Medicine, Pediatrics, Surgery, or inpatient Family Medicine, AND One in a specialty at a hospital of your choice. At least one must be completed locally at a CWRU affiliated hospital. Each Acting Internship is a 4-week long experience.

• **Additional Clinical, International, and/or Research Electives** – performed locally or at other institutions

• **Capstone: Transitioning to Residency (2weeks, voluntary)** – “Residency Bootcamp” Revisit important team, leadership, and communications skills; learn some skills to help you start your internship; review clinical skills like IV and central line insertion, ACLS protocols, etc.; engage in community service;

• **Vacation if time permits**

• **Graduation in May**

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

MSTP students can start the core Med year 3 clinical clerkships at the beginning of July, September, October, or November. See the 2013 rotations table below, as an example.

Each fall, the SOM Registrar meets with MSTP students planning to return to med school in the following summer or fall, to discuss the timing and options. 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 start as late as November. 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 may end then, as may health insurance coverage unless the student makes his/her own arrangements for insurance).

Students should consult their Society Dean advisor and the Medical School Registrar concerning the scheduling of Med year 3 Core Blocks. Students must inform the Registrar, their Society Dean, and the MSTP administrator of their plans for returning to med school, and must keep everyone informed if their plans change.
### 2013 Rotations for Students Not Starting with Core 3 (Most of Class)

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<th>Option</th>
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**Each column = 4 weeks (months are approx)**
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. September and November are the other dates chosen for start of the Med year 3 Core Blocks. 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).

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 true to some degree, but note that 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, and most MD students will have taken 8 weeks for USMLE boards in this period, so students doing a Core Block starting in November will sometimes have only 8 weeks of Med year 3 clinical experience. Thus, MSTP students will be a little behind at the start of the clerkship but should catch up quickly. 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, 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 is reduced by taking MSTP Clinical Tutorial during the PhD phase and clinical electives prior to the first core block..

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 scheduling an AI as soon as possible (consult the Medical School Registrar). A November return should still allow a student to complete a 4-week AI well before the time when materials for most residencies are due (mid-late October). Note that Ophthalmology, Pediatric Neurology and Neurosurgery have deadlines that are earlier than other residencies, which could complicate this schedule for some students.

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 by January if you expect to finish your PhD by summer or fall. She will inform you of the schedule and procedures for choosing the order and hospital location of your clinical rotations.

Other Considerations: See the Return to MD 3 To-Do List in Appendix K, and on the MSTP website.

C. Med year 4

The fourth year includes advanced clinical studies, acting internships and in-depth seminars in medicine and health, and opportunities to pursue additional clinical interests in preparation for residency. The elective time may be spent on clinical electives and up to approximately 4 months of research
electives if Med year 3 was started in July. If Med year 3 was started in November, the four months of time available for research electives are deemed satisfied by work during the PhD phase, and elective time should be spent on clinical electives.

18. 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. Students should explicitly raise the issue of research track residency if they wish to explore this option (research careers can also be pursued with traditional residency programs). Dr. Harding is an additional source of advice on these topics. 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 and Co-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.

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 the 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 usually 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, which should be precise, complete and accurate:
   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. A list of any other honors or distinctions
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.
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 Medical School Registrar 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 some time 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.

Many students also make appointments early in Med year 4 to meet with the chair of the department or chief of the clinical service division in the field they will enter for residency. The chair can give an evaluation of strong residency programs. If he/she knows the student 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 Case MSTP has a tradition of having a graduation party with a panel discussion 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 seen on the MSTP website.

See the School of Medicine Registrar web page and the AAMC web page for ERAS deadlines and FAQs.

19. Case MSTP Support and Benefits

The Case MSTP provides the following benefits.

1. Full tuition support for both MD and PhD training.
2. Stipend ($27,500 annually, as of 7/1/2014).
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 H for policy on computers.
4. Health Insurance. The MSTP pays the annual health insurance fee for all students. Students have the option to waive health coverage if they are covered under another plan.
The MSTP does not provide coverage for spouses or dependents, and does not cover the cost of co-pays or any additional fees.

5. Student Activity Fees: The MSTP pays the annual student activity fees, but does NOT pay for the One-to-One Fitness Center student membership. Students must waive this fee in the Student Information System (SIS) if they do not want the membership, or must pay the fee themselves if they do want the membership.

6. 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).

