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The MD/PhD Combined Degree Program at the University of Toledo

Mission Statement

The mission of the MD/PhD Program at the University of Toledo is to provide outstanding training that integrates clinical medicine, biomedical science, compassionate care and professionalism to enable students to succeed as independent physician-scientists with the skills, creativity and vision to shape the future of health care. Our goal is to provide rigorous training in a supportive environment for students who will become the next generation of leaders in academic medicine or a variety of alternative career paths.

Introduction and History

The combined MD/PhD degree program at the University of Toledo College of Medicine and Life Sciences (UTCOMLS) began in the mid-1980s as an informal mechanism to allow simultaneous pursuit of both the MD and PhD degrees and its first student graduated in 1992. The program offers students outstanding integrated training as both physicians and laboratory scientists. Most students accepted into the program are granted full medical school tuition scholarships and receive both tuition and a stipend at the NIH predoctoral level during their graduate school years. The unique interdisciplinary nature of our program provides a supportive atmosphere for students to pursue both medical and research training for careers as academic physician-scientists. Graduates from our MD/PhD program have progressed to highly competitive residencies and served as faculty at prestigious institutions.

Our goal is to provide students with the skills needed to conduct independent biomedical research and a firm clinical foundation for subsequent residency, fellowship and/or postdoctoral training. It usually takes seven to eight years to complete all requirements for both degrees - the national average is currently 8 years.

Typically two students per year matriculate into the MD/PhD track. Thus there are generally a total of 14-16 students in the program at any given time. Our program does not have a national training grant, but students are supported by tuition scholarships for medical school and tuition and stipend scholarships for graduate school.

Admission into the MD/PhD Program

Eligibility and Selection Criteria

Students seeking admission to the MD/PhD program must be a U.S. citizen or permanent resident and must have:

- completed one year each of college level biology, mathematics, physics, English, inorganic chemistry and organic chemistry
- completed the Medical College Admissions Test (MCAT)
- a baccalaureate degree from an accredited university/college prior to matriculation

The Graduate Record Examination (GRE) can be used to demonstrate aptitude for graduate studies, but is not required for admission. Successful candidates will have a solid foundation
in the physical, biological, mathematical, and social sciences with strong performance in upper level courses in at least one of these areas. A science GPA of 3.5 or above and total MCAT scores of 30 or above are preferred.

Students admitted into the program will have evidence of significant and sustained laboratory-based research experience and a strong commitment to a research career. The student’s contribution to this research should reflect not only a familiarity with techniques and procedures, but also a role in designing experiments, analyzing data, summarizing results and presenting findings to scientific colleagues. Students should also understand and be able to explain the significance of their research.

The applicant should be well-rounded and have evidence of leadership roles in their extracurricular activities. Volunteer experiences in a medical setting help demonstrate familiarity with the medical system and a commitment to helping others.

Medical students who have already matriculated at UTCOMLS and later become interested in pursuing the dual MD/PhD degree (for example, after a Medical Student Summer Research Fellowship) should apply using through the UTCOGS using the online application (click here). Students enrolled in a University of Toledo PhD-granting graduate program who apply and are accepted into UTCOMLS are generally not included in the MD/PhD program, though they may pursue both degrees independently. These students should complete their PhD requirements before beginning medical school.

**Applying to the MD/PhD Program**

Application to the MD/PhD program is a two-step process. The first step is to apply for admission to the UTCOMLS using the American Medical College Applications Services (AMCAS) web application. This application now provides prospective students with the option of indicating interest in a combined MD/PhD program and an additional essay prompt is available for these individuals to express their motivation for entering such a program. Selected students will be sent a secondary application from UTCOMLS requesting additional information and essays. As one of the essays required pertains to the MD/PhD program, applicants are invited to simply use the same essay written for this portion of the AMCAS application or prepare a completely new one.

If an individual is certain that the University of Toledo is their first choice institution for medical training, s/he may be interested in applying through the Early Decision Program. However, the AMCAS application software may prevent one from indicating interest in the MD/PhD program under this set of circumstances. Should this issue arise, an applicant is encouraged to still elect the Early Decision Program, as there will be a subsequent opportunity to declare interest in the MD/PhD program in the UTCOMLS’s secondary application. Further information about the admissions process can be found on the UTCOMLS homepage.

If an individual is applying to the MD/PhD program during the initial application to medical school, a separate application to the UTCOGS is not necessary as the AMCAS application will serve as the graduate school application as well.

When requesting recommendation letters for the medical school application, one should be aware that letters for MD/PhD applicants should address the prospective student’s research experience and aptitude for a research career in addition to the standard letter content.
Students who have already matriculated into medical school at UT but later wish to apply to the MD/PhD program must complete a separate application to UTCOGS. This application is available online. The MD/PhD program option should be selected. Again, in this case, the GRE exam is not needed, but additional letters of recommendation addressing the applicant’s research experience and potential are strongly advised. Students entering the program by this route must meet the same rigorous criteria as those entering by the traditional route.

The application fee is waived for current UT students, but this is not apparent in the online application which will require payment for processing. Applicants should complete the application without paying the online fee and then contact Mr. Corey Sampsel in the UT Graduate School office (corey.sampsel@utoledo.edu; 419-530-5257). He will then access the application without the fee.

The medical school tuition scholarships are awarded to two new students each year. However, full or partial scholarships may be available for applicants who are current students. These awards are not retroactive to prior years of medical school. Alternatively, financial support may be available through National Institutes of Health F30 and F31 training grants as well as grants through disease- or medical specialty-related agencies (discussed below).

**Selection of PhD Track**

At the time of application to the dual degree program, applicants should select a Ph.D. track or major from among the four possible options that best align with their research interests. Students will matriculate into that track when they commence their Ph.D. studies. The four tracks are centered upon major areas of biomedical science and disease and are Cancer Biology; Cardiovascular and Metabolic Disease; Infection, Immunity, and Transplantation; and Neuroscience and Neurological Disorders. Information about each track, the faculty and their research interests, and other information can be found on track websites:

- [Cancer Biology](#)
- [Cardiovascular and Metabolic Diseases](#)
- [Infection, Immunity, and Transplantation](#)
- [Neurosciences and Neurological Disorders](#)

Applicants should indicate their track of interest and reason for selecting it within the MD/PhD essay of the UT secondary application (or the Personal Statement of the graduate student application if they apply after matriculation into medical school).

**Application Timing**

Processing of AMCAS applications begins in mid-June and ends November 1. Applicants interested in the MD/PhD program are encouraged to indicate their interest in the dual degree program early in the admissions process. However, application to the MD/PhD program can occur at any stage in the admissions process, even after the medical school interview.

**The Interview Process**

The medical school interview process for MD/PhD candidates will include interviews with the MD/PhD Program Co-Director(s), a member of the applicant’s PhD track of interest, and a clinical faculty member. Applicants will also have the opportunity to meet with current MD/PhD students by attending dinner together the night before the interview day and by
 touring research labs and other facilities on the Health Science Campus with current students. An additional visit to the HSC can be arranged if the applicant requests it.

**Admissions and Scholarship Decisions**

Applications to the MD/PhD program undergo three levels of review. First, they are considered by the Medical School Admissions Committee. If accepted into medical school, they are then considered by the PhD Admissions Committee and the track of interest for acceptance into the PhD program. If successful there, the application will be considered by the MD/PhD Steering Committee for the dual degree program. Upon acceptance by the MD/PhD Committee, the applicant will be considered for a medical school tuition scholarship award.

Note that application to the MD/PhD program will not impact review of the application by the Medical Admissions Committee. That committee reviews dual degree applicants strictly on their merits for medical school in the same manner as MD only applicants.

Decisions regarding admission to the MD/PhD program and granting of a medical school tuition scholarship are made independently by the MD/PhD Steering Committee, but the program attempts to provide all admitted MD/PhD students with a full medical school tuition scholarship. Currently two medical school tuition scholarships are available per class. All students admitted to the MD/PhD program, however, will receive a full graduate school tuition scholarship and stipend while they are enrolled as graduate students in the program.

As noted above, second visits to the UT Health Science Campus are possible and strongly encouraged following acceptance into the dual degree program. These second visits provide additional opportunities for admitted individuals to interact with current MD/PhD students as well as with specific faculty who may be potential PhD mentors.

**Traffic Rules for Admissions Actions**

To streamline the admissions process and ensure that all programs and applicants nationwide follow the same admissions rules and procedures, a national set of “traffic rules” was adopted as follows:

- October 15th is the earliest date on which a student can be accepted into an MD/PhD program.
- By March 15th, the number of acceptances into the program must equal the desired class size.
- Prior to April 30th, applicants can hold multiple MD/PhD acceptances.
- After May 1st, applicants can hold only a single MD/PhD acceptance.
- Between May 1st and May 15th, accepted applicants may hold multiple MD medical school acceptances. After May 15th, students may retain only one MD acceptance.
- After May 1st, accepted applicants may remain on the waitlist at any number of programs/medical schools.
- After May 1st, programs should notify the program/medical school for which the applicant is still holding an acceptance if they plan to offer acceptance to that applicant.
- Offers cannot be extended to students who have enrolled in or begun orientation at another program or medical school.
An MD/PhD applicant may hold more than one acceptance after May 1st if the programs that extended the offers agree to let the applicant do so.

Financial Aid and Scholarships

Two MD/PhD students per year are eligible to receive medical school tuition scholarships which cover the full cost of medical school tuition during the time these individuals are registered as medical students. Stipend support for living expenses is not provided, however, students are generally offered loans to cover these costs. In general, the amount of debt owed by MD/PhD students at the end of a 7 to 8 year program is less than most students completing only the MD degree. For students who are accepted into the MD/PhD program, but not awarded tuition scholarships, the tuition cost of the 3rd and 4th years of medical school is frozen at the level it would have been had the student gone directly through four years of medical school. This ensures that students in the program are not penalized by tuition increases that occur during their graduate school years.

If a student is accepted into the MD/PhD program after completing one or two years of medical school or if the scholarship is awarded after matriculation, the tuition scholarship is not retroactive to the time prior to acceptance into the combined degree program or award of the scholarship.

Students must maintain minimum grade performance requirements for yearly renewal of the tuition scholarship. These expectations are a High Pass (“B”) average in all medical school courses and maintenance of a 3.0 GPA for all graduate courses. Grades less than these are considered on a case-by-case basis.

Students who receive medical school tuition scholarships must sign a promissory note upon acceptance of the scholarship, agreeing to pay back the amount of tuition awarded in the event that the student drops out of the program or does not make adequate progress toward completion of both degrees. The goal of the University is not to make students pay back tuition, but to ensure program completion.

All MD/PhD students are also granted a graduate school tuition scholarship and predoctoral stipend while they are enrolled as full-time graduate students during the PhD training phases of the program. This stipend award runs for 3 years plus 2 summer terms, and is funded partially by UTCOGS and partially by the PhD mentor (once the mentor has been identified). The mentor’s responsibility for partial stipend support begins when the student has formally entered the lab for dissertation research, usually in the fall semester of the 3rd year in the dual degree program. Students receive 100% of their stipend from the College of Medicine graduate account in year 1 of graduate training, 50% in year two and 25% in year three. The mentor provides the remainder of the stipend in years two and three. If the student has not completed all dissertation requirements by the end of their 5th year in the program (third full year in graduate school), the mentor is responsible for the student’s full stipend during subsequent year(s) of training until the student completes the dissertation or returns to medical school. Students must maintain a 3.0 GPA for all graduate courses and are not allowed to undertake additional employment that might interfere with their scholarly activities. Completion and defense of the PhD dissertation prior to returning to medical school is strongly recommended.
Students do not need to repay graduate school tuition or stipend if they drop out or fail to make adequate progress.

Students who are initially out-of-state residents must apply for in-state residency immediately upon becoming eligible (typically after one year in the program) whether or not they have been awarded a medical school tuition scholarship. This will greatly reduce medical school tuition expenses whether the student is paying on his/her own or is receiving a scholarship.

Most students, even those with medical school tuition scholarships, apply for and receive financial aid in the form of loans and grants. Information about financial aid is available through the UT Office of Student Financial Aid website. Questions can be addressed to:

Jackie Tracy
Assistant Director, Financial Aid
419-383-4574
Jaclyn.tracy@utoledo.edu

Individual NIH Training Grants

Whether receiving a medical school tuition scholarship or not, students should strongly consider applying for a Ruth L. Kirschstein National Research Service Award (NRSA) (F30 or F31 award) from the National Institutes of Health. These prestigious awards for MD/PhD, PhD, and underrepresented minority students in training for research careers include a stipend, tuition, funds to conduct dissertation research, and funds for travel to scientific meetings. For more information: F30 and F31 training grants

Additionally, grants to support MD/PhD or PhD training are available from several disease-related or specialty-related agencies. In recent years, UT MD/PhD students have been awarded grants from the American College of Sports Medicine, American Diabetes Association, and the Epilepsy Foundation of America among others. Assistance to identify funding opportunities from such organizations can be obtained from the UT Office of Research and Grants.

UT Office of Research and Grants, Health Science Campus
419-383-4252ResearchAdmin.HSC@utoledo.edu

Program Structure and Overview

The standard structure of the MD/PhD program begins with the first two years devoted to medical school and the summer between devoted to graduate school. Students are supported financially during the two years of medical school by the medical school tuition scholarship or by personal funds and loans. During the summer term between these two years of medical school, students are considered graduate students, register for graduate school coursework, and complete two lab rotations to identify their PhD faculty mentor. Students are supported during this summer term by the PhD stipend and graduate school tuition scholarship.

If a student accepts entry into the MD/PhD program early enough (i.e., before the beginning of the summer term prior to the first year of medical school), the student may opt to complete
the two lab rotations and summer graduate coursework in that summer. However, this is not mandatory or necessary for timely completion of the program.

Upon completing the second year of medical school, MD/PhD students spend several weeks preparing for and taking Step I of the United States Medical Licensing Examination (USMLE). Following completion of this exam, students re-enter the graduate school to either immediately join the lab of their previously identified PhD faculty mentor to begin their dissertation studies or, if a mentor was not identified, may do additional lab rotation(s).

MD/PhD students are allowed to apply 26 credits of their medical school coursework towards the requirements for the PhD which minimizes the number of graduate courses MD/PhD students must take and frees up time for dissertation research (described in more detail below). Students are strongly encouraged to complete and defend their PhD dissertation prior to returning to medical school for the final two years of clinical training. Students also participate in clinical training during their graduate school years to ensure continuity with their preclinical training and to help smooth the transition back to medical school for the clinical clerkships. This training is also discussed below. The focus of training shifts between medical and graduate education as students complete the MD/PhD program. However, medical and graduate studies are integrated at every stage during the course of study.

**Progress Report and Transition Meetings**

Individual meetings between current MD/PhD students and the program Co-Directors are scheduled in January-February and August-September. At these meetings, discussion focuses on student progress, any upcoming transition between medical school to graduate school and vice versa or plans to graduate, and the steps and entities that need to be notified of a transition or graduation (e.g., the Registrar, Human Resources, the Graduate School office, medical school clerkship office, etc.). These meetings are meant to support students as they move through the program.

The Co-Directors also attend the monthly student-run MD/PhD Student Committee meetings where they can hear and address student concerns and assist with student planning of events like the annual retreat or other issues. The Chairman of the MD/PhD student committee also attends the faculty-led MD/PhD Steering Committee where s/he provides and receives input about the program.

**PhD Training: Biomedical Sciences Tracks**

The graduate program in Biomedical Sciences is organized into interdisciplinary programs on the basis of the disease processes with which they are most closely aligned. These programs are termed ‘tracks’ and they are affiliated with university departments as follows:

- **Cancer Biology** (Dept. of Biochemistry and Cancer Biology)
- **Cardiovascular and Metabolic Diseases** (Dept. of Physiology and Pharmacology)
- **Infection, Immunity, and Transplantation** (Dept. of Medical Microbiology and Immunology)
- **Neurosciences and Neurological Disorders** (Dept. of Neurosciences)
**PhD Training in Biomedical Engineering and Other Options**

The majority of MD/PhD students will conduct their dissertation research under the guidance of faculty who are closely affiliated with one of these four tracks. However, students sometimes have interest in the research program of a faculty who is not a member of one of the above four tracks and is outside the Biomedical Science program, for example a faculty from Biomedical Engineering. In such cases, it may be possible to pair that faculty member with a faculty member who has mentoring status within the program and who will serve as the student’s official advisor for the program.