7. 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.

20. 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 March. 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 Council

MSTP 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 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. **Summer Retreat Committee.** This committee plans the agenda and selects speakers for the summer retreat. The committee functions in collaboration with the MSTP Director and Administrative Director.

2. **Intro to MSTP:** This committee is in place to help first year MSTP students adjust to the program and CWRU.

3. **Communications and Webpage Committee.**

4. **Community Service Committee:** Plans events for involvement of MSTP students in community service.

5. **Social Committee:** This important committee plans fun events throughout the year!

6. **Monthly Dinner Seminar Series:** These seminars are planned by representatives of each MSTP class with efforts coordinated by MSTP Council Vice President. Students are 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.

7. **MSTP Representative to Faculty Council:** One student is selected to represent the MSTP on Faculty Council.

8. **MSTP Representative to the Committee on Medical Education.**

9. **MSTP Representative to the CWRU Graduate Student Senate.**

10. MSTP Representative to the Biomedical Graduate Student Organization (BGSO).

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. **Recruiting Liaisons work with the MSTP staff to facilitate recruiting of applicants.**

13. The Winter Retreat is planned by a student and mentor identified by the Director.

14. 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. Marion Skalweit, MD, PhD, 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 graduation party are held each year as social gatherings for all MSTP students, faculty and staff members (spouses and children are invited). The graduation party includes a Q & A session for the current students with the graduates regarding their insights into residency application, interviewing and selection, as well as their reflections on their paths in scientific and clinical training.
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) and to the MSTP office (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) or Kathy Schultz (368-3404; 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 student’s 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.
Abstract/Summary
From July – August 2013, I worked under the direction of Dr. Gabrielle Nickel, a post-doctorate researcher in the laboratory of Dr. Eric J. Arts, to analyze sequencing data from a collaborator’s project investigating population-level changes in the viral sequence encoding glycoprotein 120 (gp120) of simian human immunodeficiency virus (SHIV) in a macaque pathogenesis model. To assess the effect of a broad-spectrum vaccine on the evolution and infectivity of the virus, the collaborator vaccinated monkeys with replication-defective SHIV pseudovirus representing the env variants of 10 different HIV-1 subtypes. As controls, animals were vaccinated with pseudovirus expressing only the B-subtype env variant. These monkeys were then infected with a SHIV clone expressing the B-subtype env variant. After 1 and 3 weeks, blood lymphocytes were collected from each monkey, and the gp120 region in a sample provirus population was PCR-amplified and deep-sequenced. As a measure of evolution in gp120 over time, we tracked changes in the frequency of predicted N-glycosylation sites. Preliminary results show differences in the rate of loss or gain of N-glycosylation sites in gp120 between different animals, presumably due to differential selection pressure of the vaccination treatment on the virus, though at this point we are still blinded to the vaccination treatment of each animal.

Introduction
The development of an effective preventive HIV-1 vaccine has proven to be an elusive goal for many reasons, including the heterogeneity of the virus, the high mutation rate of the viral genome, and the inaccessibility of virion surface proteins to host antibodies. However, promising results from a landmark 2009 HIV-vaccine trial (RV144) that lowered the risk of acquiring HIV-1 by 31% have spurred renewed attention on this goal, with specific focus on gp120. Gp120, a virion surface envelope glycoprotein encoded by the env gene, plays an essential role in HIV-1 infectivity, by binding the CD4 receptor and co-receptor of target CD4 T-lymphocytes and mediating viral entry. Glycosylation of this protein at arginine residues is important for this function, as the N-linked glycans are essential for the receptor binding-induced conformational changes in gp120 necessary for membrane fusion. In addition, glycosylation provides a “glycan shield” that masks epitopes from the host immune system. This immune escape strategy makes the sequence encoding gp120 one of the most variable regions in the HIV-1 genome.
To measure the efficacy of a broad spectrum vaccine, our collaborator vaccinated 6 monkeys with a combination of pseudovirus representing the gp120 variants of each of 10 HIV-1 subtypes. After
infection with the B-subtype SHIV, the gp120 region of a sample provirus population was sequenced at various time-points post-infection. I contributed to the sequence analysis for 2 of the 6 samples. As the reads covered specific sub-parts of the full-length gp120 sequence, I first mapped each read to the known, full-length sequence using an alignment tool, MUSCLE. Next, I calculated the frequency of predicted N-linked glycosylation sites from the translated sequence reads, by developing and running a customized Perl script which finds in the sequence all matches to the pattern predictive for N-linked glycosylation sites (Nx[ST]).