**Laboratory Rotations and Identifying a PhD Mentor**

Students have the option to begin the MD/PhD program as graduate students during the summer prior to their first year of medical school and complete two required laboratory rotations. However, most students begin the combined degree in the fall when the first year of medical school begins. These students enter the graduate school during the summer between their first and second year of medical school during which time they will complete the laboratory rotations.

Two six week long lab rotations are required for MD/PhD students. The purposes of the rotations are for students to “try out” a laboratory and potential PhD mentor as well as for the faculty mentor to consider the potential student. During the rotations, the student should design and perform laboratory experiments under the guidance of the potential mentor and participate in lab meetings and other laboratory activities in the same manner as if the student was an official member of the lab. The student should strive to work hard and contribute to the research program of the laboratory since this is the opportunity for the student to impress the potential mentor.

Upon completion of the two rotations, the student will choose which of the two labs s/he would prefer to join. Then the faculty member of that lab will be queried by the lab rotation course director if s/he will accept the student for PhD training. If agreed, the student and mentor should complete a document called the **GRAD form** and obtain the signature of the mentor’s Chairman. If the advisor decides not to accept the student, the student may request to join the other rotation lab or may elect to complete additional rotation(s) in the subsequent summer to identify another lab of interest.

Choosing a laboratory for rotation is one of the most important and challenging steps of one’s PhD education and the student should put substantial effort into making the best choice. To help students identify potential labs for rotations, a series of seminars by faculty who have positions in their labs for PhD students takes place over the first eight weeks of fall semester every year. The series is called the “Introduction to Biomedical Research” and is held on Tuesdays and Thursdays from 3:00-5:00 p.m. Typically 2-3 brief seminars (30 minutes with 10 minutes for questions) are given by faculty from all four tracks who have openings in their labs at each session. The schedule of presenting faculty is developed by the lab rotation course director and made available to the MD/PhD students. All PhD and MS students in the four tracks are required to attend these sessions since they also undertake lab rotations. Attendance by MD/PhD students is not mandatory, but strongly encouraged (although the fall medical school curriculum may conflict with the seminars.) The seminar series is the best way to learn about research labs available for lab rotations and subsequent dissertation
research. Additional information about available openings in faculty labs can be obtained from the Director of each Track.

MD/PhD students are also encouraged to attend research seminars offered throughout the year by various departments, especially the home department of their track of interest. The students should also participate in various other track events such as retreats and holiday parties. Each track has a designated “home department” which was initiated in part to provide MD/PhD and graduate students a “home base” for mail and student-related needs.

Students generally complete lab rotations and join a faculty mentor’s lab for their dissertation research work no later than the fall semester of their third year in the program. In choosing laboratory rotations, students should be aware that only some faculty members are eligible to accept students. Eligible faculty must be Full mentoring members of the Graduate School and must have adequate financial support and suitable training environment. This rule exists to ensure that PhD students have an adequate training environment and financial support for their studies. Mentoring status is conferred by the College of Graduate Studies to those members of the faculty who have demonstrated the ability to provide an appropriate laboratory and intellectual environment for training PhD students. Criteria for this distinction include a sustained and independent research program with extramural funding, recent peer-reviewed publications, and evidence of national recognition for research (extramural talks, service on NIH grant review panels, editorship of journals, etc.). New and junior faculty who do not fully meet these guidelines may be allowed to mentor students based on departmental recommendations and support.

Members of the graduate faculty without mentoring status can host students for laboratory rotations and serve on their Dissertation Committees, but cannot serve as the primary mentor/dissertation lab. Faculty with mentoring status can host students, but may not have resources for additional graduate students. Hence, when considering lab rotations and selection of a mentor, students should discuss with the mentor whether the lab is able to support an additional student. There are valid reasons for doing lab rotations in labs that are not able to sponsor dissertation students, including learning new techniques and scientific approaches, but at least one rotation should be performed in a lab that can serve as a future home for the dissertation research.

During the course of a student’s dissertation research, a mentor’s research grant funding may decline and make it difficult to continue the research without another source of funds. This is very unusual, but can happen especially in today’s climate of diminishing federal research dollars. In such a case, the mentor’s Chairman is responsible to provide adequate funding through department discretionary funds and other mechanisms that will sustain the student’s research project until completion. The portion of the graduate school stipend that the mentor is responsible for must also be covered by the Chairman. This requirement to guarantee funding is the reason the Chairman must also sign the GRAD form when the student joins a lab (described above).

The student and mentor typically develop a working relationship and friendship that can last through one’s career. However, on rare occasions the relationship is not successful and the student may need to identify a new mentor. There are several reasons this could happen. Should such a situation arise, it is the responsibility of the mentor, Track Director, Chairman,
and Associate Dean of COGS-HSC to help the student identify a suitable new mentor in a timely manner.

**Preclinical Medical School Coursework**

MD/PhD students take all of the same preclinical medical school courses and electives during medical school years 1 and 2 as other medical students. During the first two years of medical school, students are encouraged to interact with the graduate school faculty and attend basic science seminars in the area in which they plan to do their dissertation research.

The medical school curriculum and course structure is a systems based approach to learning medicine. UTCOMLS is committed to developing physicians with a broad range of knowledge, skills, attitudes and understanding, allowing them to pursue careers in primary care or any medical or surgical specialty.

The first year of medical school includes the following courses:

- **Cellular and Molecular Biology.** This course includes integrated topics from Biochemistry, Physiology, Microanatomy, Pharmacology and Pathology.

- **Human Structure and Development.** This course includes integrated topics from Gross Anatomy, Microanatomy and Embryology.

- **Neuroscience.** This course integrates neuroanatomy, neurohistology, neuroembryology, neurophysiology, neuropathology, and neuroradiology.

- **Behavioral Science.** This course presents basic human behavior and the processes of emotional, social, cognitive and moral development from infancy to old age.

- **Clinical Decision Making I.** This course provides medical students with fundamental knowledge and skills for clinical decision making. Includes a problem-based learning (PBL) course that combines independent study with small group discussion under the guidance of faculty facilitators.

- **Basic Life Support.** The Basic Life Support Healthcare Provider course is designed to teach CPR, artificial ventilation, use of an automated external defibrillator, etc.

The second year of medical school includes the following courses:

- **Immunity and Infection.** This course includes Immunology, Bacteriology, Virology, Mycology, Parasitology and Molecular Basis of Infectious Diseases.

- **Organ Systems.** This course covers the physiology, pharmacology and pathology of each organ system: Cardiovascular and Autonomics; Neurological Disease; Respiratory; Renal and Electrolytes; Hematopoietic; Gastrointestinal and Hepatic; Endocrine; Reproductive; Skin and Skeletal.

- **Clinical Decision Making II.** This is a year-long course that develops concepts and skills related to providing medical care within the health care system. Includes a PBL course that
combines independent study with small group discussion under the guidance of faculty facilitators.

**The USMLE Examination, Step I**

After completion of the second year of medical school, students generally take several weeks to prepare for "Step I" of the United States Medical Licensing Examination (USMLE). This is a comprehensive examination covering all of the material presented in the first two years of medical school. Students should schedule the examination prior to July 1 to allow sufficient time for lab rotation(s) during the remainder of the summer if rotation(s) are necessary. Students must achieve a Pass score on Step 1 in order to transition into Graduate School. The Pass score is defined by the USMLE each year. If a failure is achieved, the student must plan to re-take the exam. Information regarding the examination and scheduling can be found at [http://www.usmle.org/apply/](http://www.usmle.org/apply/).

After taking Step 1 of the USMLE, students will reenter graduate school to take graduate school courses, additional laboratory rotations, if needed, and move on to undertake their dissertation research.

**Graduate School Registration and Stipend**

Prior to entering the graduate school for the first time (typically the summer between the first and second year of medical school to do lab rotations) or when making the transition from medical school to graduate school after passing the USMLE Step 1 exam, the student should have met with the Program Co-Directors in a semi-annual meeting and begun the necessary paperwork and notifications for the transition (discussed above). These tasks include Human Resources Orientation, medical clearance, and drug-testing similar to that of an employee. When students are in graduate school and receive a stipend, they are considered employees by Human Resources.

Students should register ‘full time’ for fall, spring, and summer terms while in graduate school. This translates to 15 credits in fall and spring and 9 credits for the summer during which the USMLE Step 1 is taken and 11 credit hours for other summers. Signing up for the full number of credits is required for the graduate stipend and essential, as this ensures that the institution is fully reimbursed by the State of Ohio for every student enrolled.

**Graduate School Requirements**

Students must meet all of the requirements for both the MD and PhD degrees, i.e., ten semesters/terms of medical education and a minimum of 90 graduate semester credits. The time limitation for completion of both MD and PhD degrees is 10 years. The additional specific requirements for the PhD degree can be found in the Graduate Student Handbook for the year in which the student entered the MD/PhD program via this [link](#). Information on the specific medical school requirements for graduation can be found [here](#).

The Biomedical Sciences PhD program has a common first-year core curriculum for PhD students (listed below), but much of this curriculum is covered in medical school. Therefore, MD/PhD students are allowed to apply medical school course credit towards their PhD degree and are excused from most of the core curriculum requirements. This also accelerates the entering of the student into the lab and the completion of their dissertation research.
MD/PhD students are allowed to apply a maximum of 26 credits from medical school coursework toward their PhD degree. Only 20 of these credits may be applied toward the PhD requirement of a minimum of 25 didactic (carrying a letter grade) graduate course credits. Thus, the MD/PhD student must register for an additional five credits of didactic graduate credit in order to complete the didactic requirement. The remaining six available credits from medical school can be applied as non-didactic credits towards the minimal 90 credits required for the PhD.

First Year Core Curriculum for PhD Students

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPRA* in Protein Structure and Catalysis</td>
<td>2.5</td>
<td>letter</td>
</tr>
<tr>
<td>CPRA in Genes and Genomes</td>
<td>2.5</td>
<td>letter</td>
</tr>
<tr>
<td>CPRA in Cell Membranes</td>
<td>3</td>
<td>letter</td>
</tr>
<tr>
<td>Methods in Biomedical Sciences</td>
<td>3</td>
<td>letter</td>
</tr>
<tr>
<td>On Being a Scientist</td>
<td>1</td>
<td>S/U</td>
</tr>
<tr>
<td>Introduction to Biomedical Research (PI seminar series)</td>
<td>0</td>
<td>none</td>
</tr>
<tr>
<td>Mentored Research (one 8 wk lab rotation)</td>
<td>3</td>
<td>S/U</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPRA in Cell Biology and Signaling</td>
<td>3</td>
<td>letter</td>
</tr>
<tr>
<td>Systems Pathophysiology I</td>
<td>2.5</td>
<td>letter</td>
</tr>
<tr>
<td>Systems Pathophysiology II</td>
<td>2.5</td>
<td>letter</td>
</tr>
<tr>
<td>Mentored Research (two 8 wk lab rotations)</td>
<td>6</td>
<td>S/U</td>
</tr>
<tr>
<td>Track-Specific Journal Club</td>
<td>1</td>
<td>letter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer Semester</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical Methods</td>
<td>3</td>
<td>letter</td>
</tr>
<tr>
<td>Practical Bioinformatics (required for Cancer Biology students; optional for others)</td>
<td>1</td>
<td>letter</td>
</tr>
<tr>
<td>Independent Study in “Your Track” and/or Electives</td>
<td>0-8</td>
<td>letter</td>
</tr>
</tbody>
</table>

*CPRA = Current Problems and Research Approaches

Of this PhD core curriculum, MD/PhD students are required to take only the following:
- On Being a Scientist (INDI 6020/8020)
- Two lab rotations (Mentored Research, BMSP 6390/8390)
- Methods in Biomedical Science (BMSP 6380/8380)
- Statistical Methods (PUBH 5320) – this requirement can be waived if the student has had an equivalent statistics course
- Required track-specific courses and journal clubs – students should consult with their Major Advisor, Track Director, and track websites:
  - Cancer Biology
  - Cardiovascular and Metabolic Diseases
  - Infection, Immunity, and Transplantation
  - Neurosciences and Neurological Disorders
MD/PhD students are strongly recommended to also take the following courses since the courses will help them in their research endeavors:

- Public Health Epidemiology (PUBH 6010)
- Grant Writing Workshop (BMSP 6250/8250)

Additional elective courses can be taken if the student and faculty advisor see the need. MD/PhD students should sign up for “5000- or 6000-level” courses if a) they do not already hold a Master’s degree or b) they have not yet completed 34 graduate school credits. After one of these criteria has been met, students should sign up for “8000-level” courses.

The Plan of Study

Students must complete the Plan of Study for the Doctoral Degree form that outlines the courses to be taken throughout graduate training. It should be completed within one additional semester after the student joins a faculty mentor’s lab. This form must be submitted before the student is permitted to take the Qualifying Examination at the end of the first full graduate school year (see below).

The student must complete all courses on the Plan of Study to graduate. The Plan of Study also needs to account for how credits earned in medical school will count toward graduate school credits. The strategy for mapping medical school course credit onto required graduate courses is as follows:

- Cellular and Molecular Biology (11 credit hours) covers the 4 “CPRA” courses
- Organ Systems covers Systems Pathophysiology I and II (5 credit hours)

Hence, an additional 4 credits from medical school courses can be applied toward the minimum requirement of 25 didactic (carrying a letter grade) graduate course credits and an additional 6 credits from medical school can be applied as non-didactic credits toward the 90 required credits for the PhD degree. These additional credits, if needed, can be applied toward track-specific requirements as determined to be appropriate by the student’s Graduate Committee. Such course mappings might include medical school Neuroscience mapping to the graduate school version (Neuroscience NND 5810/7810) which is required in the NND Track. Other possibilities may also exist and should be considered by students and their graduate committees.

A sample MD/PhD Plan of Study can be found in the Appendix.

The Dissertation Committee

A student should also assemble a Dissertation Committee within the first month after joining a faculty mentor’s lab. The Committee is responsible for assisting the student with their research project and progress through the PhD side of the program. The Committee also administers the Qualifying Exam (see below) and serves as the decision-making body during the Dissertation Defense when the student presents and defends her/his research as a final requirement for the PhD. Hence it is important the committee contains individuals knowledgeable in the student’s research area.

Membership of the Dissertation Committee should be determined in consultation with the student’s faculty mentor. A minimum of five faculty members is required and inclusion of an extramural member(s) is possible if appropriate but is not a requirement. Not all committee
members need to be members of the Track in which the student has chosen to concentrate, but typically most will be. All members must have some form of membership in the Graduate School. When committee members are identified, they should agree to serve by signing a new GRAD form which will be placed in the student’s file. Occasionally members of the Dissertation Committee must resign, usually because of a move to another institution. In those cases, the minimal number of five members must be maintained by the addition of another member.

The student should meet with the Committee at least once per year to provide a progress report on the research project. The Committee also will determine when the student has generated sufficient data to begin writing the dissertation and scheduling its defense.

**Qualifying Examination**

MD/PhD students are required to pass a Qualifying Examination as graduate students during their first full year in graduate school. The purpose of the Qualifying Examination is to evaluate the student's knowledge and ability to analyze information in her/his area of concentration and to apply this to the solution of problems that a student would be expected to meet in her/his professional career. The examination provides the student with the opportunity to demonstrate that s/he is adequately knowledgeable in a chosen area of concentration. Timely completion of the exam is important, as the graduate college will withhold the tuition waiver until it is successfully completed.

Prior to the scheduling of the examination, the GRAD and Plan of Study forms and establishment of the Dissertation Committee must be completed.