Results

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Table 1. [unpublished data redacted] Positions of predicted N-linked glycosylation sites and their frequencies in a sample population of gp120 sequences, 1 week and 3 weeks after infection, for 2 different animals. In red and green are positions lost and gained, respectively, between the two time-points.

The distribution of predicted N-linked glycosylation sites in gp120 is shown for two different animals in Table 1. In Animal 1, between weeks 1 and 3, X sites were lost, and X sites were gained in the population of gp120 sequences. In contrast, in Animal 2 in the same period of time, X sites were lost in the population of gp120 sequences, and X were gained. Though quite preliminary, these results may be consistent with our hypothesis that the rate of evolution in gp120 is accelerated in subjects of the broad-spectrum vaccine, because of higher selection pressure on the virus from antibodies against all gp120 subtype variants compared to antibodies against a single gp120 subtype variant.

Future directions

I will confirm each monkey’s vaccination treatment to associate rate of change in the distribution of N-linked glycosylation sites with vaccination treatment. I am currently working with Dr. Nickel to assess the genetic diversity of the gp120 populations at each time-point using the Kimura 2-parameter model, which estimates the evolutionary distance between two sequences from the frequency of nucleotide substitutions. We expect that genetic diversity of gp120 populations will follow similar trends as the rate of change in the distribution of N-linked glycosylation sites, comparing the subjects of the broad-spectrum vaccine with controls. In addition, we will correlate evolutionary rate in the gp120 sequence with viral load measurements to assess whether accelerated evolutionary rate indeed contributed to increased viral fitness in this study.
Appendix B: MSTP Clinical Tutorial Guidelines and Forms

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
3. To receive two weeks clinical elective credit for the MD4 year
4. To fulfill the CPCP requirement

Students can get both clinical elective and CPCP credit at the same time. The CPCP requirement needs to be met only once; after completing CPCP, students can take MSTP Clinical Tutorial without the online CPCP components.

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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.).
7. 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.
8. 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.

Clinical Elective Credit

1. At the end of each Tutorial, an evaluation form must be completed by the clinical mentor and returned to the MSTP office. Please return the evaluation promptly, as it is necessary for the student to receive elective credit for the tutorial.

2. Students must complete an exit survey at the conclusion of each tutorial. The MSTP office will send a link to the survey. This exit survey is necessary for receiving elective credit.

3. 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.

Fulfillment of CPCP Requirement

1. The Clinical Tutorial fulfills the CPCP requirement only if it is based in a patient-based setting. Clinical settings that are not sufficiently patient-based, e.g. Pathology or Radiology, will not satisfy the CPCP requirement. A student may do clinical tutorial in a non-patient-based setting after completing the CPCP requirement.

2. CPCP online components include 22 patient logs and two online modules. This effort is estimated to take approximately 7 hours.

3. To obtain CPCP credit, students must complete the CPCP registration form, below, and take it to the FCM office, E306, when the Clinical Tutorial begins.

4. The CPCP administrator is Denise Carter O’Gorman. Contact Denise for further inquiries about the CPCP requirements.

5. Students will still earn two weeks clinical elective credit when using the Tutorial to fulfill part of the CPCP requirement.

6. The CPCP component is not necessary if a student has already satisfied the CPCP requirement in an earlier year of Clinical Tutorial.
MSTP Clinical Tutorial Agreement Form

We have read and discussed the Guidelines and Expectations for Clinical Tutorials, and have agreed on a working schedule. We will complete the evaluation form (mentor) and the online exit survey (student) when the Tutorial is concluded.

Student’s Name: ______________________________________________________

Mentor’s Name: ______________________________________________________

Department/Division/Clinical setting: ________________________________

Student’s Signature: ________________________________________________

Mentor’s Signature: ________________________________________________

Date: ____________________________________________________________

Will this Clinical Tutorial be used to fulfill the CPCP requirement? Yes ☐ No ☐

If so, students must complete the CPCP Registration form, bring it or email it to Kathy Schultz for her routing signature, and return it to the Foundations of Clinical Medicine office, room E306.

Please sign and return to MSTP office.

MSTP
School of Medicine T401
phone 368-3404    fax 368-5295
mstp@case.edu
CPCP Registration for Credit Form

This form must be completed and all receive all signatures in order for a student to receive credit for CPCP (part of your clinical coursework for graduation). This form and completion of CPCP course requirements are required prior to student joining the Year 3 curriculum.

Section A: Student Information (All students must complete this section.)

Today’s Date: _______________ Full Name:________________________________________

Case ID: _______________ Cell Phone: (__)_____________

Student Signature: ______________________________ Date: ___________

Please complete appropriate sections below and bring to FCM Office (E306)

I am completing CPCP as part of Clinical Tutorial:

YES ______ If yes, please complete Section B below.

NO ______ If no, please complete Section C below.

SECTION B-CPCP as part of Clinical Tutorial (Please fill this section out and bring the form to the FCM Office when you begin the Clinical Tutorial.)

Clinical Tutorial Preceptor Name: _______________________________

Preceptor Email: ___________________

Case ID: _________ Telephone ________________

Tutorial Site Address: ______________________________

SECTION C-CPCP outside a Clinical Tutorial

CPCP Preceptor (This section will be completed with the FCM office)

Name: _______________________________ Email: ________________

Case ID: _________ Telephone ________________

CPCP Site Address: ______________________________

See other side of form for CPCP Requirements and Site access information
Site access information

Prior to beginning your tutorial:
Register with the Graduate Medical Education Office (GME) at the hospital connected to your assigned site in order to
- Update demographic info, HIPAA & OSHA training
- Provide proof of current immunizations
- Reactivate your hospital ID
- Release and/or complete your latest background check
- Gain access/training to use site’s EMR

Student should contact:
GME Office contact information
- UH: Kate Ridenour 844-3887 Humphrey Bldg., 1st flr, Suite 1626, RmB
- Metro: Kathleen Longley: 778-5369, klongley@Metrohealth.org
- CCF: Pat Gassar: 444-9977 gassarp@ccf.org
- VA: the Preceptor’s Department arranges for the above

Requirements for completing CPCP Link: [https://casemed.case.edu/cpcp/](https://casemed.case.edu/cpcp/)
On line Module 1 due date:
On-line Module 2 due date:
On-line Patient Logs (min. 22) due date:

Routing Signatures:

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<td>1. MD/PhD Representative</td>
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<tr>
<td>2. Foundations of Clinical Medicine Representative (E306)</td>
<td>Date:</td>
</tr>
<tr>
<td>4. SOM Registrar (Room T408) Siu Yan Scott (T408)</td>
<td>Date:</td>
</tr>
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</table>

Internal Use: SIS RegistrarPS SRS
MSTP Clinical Tutorial Evaluation Form

(Course Code MEDS 4010M)

To be completed by Mentor.
Please return to MSTP office.

Student’s Name_________________________ Dates of tutorial __________ - ___________

Mentor’s Name____________________________ Clinical Setting ______________________

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<td>4</td>
<td>3</td>
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<td>includes pertinent positives and negatives</td>
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<td>skill consistent with level of training/peers</td>
<td>5</td>
<td>4</td>
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<tr>
<td>prepared for entry into clerkship</td>
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<td>applies knowledge to clinical situations</td>
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</table>
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
MSTP Clinical Tutorial Exit Survey for Students

When students have completed the tutorial, Kathy will send them a link to an online survey.
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. 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. Communications Committee: Maintains the Case MSTP webpage. Develops content and implements changes in consultation with Council, MSTP Director and Administrative Director. Organizes other communications.

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. 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.

6. 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).

7. 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.

8. **Student Representative to the Committee on Medical Education.**

9. **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.

10. **Representative to the Biomedical Graduate Student Organization (BGSO).**

11. Representative to APSA (American Physician Scientist Association). Students who are involved in this group may volunteer to serve as a CWRU representative to the national group. The CWRU MSTP does not guarantee support for attendance to the annual APSA meeting. The Steering Committee usually selects two students to attend a national MSTP meeting each year, but most students elect to attend the MD-PhD Student National Meeting in Colorado instead of APSA. However, the selected students may choose the APSA meeting if they wish. In some years, the MSTP may identify additional travel funds to support more student travel, including additional attendance at APSA.

**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 Liaisons:** Help organize participation of students in the recruiting process and interactions with applicants.

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. **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).