The Qualifying Examination is administered by the Dissertation Committee and consists of a written portion in the form of an NIH R21 style grant and an oral exam. The written portion must be written solely by the student. The oral exam includes questions that probe the breadth and depth of basic knowledge and critical thinking skills of the candidate, including past course work. A grade of Pass or Fail will be determined by the Committee based on the written and oral portions. The Committee is also responsible for determining the topic for the research proposal. Successful completion of the Qualifying Examination requires a unanimous pass vote of the Committee members. To ensure fairness of proceedings, a representative of the Graduate Faculty who is not on the Committee may serve as an observer of the exam at the student’s or Committee’s request. The completed Report of the Qualifying Examination Form must be sent to the office of the Associate Dean, College of Graduate Studies on the Health Science Campus and a copy also sent to the Associate Dean, College of Medicine and Life Sciences Graduate Programs. If the student fails the exam, it may be repeated at the discretion of the student’s Graduate Committee. Guidelines for preparation of the research proposal and additional information about repeating the exam in the case of a failure can be obtained from the Associate Dean, College of Medicine and Life Sciences Graduate Programs.

After passing the Qualifying Examination, the student is eligible to register for Dissertation Research (INDI 9990) to complete the remainder of their research activity as a graduate student. A minimum of 30 credits of Dissertation Research are required for graduation. Students must be registered for at least one credit during the semester in which they defend
their dissertation. It is acceptable to defend in the summer term and be registered for courses as a medical student.

**Writing and Defending the Dissertation**

Typically after three years of intensive research activity, the MD/PhD student has accumulated enough data to write the dissertation in preparation of its defense and completion of the PhD side of the program. The go-ahead to write and defend the dissertation is determined by the Dissertation Committee. The format of the dissertation is typically a series of chapters which may include submitted or published manuscripts as separate chapters. The COGS has developed instructions and formatting guidelines for PhD dissertations that can be found [here](#). The dissertation is ultimately uploaded and stored electronically to OhioLINK where it is accessible worldwide through the internet.

**Clinical Training during Graduate School**

During the years of graduate training, students will also participate in required clinical electives to reinforce their preclinical education in pathophysiology, pharmacology, and other areas while beginning to develop the clinical skills they will need as third year clinical clerks. Prior to taking these electives, students are required to attend the one week Bridge Course during the last week of June. The Bridge Course introduces pre-clinical students to life in the hospital and clinics and expectations for students participating in clinical rotations (see below, “Re-entry into Medical School”). It should be noted that the student will participate in the Bridge Course two times. The first time will be immediately following the second year of medical school, prior to entering graduate school. During this week, the student will not be registering for the course but will be attending all of the required components. The second time the student participates in the Bridge Course will be when they re-enter medical school as a third year student. At the beginning of the third year they will be registered for the course and it is at this time that they will receive credit for the course.

The clinical elective program is highly flexible, but requires 8 hours of clinical exposure per month, broken down into a 4 hour session every 2 weeks or a weekly 2 hour session. This level of commitment is sufficient to maintain and develop clinical skills without interfering with the progress of the student’s laboratory research. Students should meet with the clinical MD/PhD Co-Directors to plan clinical electives. Rotations can be scheduled with clinical mentors in almost any discipline and the clinical MD/PhD Co-Directors will work with the student and clerkship course directors to set up each of these experiences. The student’s performance will be evaluated by the clinical faculty. By signing up for this elective consistently each semester, the student will be granted up to 8 weeks of clinical elective credit for this work (see below). The course listing for the clinical elective is: Clinical Training for MD/PhD Elective – INDI 745. Additional details about the elective can be found [here](#).

MD/PhD students who perform at least 8 hours of clinical activity per month while in graduate school will complete about 36 hours of contact time in the fall and spring semesters, which is equivalent to about 1.5-2 credits per semester; hence, students should sign up for 2 credits in the fall or spring semester. Students will complete about 24 hours of contact time in the summer semester, so students continuing their clinical experience in the summer should sign up for 1 credit. A total of 5 clinical elective credits can thus be earned per year. Two weeks of 4th year clinical elective is equal to 3 credits; hence, students should be able to earn 12 credits over 3 years of graduate school to qualify for 8 weeks of clinical elective credit.
A Clinical Mentor/Mentee Contract should be completed by the student and Clinical Mentor indicating their willingness to work together. This only needs to be completed once unless a new clinical mentor is selected. Though the mentor does not need to commit to being present at every clinical session, this individual must ensure that the student receives a meaningful clinical experience.

**Re-entry into Medical School**

Planning for the 3rd year clerkships begins more than 6 months prior to the start of the third year. Thus, it is very important during the annual spring meeting with the MD/PhD Co-Director(s) (described above) to indicate one’s intention to complete the dissertation and re-enter medical school in the upcoming summer, even if one is not completely certain this timeline will be met. It is easier to cancel a reserved clerkship space than to add someone in later.

In addition, the student returning to medical school should re-take the week-long Bridge Course (described above) during the last week of June. At the beginning of the summer term of re-entry into medical school, the student will be registered as a medical student and will officially register for the Bridge Course. The course introduces rising 3rd year medical students to life in the hospital and clinics and expectations for students.

The MD/PhD Co-Directors will notify Student Affairs and the Registrar of the student’s intention to re-enter Medical School. Once the Student Affairs office has been informed of intent to participate in the following year’s third year clerkships, students will be sent information by email and informed about meetings of the second year medical school class related to 3rd year registration. Students should make sure that they are on the current second year/upcoming third year email list so that they do not miss important communications.

It is critical that MD/PhD students attend such meetings and pay close attention to registration instructions. Registration will occur at a preset date and time prior to the start of each semester (Summer, Fall, and Spring). All students have the opportunity to register for their desired order of clerkships for each semester. Registration is based on a first-come, first-serve basis through an online sign-up process. In general, most students get the clerkship order they desire, but there will always be a few students who do not get their first choice. If one is dissatisfied with the results of the registration, one may either try swapping clerkships with another student or request a clerkship change by submitting a Clerkship Modification Form available through the Student Affairs office.

Although there is a perception that selection of an “easier” or “less critical” rotation early in the rotation may help students adapt to life as a clinical clerk, in practice, rotations deemed “critical” vary from student to student. Because the optimal order of clerkships is different for each individual, most students end up with an order very close to their “ideal” order. Most students find at the end of third year the order of clerkships conferred little advantage in the context of the entire third year experience.

In addition to the above, one needs to apply for graduation to the Graduate School in either the Spring or Summer term, depending on when the defense is planned. The website that describes the steps to apply for PhD graduation is [here](#).
Timing of Re-entry to Medical School

The timing for completion and defense of the dissertation does not always correlate perfectly with the standard medical school calendar in which the Bridge Course begins the last week of June. In this circumstance, one has several options: 1) attempt to finish on schedule by late June, 2) defer returning to medical school for an additional year, or 3) re-enter medical school on schedule, but defer writing and defending the dissertation until a later date.

Although some students have deferred completion and defense of the dissertation until after the third year of medical school, this is strongly discouraged. One has plenty to do in the 4th year of medical school without having to write and defend a dissertation. Further, deferring the dissertation also likely means delaying one’s publications until well after the work has been completed. This can cause problems if experimental details are forgotten or additional experiments are needed – both of which could jeopardize publishing the research. One should start writing well before the planned defense date and one should realize that scheduling a defense can be difficult when dealing with the various schedules of the Dissertation Committee members.

As mentioned above, if a student is planning to write and defend the PhD dissertation and then enter 3rd year of medical school, s/he should make that clear to the MD/PhD Co-Directors so they can assist in identifying clerkships and transitioning to medical school in the university database.

It is possible to delay the start of clerkships by 5 or 10 weeks, but there is no utility in deferring longer than this, due to the requirement for 32 weeks of 4th year elective credit which could not be completed prior to graduation if more than 10 weeks of required 3rd year clerkships have been deferred to the 4th year. Moreover, one would still need to attend the Bridge Course. Hence, it is best to plan far in advance so that the dissertation defense occurs prior to the last week of June.

Another issue is what happens to the graduate school stipend if the student completes and defends the dissertation in the spring term, but has several weeks between the defense and the start of 3rd year clerkships in the summer term. Technically, the graduate stipend ceases upon successful completion of the PhD degree requirements. However, loan packaging for living expenses during the 3rd year of medical school cannot begin until the student restarts medical school. To cover this gap, the Biomedical Sciences Graduate Executive Committee has endorsed a plan in which the stipend (paid by both the mentor and the institution according to the student’s year of training) will continue from the dissertation defense date until the date of re-entry to medical school provided 1) that the student continues to work on final corrections to the dissertation or other lab-related work during that time, and 2) that the duration of additional stipend coverage does not exceed 8 weeks (from the end of April through the end of June).