4. **National MD/PhD Student Meeting (or APSA 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.

5. **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.
6. **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.

7. **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

Many MSTP students have not had significant experience with income tax and the filing of tax returns. Moreover, the tax considerations for MSTP stipends are confusing, and in different stages of the program students’ income is reported differently to the IRS.

Note that CWRU and the CWRU MSTP cannot provide tax advice. The following text reflects notes from a workshop at the 2003 MSTP Retreat at which a tax advisor spoke. Although we believe the following text was valid at the time, 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.

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

- No W2 will be issued, but still need to report stipend income (not tuition support) and pay federal and state taxes on this income.
- No federal or state taxes withheld from paycheck. 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, you may need to make quarterly estimated tax payments to avoid a penalty from the IRS.
- Can decrease reported income by the amount of school expenses that you paid for REQUIRED items, e.g.; textbooks, stethoscope. Optional materials you may purchase to help with your coursework do not count. MSTP students should retain copies of receipts for any course-related expenses.
- May not have to pay local taxes on this income. This varies by city.
- No Social Security or Medicare taxes deducted

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

- Will have income reported on a W2.
- Will have federal and state taxes withheld.
- May deduct unreimbursed professional expenses (subject to usual limitations)
- Will have to pay local taxes as well as state and federal.
- Will have Social Security and Medicare taxes deducted.

All students will be supported on the MSTP T32 grant (scholarship phase) for at least part of the MD training years, but may 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.
The notes below are based on recent student experience (2011) and are intended only as an example and a rough guideline to help you with your planning.

- While you are appointed to a training grant (usually your first two and last two years in the program), no taxes are withheld from your paycheck. This is because the IRS does not consider training grant stipends to be salaries.
- Social Security and Medicare (FICA) taxes are not taken out during this phase either.
- The university will not give you a W2 while you are appointed to a training grant.
- You will get the entire $25,000 annually in your paycheck.
- BUT … even when your stipend is not considered a salary, it is still income and therefore must be reported to the IRS.
- Even when taxes are not withheld from your paycheck, your income is still taxable.
- After you report your income in the first year, you will be billed quarterly for estimated taxes from the federal government, as if you were self-employed. That happens second year of med school.
- Once you are in the lab, and no longer supported by a training grant, normal withholdings and FICA taxes are taken out of your paycheck, and you will receive a W2 form.
- If you live in Cleveland Heights or Shaker Heights, you are also required to pay estimated local income taxes to that city as well as to the city of Cleveland. This amount is never withheld regardless of phase, and you have to pay it quarterly. This is usually roughly $400 per year.
- Note that you may be appointed to another training grant, or obtain your own fellowship funding, during the PhD phase. In this case your stipend payments will be treated as they are when you are appointed to the MSTP training grant.
- The bottom line: take home pay for a single person living in Cleveland Heights and claiming one exemption is about $21,900. This amount should be roughly the same whether you are having taxes withheld, being billed for estimated taxes, or paying all taxes at the end of the year.
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.

Students take Step I in March (sometimes later in the spring semester) 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 401-403 and IBIS 411-413). 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 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.

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 (1)
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 limitations. The computer must be purchased through the Department of Administrative Computing. MSTP students place their computer orders according to instructions available in their School of Medicine iApply accounts. In general, the program will support purchase of the least expensive of the computers offered 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.

The School of Medicine’s student computer policies apply to all School of Medicine students, including MSTP students. 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.

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.

Some MSTP-affiliated PhD programs purchase computers for their PhD students, since the BSTP does not purchase them. MSTP students should realize that their MSTP-provided computer may make them ineligible to receive an additional computer from the graduate program, since they will have already received a CWRU-supported computer. Policies on this issue may evolve, and individual considerations may apply. Please respect the need to conserve institutional resources.
Appendix I: Information for F30 or F31 applications

This appendix supplements information in section 15 of the MSTP Guidelines (please read that section first).

Summary list of MSTP/CTSTP issues for F30/F31 applications:

1. Inform Cliff and Kathy BEFORE developing the application. Your home department is likely to NOT understand issues specific to MD-PhD students, and the MSTP needs to coordinate certain financial issues relative to your application.