Required Clinical Clerkships (Third Medical School Year)

Students are expected to finish their PhD course requirements, qualifying exam, dissertation, and oral defense before reentering medical school for the third and fourth year clerkships. The 3rd year clerkships include five 10-week blocks. Each 10 week block consists of either one 10-week or two 5-week clerkships. The 10-week clerkships are Internal Medicine and Surgery. The paired 5-week clerkships are Obstetrics/Gynecology plus Pediatrics, Neurology
plus Psychiatry, and Family Medicine plus a 4-week elective with 1 week of flex time. After completing these required rotations, students will take Step 2 of the USMLE.

Area Health Education Centers (AHEC)

During the third and fourth years of medical school, each student is required to complete eight weeks of clinical experience in the Area Health Education Centers (AHEC) of The University of Toledo. These clerkships are at outlying hospitals or clinical practices, and provide students with unique practical experiences in smaller communities in a one-on-one structured relationship with physicians in the community. Most students find this experience very rewarding since they have a unique opportunity to spend much time with the preceptor and have a sense of day-to-day medical practice issues away from the academic medical center. However, opportunities to participate in didactic lectures may be more limited and students on AHEC rotations have less access to professors who are known in national circles and whose recommendation letters are most helpful for residency applications. Thus, it may be preferable to request AHEC rotations for those areas that are less likely to be residency or career choices. If an AHEC rotation does end up being in the area one selects for residency training, the student can supplement their experience with UT advanced electives early in the fourth year.

Fourth Year Electives

The fourth year consists of 40 weeks: 32 weeks of electives and 8 weeks of FLEX time. Students are required to complete 24 weeks of Clinical Electives and a maximum of 8 weeks of basic science electives. A minimum of twelve weeks of Electives must be at the The University of Toledo and its associated teaching institutions. Independent Study electives can not be used to satisfy this requirement. Four weeks of the Clinical Electives must be a UT Acting Internship. The remainder of the fourth year of medical school electives can be completed at any medical school in the United States or Canada with the approval of a sponsoring department at The University of Toledo. In addition, students can participate in international clerkships if they are approved by a sponsoring department at The University of Toledo's College of Medicine and the COMLS Global Health Committee.

The Clinical Elective experience pursued during graduate school (described above) contributes towards one’s “flex time” electives. This frees one to perform other electives, return to the lab to finish a project or paper, travel to perform extramural electives, or pursue other academic activities. MD/PhD students frequently use some of their elective time for research.

Residency Applications

Early in the 4th year of medical school, one should finalize one’s choice of specialty for residency training. A full discussion of the procedures and strategy involved in residency application is well beyond the scope of this handbook; thus, the focus here will be only on issues of importance to MD/PhD students.

For many MD/PhD students, the choice of specialty will be a natural outgrowth of research interests (or vice versa), which facilitates the combination of research and clinical interests as an academic career. However, such connections need not be obvious or standardized; there are many possible combinations that make sense for different reasons. For example, a neuroscience PhD might choose Neurology, Neurosurgery, Anesthesiology (due to the
extensive neuropharmacology component in that field), Neuroradiology, Physical Medicine and Rehabilitation, Psychiatry, or other areas. Sometimes a specialty is chosen for lifestyle reasons - one MD/PhD graduate elected to train in Emergency Medicine due to the very predictable hours and lack of ongoing patient care commitments, which facilitated laboratory work. It is important to realize that residency training does commit one to a clinical field and options for retraining in a different area are limited due to the lack of federal funding for additional years once a residency is chosen.

The application to a residency should clearly state career goals and how one plans to integrate clinical and research interests (if this is one’s goal). A letter from one’s major advisor is all but mandatory - if it is absent, the program will want to know why. The student should also have letters from attending physicians in the chosen field who can comment on clinical skills. If one is interested in a specific program, one should try to arrange an elective clerkship in that program. The importance of such experiences cannot be stressed enough – they demonstrate strong interest in the program and give the faculty a chance to know the student, which will almost always be beneficial to the student in the ranking process.

Residency programs are generally very interested in recruiting MD/PhD students, but some may have ambivalent feelings toward trainees who have a significant commitment to research, as they may be concerned that the future resident may not be fully committed to clinical training. It is important to realize (and to stress in interviews) that one sees residency as a critical time in one’s training as a clinician and that one’s primary goal in residency is to develop as a clinician.

Some residency programs (often labeled “Physician Scientist Training Programs”) do offer research training in the context of residency. These programs can be very attractive, with guaranteed research time, research budgets, travel allowances, etc. However, most residencies and their certifying bodies require that the bulk of training be in clinical areas and it may not be a good use of time to sacrifice clinical training for a few extra months in the lab. These programs should be individually evaluated on their merits and not automatically assumed to be superior to standard residency programs.

Post-residency fellowships, on the other hand, often provide opportunities for clinical or basic science research and may provide a better springboard for launching into an academic career immediately after training. For that reason, the student should carefully consider what research options and mentors are available when choosing a fellowship program.

Of course, students who clearly decide that they do not want to incorporate clinical care in their careers do not need to pursue residency training. If one is certain that one’s career will be exclusively in research, a post-doc is the next step in training. Typically the student does not pursue a post-doc at the same institution or with the same mentor, but instead selects another institution and a lab with an excellent national reputation for training outstanding scientists, high productivity, and solid funding. However there may be very compelling reasons to remain with the same mentor or institution. Nationally, most MD/PhD graduates do pursue some sort of residency training, though a small percentage choose post-doctoral research training exclusively.

Student Life
Office of Student Affairs
The Office of Student Affairs (OSA) is a wonderful resource to assist medical students as they progress through their educational programs. The OSA supports the mission of the University of Toledo College of Medicine and Life Sciences which is to improve the human condition in part by enhancing the education and success of medical students. The OSA offers academic and career advising, leadership and professional development programming, and transformational bridge ceremonies. The OSA is located on the first floor of the Mulford Library Building on the Health Science Campus.

Toledo and Regional Attractions

Toledo is a vibrant city on the banks of the Maumee River and the shores of Lake Erie in northwest Ohio. Its population is about 325,000. Toledo has long been a center for manufacturing, particularly that associated with automotive parts and accessories, stampings, die castings, chemicals, spray equipment, scales and glass. Because of its location on Lake Erie and the bay of the Maumee River, Toledo is also a major seaport with about 2,000 US & foreign vessels docking at the port annually.

There are a variety of cultural and natural attractions and activities, including the internationally famous Toledo Museum of Art and Glass Museum, the world-class Toledo Symphony Orchestra, as well as the Toledo Opera Association and the Toledo Rep, a semiprofessional theatre company. Touring productions of Broadway shows often come to the Valentine Theater downtown and the Stranahan Center in Maumee. Downtown Toledo also features the Fifth Third baseball stadium which is the home of the Toledo Mud Hens, the AAA level farm team of the Detroit Tigers. Nearby is the Huntington Center which hosts the Toledo Walleye professional hockey team and concerts and other events throughout the year. Also downtown are the Erie Street Farmers Market, the Imagination Station hands-on museum, and several fine restaurants and clubs that are favorites of university students. The University of Toledo also offers first-class productions through the Departments of Music and Theatre, Film and Dance. The Toledo Zoo is outstanding and draws visitors from throughout the region. Further, within an hour’s drive of Toledo are Cedar Point Amusement Park, Put-in-Bay island with ferries from the mainland, several water parks, and the cities of Detroit and Ann Arbor each with many attractions of their own. The Toledo Metroparks system of eleven parks contains miles of trails, playgrounds, and facilities for outdoor activities and is one of the finest systems in the state. Lake Erie and regional lakes and rivers provide opportunities for fishing, boating, skiing, canoeing and kayaking.

Student Health Care and Health Insurance

University Health Services (UHS) encompasses services for student health, employee health and acute illness care, occupational medicine and workman's compensation.

Appointments are scheduled through Family Medicine located in Ruppert Health Center on the HSC campus by calling (419) 383-3777.

For emergency or after hours visits go directly to the University of Toledo Medical Center Emergency Department or call 911.

UHS provides full-service care for students including:

- Illness visits
- Occupational exposures (i.e. needle stick injury)
Physical examinations and immunizations to fulfill requirements for individual programs of study as well as requirements for foreign travel
Well woman examinations including immunizations and routine contraceptive care
Prescription management
Mental health and counseling services through Harbor Symmetry Wellness (Emergency Mental Health services 24 hours a day 7 days a week 419-475-5338)
Allergy injections

UT graduate students, undergraduate students and medical students who have a valid student ID badge (enrolled a minimum of 6 credit hours on campus) and whose general fees are paid to/received by UT are eligible for services at UHS.

As an MD/PhD student, one will be required to have health insurance. Students at the early stages of training may still qualify to be on their parents’ plans. In this case, the student can waive the University’s student health insurance by logging in to the myUT portal and under the Student Tab/My Toolkit, My Registration selecting Health Insurance – Change or Waive then following the prompts and submitting required additional information. For the purpose of health insurance, MD/PhD students are considered medical students throughout their student tenure, including the graduate student period. Further information about student health services and health insurance can be found on the Student Health and Wellness page.

Campus Safety

The Safety and Health Department has a comprehensive plan to develop, implement and monitor programs of environmental and occupational safety and health as necessary to protect the health and safety of faculty, staff, students and campus visitors, and to provide compliance with applicable regulations. This department is located in Mulford Library, Room 011 on Health Science Campus and in Transportation Center, Rooms 1200 A-D on the university’s main campus.

A UT Alert program has been created to inform all students, faculty, and employees about emergency situations. One can sign up for this free service here.

On campus incidents involving theft of personal possession(s) as well as bodily and/or property damage arising from University related maintenance issues should be reported as soon as possible to the University of Toledo Police (Main Campus 419-530-2600; Health Science Campus 419-383-3700). One may also fax the report to the Police Investigations Office 419-530-4505. Note: Reporting of such incidents does not automatically grant coverage under the University’s insurance. Any threat of physical violence or actual attack should be communicated to the Toledo Police by calling 911. Suspicious behavior or circumstances should be immediately reported to UT Police at 419-530-2600 (x2600). Additionally, reports can be made through use of any campus emergency phone. These reports can help law enforcement officials in solving crimes or identifying threats to campus security. Click here for UT’s Police Department Web site.

Most students feel safe on campus at all times of the day or night, but reasonable precautions should be taken. Lab doors should be locked when the lab is empty and when one is there at night. Further, after dark, individuals should walk in pairs through the parking lot and around campus. Also, Campus Police is happy to provide an escort upon request.
Health Risks to Graduate Students in Science Research

As an individual who is involved in science research, it is the graduate student’s responsibility to incorporate safe working practices into one’s research. The University of Toledo is required to follow OSHA and EPA Regulations. One should work with one’s mentor to ensure proper training for any work involving biological/infective hazards, radioactive compounds/isotopes, and animals. The student’s mentor MUST obtain the appropriate approvals before a student can actively participate in research projects involving these hazards, even if only for a lab rotation. Please visit the Environmental Health and Radiation Safety department webpage for specific information.

Parking

All HSC medical and graduate students who matriculated in 2008 or thereafter ARE charged for parking. HSC students who matriculated prior to 2008 are currently grandfathered with no parking fee. The charge is a flat fee of $125 per semester regardless of program, level or credit hours. This amounts to $375 per year.

Every vehicle that parks on UT property – student, staff or visitor - is required to have a permit. The UT Police do not ticket for "No Permit" between 5 p.m. Friday and 7 a.m. Monday or when classes are not in session (winter break, spring break, and University holidays). However, do note that school is considered to be in session during exam weeks. Students may purchase parking permits through UT's myUT online portal. Additional information is available on UT's Parking Services website.

Organizations, Clubs, and Activities

A wide variety of student-centered organizations, clubs, and activities are available, many of which are sponsored by the COMLS. These range from organizations fostering interest in medical specialties to the MOOSE club (Medically Oriented Outdoor Situational Education Club) which sponsors outdoor activities. A list of student organizations can be found here.

Volunteer Experiences

Many volunteer opportunities are available and the program encourages students to get involved! Many students have found time to participate in the America Reads program, the Community Health Project, and the Community Care Clinic among others. These are organized through the Office of Student Affairs. Involvement in these activities not only looks good on residency applications, but also instills the spirit of volunteerism and service that should become part of a future doctor’s professional commitment to helping others.

Travel to Meetings

MD/PhD students are strongly encouraged to take advantage of opportunities to attend regional and national meetings to present their research or participate in organizations. Funding for travel can come from a variety of sources. The College of Graduate Studies allocates funds for students to travel to a meeting to present their work. Additionally, research mentors may have grant funds available that can be devoted to student travel. Moreover, the Office of Student Affairs provides a one-time grant of $1,000 per student (pending availability of budgetary funds) for travel to meetings. However, the student must be giving a presentation at the meeting. MD/PhD students are considered medical students even during their graduate years so this funding is available throughout one’s training.
Monthly Luncheon Meetings
Every month during the academic year, MD/PhD students at all stages of the program gather for a luncheon meeting with the Co-Program Directors. The meetings are arranged and organized by the students and provide opportunities to discuss issues, receive advice, and communicate any news relevant to the program.

MD/PhD Student Office
The program has secured an office (Block Health Science Building, room 460) for MD/PhD students that can be used for studying and is a repository for donated medical textbooks. To obtain a key for the office, one must submit a Key Control Form to the police station in the basement of the Mulford Library building. The approver is Mary Ann Schuster, in the Dept. of Biochemistry and Cancer Biology (maryann.schuster@utoledo.edu, 419-383-4100).

MD/PhD Student Retreat
The MD/PhD program has an annual off-campus retreat to serve as an opportunity to share research, develop leadership skills, explore topics of broad interest, and foster socialization in an informal setting. The retreat has been held previously at the Maumee Bay State Park and includes oral presentations by students engaged in research, lunch, and outdoors activities.

National and International Meetings
The UT MD/PhD Program encourages students to attend national meetings at some point in their student career. Usually this is most appropriate in the later stages of graduate school training when a student has a significant body of research to present as a poster. Funding for a student to attend this meeting is included in the MD/PhD budget. Past meetings attended by UT MD/PhD students include:

The University of Colorado MD/PhD program meeting that takes place at the beautiful Keystone Conference Center in the Rocky Mountains of Colorado in late July. This meeting is a very well organized event with poster sessions for student presenters and breakout sessions to discuss residency and other career topics. The meeting attracts high profile keynote speakers including Nobel laureates. Recreational activities like mountain biking, hiking, and white water rafting are included as well. More information is available here.

The American Physician Scientist Association (APSA) hosts an annual spring meeting in Chicago as well as regional meetings. Keynote speakers and poster presentations are part of the agenda. The APSA website and meeting information can be found here.

Additionally there are several local, national, and international research discipline-related meetings that MD/PhD students often attend to present their research. These include the annual meetings of the American Association for Cancer Research, the American Society of Microbiology, the American Heart Association, and smaller regional meetings.

Support for MD/PhD student travel such meetings is available from the COMLS Office of Student Affairs, the College of Graduate Studies, the faculty mentor’s
research grants and department, and through travel awards sponsored by the above organizations and other entities.