2. IF POSSIBLE, APPLY FOR AN F30 THAT FUNDS BOTH PhD AND MD PHASES (PA-11-110) RATHER THAN A GRANT THAT FUNDS ONLY THE PhD PHASE. Consult the NIH program announcements (see list at the end of this appendix) to determine if your institute will fund PhD-only or MD-PhD support on the F30 or F31. If your research is responsive to more than one NIH institute, it is preferable to choose one that funds MD-PhD training including the MD phase (see list of institutes for PA-11-110 at end of this appendix).

3. Always ask for the maximum period possible, even if you may finish earlier, as it is easier to send money back to the NIH and much harder or impossible to extend the period of support. Consult with Kathy to determine the length of the maximum allowable period. Dual degree students are allowed a total of six years of support on any NRSA training grant or fellowship. This includes the MSTP and CTSTP training grants. We suggest that you round up to full years of eligibility to avoid budget and timing complications. For example, if you are eligible for 3.5 years of support, request 4 years of support. The excess budget for the unused part year will be returned to NIH.

[Note to administrators: Attempts to match precisely the partial years in a budget are complicated by award start date, transition from PhD back to MD phase, or resubmissions. A key issue specific to grants that cover both MD and PhD training is whether any part year will be one that covers PhD phase or MD phase which is usually unknown at the time of application.]

4. Always ask for the maximum budget needed. The budget comprises three lines, or categories: stipend, tuition, and institutional allowance. The dollar amounts for stipend and institutional allowance are formulaic in an NIH fellowship, and we suggest you ask for maximum allowable amounts per NIH guidelines. CAUTION: THE TUITION CALCULATION IS MUCH MORE COMPLICATED.
   a. For applications that fund only the PhD phase, your PhD department administrator will know how to do the tuition budget.

   [Note to Administrators: The Office of Graduate Education recommends that the FULL TUITION be listed, with budget justification that this full tuition will be funded to 60% as per the NIH formula. Alternatively, list the reduced/capped amount per NIH guidelines and explicitly indicate the justification for that amount by also indicating the full tuition amount and calculation.]

   b. For the F30 fellowships that allow support for BOTH MD AND PhD PHASES (PA-11-110), special considerations on the budget are required that your department administrator may not be familiar with:

   **YOU SHOULD PROPOSE MD TUITION RATE FOR THE LAST TWO YEARS OF THE BUDGET.
**YOU SHOULD PROPOSE A FULL 9-CREDIT LOAD FOR EVERY PhD PHASE SEMESTER, EVEN IF YOU ANTICIPATE LOWER CREDIT REGISTRATION COSTS FOR SOME OF THEM.** Any unused monies are returned to the NIH.

[Note to Administrators: This policy is advised by both MSTP and the Office of Graduate Education, and is necessary because of the variable timing of student transitions from PhD training to the final two years of MD training. In particular, a student may transition from the PhD to the higher budget MD phase sooner than expected and budgeted for, and the NIH is very unlikely to change fellowship funds once the grant has been awarded. In the first scenario, if a student budgets 2 credits of dissertation PhD training, completes the PhD and transitions to MD3 early, the student will not obtain the very expensive MD tuition from the grant early, and we lose a tremendous amount of justified support. By contrast, in the desired scenario, if the student has budgeted 18 credits PhD tuition, if the student returns to the MD early, the budgeted 18 credits PhD tuition will better address the MD tuition rate. As always, any unused NIH monies are returned to the NIH each budget year. This is acceptable by CWRU and NIH policy. We understand that arrangements may occasionally be negotiated with the NIH at the time of the transition from PhD to MD phase (it is good to check to see if we have maximized opportunity), but the ability to increase budget to account for increased costs in a given budget year is often not possible).

5. Check the [CWRU bursar website](#) for current graduate school tuition charges per credit hour. Contact Kathy for the current MD tuition rate. Usually you can assume a 4% tuition increase per year for both, so extrapolate into the future accordingly.

6. 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. We recommend that the mentor’s letter of support clarify this issue of non-overlap, and it should also be stated in the budget justification section and/or wherever else is appropriate.

7. How to specify research vs. clinical activities for the years of training in the training plan section: In general, the reviewers want to see research training activity, so bring this out as the primary focus of the proposal, but it is OK to indicate how your clinical interests will tie in with your research goals. You don’t need to spend much time on describing clinical training, but you can mention it as a phase of your training. Don’t miss the opportunity to indicate research in a year when it might be there. For example, if the training period will include a mixture of research and clinical periods (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 can also include a small amount of clinical time (~5%) during the PhD phase if you intend to do MSTP Clinical Tutorial (explain that this will be individualized and customized to link to your research field). Remember, for med year 4 you might do research electives, and we recommend that you propose this as an attractive feature in the application (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.

8. Tell Cliff Harding and Kathy Schultz when the grant is awarded, and send a copy of your Notice of Award to Kathy.

9. The MSTP provides a $2,000 annual stipend bonus in the final two MD years to MSTP students who are awarded F30 fellowships that include funding for those years. The bonus is prorated and applied in each month for which the student’s fellowship provides funding. PhD departments may also provide a bonus for fellowship funding in the PhD phase; see Appendix J.
10. Resources for F30/F31 applications are available on the School of Medicine Graduate Education website (http://casemed.case.edu/gradprog/prodevwriting.cfm). Contact Kathy Schultz to get access to a shared folder of prior successful applications and advice from MSTP students. Note that these documents are confidential, and the student grantees have agreed to share them with you; PLEASE RESPECT THEIR CONFIDENTIALITY AND DO NOT DISSEMINATE THEM.

F30/F31 Funding Opportunities

The three program announcements for F30 or F31 funding are listed below. Each is accompanied by a list of NIH institutes that will support F30 or F31 funding through that mechanism. For program announcements and general information about the F awards, see the NIH F Kiosk.

NIH Parent F30 for MD-PhD (PA-11-110)

**THIS IS THE ONLY PROGRAM THAT SUPPORTS BOTH PhD AND MD PHASES. IF POSSIBLE, APPLY VIA THIS MECHANISM AND REQUEST SUPPORT FOR THE MD PHASE AS WELL AS THE PhD PHASE.

As of March 2014, the following restriction applies.

*For all applicants other than DDS/PhD, DMD/PhD, and AuD/PhD degree candidates: To be eligible, an applicant 1) must have matriculated into a dual-degree program no more than 48 months prior to the due date of the initial (-01) application; and 2) must have identified a dissertation research project and sponsor(s). Exceptions to the first eligibility criterion will be considered when the applicant has taken an official leave of absence from the dual-degree program. In addition, over the total duration of F30 support, at least 50% of the award period must be devoted to full-time graduate research training leading to the doctoral research degree.*

The NIH will allow students who matriculate in year 0 in July to submit for the August submission date, about 49.5 months after their start.

- National Cancer Institute (NCI)
- National Institute on Aging (NIA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- National Institute on Deafness and Other Communication Disorders (NIDCD)
- National Institute on Dental and Craniofacial Research (NIDCR)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Institute on Drug Abuse (NIDA)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute of Mental Health (NIMH)

Information at the following website provides explicit information specific to each NIH institute for preparing MD-PhD F30 applications. We urge you to consult this information:


66
**NIH PA-11-111 F31**

**Supports PhD phase only.**

- National Cancer Institute (NCI)
- National Institute on Aging (NIA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- National Institute on Deafness and Other Communication Disorders (NIDCD)
- National Institute on Dental and Craniofacial Research (NIDCR)
- National Institute on Drug Abuse (NIDA)
- National Institute of Mental Health (NIMH)
- National Institute of Neurological Disorders and Stroke (NINDS)
- National Center for Complementary and Alternative Medicine (NCCAM)

**NIH F31 Diversity NRSA (PA-11-112)**

**For Under-Represented Minority (URM) students, may support both PhD and MD phases. Check with the individual institute.**

- National Cancer Institute (NCI)
- National Eye Institute (NEI)
- National Heart, Lung, and Blood Institute (NHLBI)
- National Human Genome Research Institute (NHGRI)
- National Institute on Aging (NIA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- National Institute of Allergy and Infectious Diseases (NIAID)
- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
- National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
- National Institute on Deafness and Other Communication Disorders (NIDCD)
- National Institute on Dental and Craniofacial Research (NIDCR)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Institute on Drug Abuse (NIDA)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute of General Medical Sciences (NIGMS)
- National Institute of Mental Health (NIMH)
- National Institute of Neurological Disorders and Stroke (NINDS)
- National Institute of Nursing Research (NIHR)
- National Center for Complementary and Alternative Medicine (NCCAM)
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 policy for MSTP students in the PhD phase will be governed by the student’s home department (the department in which the student’s mentor has his/her primary appointment, which may be different from the department that is the administrative home of the student’s PhD program). The MSTP does not control the policy of the home departments, which may vary. Please note that stipend supplementation cannot be made retroactively. If MSTP students obtain fellowships that provide funding that extends into MD phase periods, the MSTP will provide a stipend supplement as described below.

For certain types of fellowships, especially NIH F30 grants that fund MD-PhD training, the period of support may include clinical training in Med years 3 and 4. MSTP students who obtain an externally-funded fellowship that provides at least 75% of the current stipend amount for a period within the MD phase will receive a stipend bonus of $2,000 per year from the MSTP, prorated on a monthly basis during the MD phase period covered by the grant.
Appendix K: Return to MD 3 To-Do List

See pages 27-30 in the MSTP Guidelines for information on the timing of your return.

Talk to the Medical School Registrar to get scheduled in your clinical blocks.

Make sure your Society Dean knows you’re planning to return.

If you’re not on the SOM listserv for your MD graduating class, sign up for it here: https://lists.case.edu
After logging in, search for the following:
   som-class
   som-admin
Both searches will bring up a listing of all years, and you can choose which ones you want to subscribe to.

You must complete all of your PhD program’s requirements for graduation before you can return to med school.

Look at the Grad Studies calendar (http://www.case.edu/provost/gradstudies/current/calendar.html) for graduation application deadlines and a link to the graduation application. Although your PhD requirements must be complete before you go back to med school, it’s not necessary to actually graduate before you go back. For example, if you plan to go back in September, it’s OK to have a January graduation.

You do not need to register for graduate credits in the semester of your PhD graduation. However, you must be sure you are registered for medical school credits for that semester, and you do need to submit a waiver of registration form to the School of Graduate Studies. (In rare exceptions, the Steering Committee allows students to return to med school before completing the PhD graduation requirements. In this case you may need to register for graduate credits in the semester you return to med school. Check with Kathy.)

August MSTP grads do not have to register for graduate credit in the summer if they return to medical school in July.

January MSTP grads do not have to register for graduate credit in the fall if they return to medical school in September or November.

When you know your defense date, please send it to Kathy Schultz. She also needs your thesis title, and a location and time for the thesis seminar, so she can put it on the MSTP calendar.

If your plans change, it’s important that you let Kathy and the Med School Registrar know as soon as possible.

Make sure your immunizations are up to date. You can check your immunization record online with University Health Service at http://studentaffairs.case.edu/health/about/ . Click on the Open Communicator link to check your records and schedule an appointment.

Make sure you have a login and password for the Clinical Assessment System (CAS), https://casemed.case.edu/CAS/. If you do not, contact CollegeTech@ccf.org.
Keep up on your blood-borne pathogen and hazard communication training through DOES online, https://www.case.edu/finadmin/does/Training/

Hospital ID cards will be issued through the hospitals when you begin your rotations. It’s better to wait until you start than to try to get the ID ahead of time.

UH will give you a memo to get your ID. Take the memo to the 6th floor of the UH MCCO Building, just behind the med school next to the service center. (This is the building with the red UH logo.)

HIPPA and Quality Assurance tests are hospital-specific, and the hospitals will handle these.

Other Notes from Students

A heads-up for the third MD year: register soon for USMLE Step 2 CS. If you take 4 or more years to do your PhD, your USMLE registration will have expired, because it’s only good for 5 years. It will take at least a week to get registered again. The med school wants you to take this by November 1 of the MD 4 year, and your registration is good for 1 year. Students who have been through this process suggest registering in December or January of the MD3 year, when you’ll have your pick of days and times. The day and time can be changed later without penalty.

If it is at all possible to return in Sept. vs. Nov., it makes your scheduling much easier. Because the latest curriculum change added the 8-week core three, if you wait to go back until Nov., you have to work core 3 into your 4th year schedule. This is at a time where you really need to be doing some AIs and getting your residency application together, so it makes your scheduling much easier if you start in Sept. and get core 3 out of the way first.

When starting a new rotation, you probably will not know exactly when and where to show up until 1-2 weeks before the start date. In addition, schedules can change unexpectedly, so plan on being flexible.

You will need a reliable car, and a GPS is helpful.
### My Program of Study

**Program:** MATH 511 - Math Education Theory by (ME)

**Version:** 3

**Status:** Approved by Advisor

**Approval:** No Waitlist

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