People

Co-Program Directors

Marlene Welch, MD, PhD, FACS
Associate Professor of Surgery
Chief, Division of Plastic Surgery
Assistant Dean for Student Affairs
University of Toledo College of Medicine
Phone: (419) 383-6939
marlene.welch@utoledo.edu

Randall Ruch, PhD, MPH
Associate Professor of Biochemistry and Cancer Biology
University of Toledo College of Medicine
Phone: (419)383-4408
randall.ruch@utoledo.edu

MD/PhD Committee

The MD/PhD Committee has responsibility for administrative direction of the program, including admission of new students, oversight and management of the course of study and tracking of student progress. Members of the committee for the 2013-2014 academic year are:

Marlene Welch, MD, PhD (Co-Chair)
Randall Ruch, PhD, MPH (Co-Chair)
Andrew Beavis, PhD
Nicolas Chiaia, PhD
Ken Hensley, PhD
Kevin Pan, PhD
Dorothea Sawicki, PhD
James Willey, MD, PhD
Kandace Williams, PhD
Brian Youseff, BS (MD/PhD Student Representative)
Marianne Pohlman, administrative secretary
Administrative Personnel

Marianne Pohlman
Secretary 2, Graduate School
Email: marianne.pohlman@utoledo.edu
Office: HSB 426, Mail Stop: 1010
Phone: 419.383.4117; Fax: 419.383.6228
Marianne performs administrative duties for the program.

Christine Wile
Medical Admissions Analyst
Email: christine.wile@utoledo.edu
Phone: 419.383.4229
Christine performs processes medical school and MD/PhD applications.

Michelle Arbogast
Manager, COGS Administrative Services, Health Science Campus
Email: michelle.arbogast@utoledo.edu
Phone: 419.383.4113
Michelle performs many tasks for the graduate school on the Health Science Campus including Graduation Audit, Electronic Thesis/Dissertation Submission, Orientation, Survey and Reports, Emergency Loan Administration, and Budgets.

Dorothea L. Sawicki, PhD
Professor of Medical Microbiology and Immunology
Associate Dean for Graduate Programs, Health Science Campus
E-mail Address: dorothea.sawicki@utoledo.edu
Office Phone Number: (419) 383-4337
Graduate School Office: 419-383-4113
Dr. Sawicki oversees all aspects of the graduate school programs on the Health Science Campus.
Appendix:

M.D./Ph.D. Student Clinical Training Agreement

As part of their training program, M.D./Ph.D. students are expected to participate in a clinical training experience during the graduate school/research phase of their training. The goal of this experience is to reinforce preclinical information and help develop clinical skills that will be used when students transition back to the clinical clerkships after completing their Ph.D. degree requirements.

Learning objectives for this rotation are as follows:

a. Develop and improve history taking and physical examination skills.

b. Describe how to present a cogent history and physical to an attending.

c. Present the differential diagnosis, diagnostic work-up and management for common medical problems.

d. Relate patient presentations and treatments to basic pathophysiology and pharmacology

Students will work with a Clinical Mentor who will take responsibility for the clinical experience and evaluate student progress. The clinical mentor is not required to proctor all of the clinical exposures, but to ensure that the student is appropriately supervised and receives a good clinical experience. Students are expected to spend about 8 hours per month in clinical training. This can be divided into weekly 2 hour sessions, biweekly 4 hour sessions or an 8 hour day per month, or other arrangements as determined by the Student and Mentor. Students are encouraged to discuss the most appropriate schedule with their Research Mentor to ensure that the clinical experience does not interfere with graduate coursework or research progress. Students should see about one patient per hour of training (or more if possible), and should keep a log of patients seen, their diagnoses, and any procedures performed. Students will sign up for 1 or 2 hours of elective credit per semester, which will count toward the 4th year clinical elective credit at the rate of 2 weeks of credit for every 3 credit hours earned in this program. Clinical Mentors should not change more than once per semester.

Student Statement:

I, __________________ (Student), agree to work with Dr. __________________ (Clinical Mentor), for the period from ____________________ (start date) through ___________ (end date). I agree to spend 8 hours per month in this rotation, at times mutually agreed upon between myself, my Clinical Mentor, and my Research Mentor. I understand that this is an important part of my M.D./Ph.D. training, for which I will be evaluated and graded, and will pursue this training with the same commitment as I have to other phases of my education.

___________________________________
(Student signature)  (date)
Clinical Mentor Statement:

I, _______________ (Clinical Mentor), agree to work with _______________ (Student) as his/her Clinical Mentor for the period from ________________ (start date) through _______________ (end date). I understand that my role is to provide clinical experiences and training to the student for 8 hours per month at times mutually agreed upon between myself, the Student and the Research Mentor, and to submit a brief written evaluation form describing student progress to the M.D./Ph.D. director and the Office of Student Life at the end of each semester.

________________________________
(Clinical Mentor signature)  (date)

Research Mentor Statement:

I, _______________ (Research Mentor), as the Research Mentor for _______________ (Student), agree to allow him/her sufficient release time from laboratory duties to pursue the clinical training program described above. I understand that this is an important part of the Student's overall education. I will work with the Student and his/her Clinical Mentor to ensure that this clinical experience does not interfere with the Student's research progress.

________________________________
(Research Mentor signature)  (date)

Program Director Statement:

I, Marlene C. Welch, M.D., Ph.D., Co-Director of the M.D./Ph.D. Program, understand that the above named Faculty have agreed to work together to create a clinical training experience for the Student named above. If questions or problems arise during the course of this training experience, any of the above individuals may contact me for assistance.

________________________________
(M.D./Ph.D. Program Director)  (date)

Please retain one copy for each signer and submit one copy each to:
Marlene C. Welch, M.D., Ph.D.
Department of Surgery
Co-Director, M.D./Ph.D Program
Mulford Library Building, Room 102
University of Toledo College of Medicine and Life Sciences
Tel: 419-383-6939
Plan of Study for the Doctoral Degree

Description: The Plan of Study serves two main purposes. By defining a student's course of study, it provides focus and direction to his or her graduate degree program and it constitutes an agreement that successful completion of the proposed course of study and the general degree requirements will result in the awarding of the degree. Each student working for a degree is required to file a Plan of Study with the College of Graduate Studies prior to the completion of 12 credit hours. This plan must be approved by the Advisor, the Chairman or Program Director and the Associate College Dean before being submitted to the College of Graduate Studies. It is understood that the first "Plan of Study" filed by a student may be subject to change as he/she progresses. However, it is the student's responsibility to notify the College of Graduate Studies of any changes to an approved plan of study. According to the University of Toledo General Catalog, it is the policy that credit applied towards the doctoral degree must be earned within seven immediately preceding the time the degree is awarded (combined M.D./Ph.D. program limit is ten years).

Instructions:
1. List all credits earned or to be earned that you would like to apply toward fulfillment of the Doctoral degree requirements.
2. Under "Alphanumeric Code," give department and course number as they were taken or are to be taken. Give the course title in the second column. Enter term and grade information as appropriate.
3. Complete the "Credits" column for all courses listed.
4. Obtain all required signatures and forward to the College of Graduate Studies for final approval.
5. If there are significant changes, a new "Plan of Study" should be completed. If there are minimal changes, an "amended Plan of study" or "Plan of Study Course Substitution" form may be used.

<table>
<thead>
<tr>
<th>Last Name: Doe</th>
<th>First Name: John</th>
<th>MI: A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket ID: RRRRRRRRRR</td>
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<tr>
<td>College: Medicine &amp; Life Sciences</td>
<td>Degree: MD/PhD</td>
<td>Major: Infection, Immunity, &amp; Transplantation</td>
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Academic Background:

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<th>Date: June 13, 2010</th>
<th>My University</th>
<th>Microbiology</th>
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List all graduate courses required for the degree

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Plan of Study for the Doctoral Program Revised 07/2011
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<td>PUBH 5230</td>
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<td>Spring 2016</td>
<td>S</td>
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</tbody>
</table>

**Program Total**: 151
Residency Requirement

Doctoral students satisfy the doctoral residency requirement by completing a total of 18 hours of coursework taken over 3 consecutive semesters. Enrollment in a summer term is not required to maintain continuity, but credits earned during summer terms could count toward the 18 hours required for residency. Each graduate program may exclude certain courses and credit hours from meeting the residency requirement.

<table>
<thead>
<tr>
<th>Proposed Terms of Completion</th>
<th>Fall 2013</th>
<th>Spring 2014</th>
<th>Summer 2014</th>
</tr>
</thead>
</table>

Additional program degree requirements (please check all that apply):
- [ ] Qualifying Exam
- [ ] Comprehensive Exam
- [ ] Teaching
- [ ] Foreign Language

[ ] Other Requirements (list all that apply)

Proposed Semester of Candidacy: Summer 2014
Meets requirements of Catalog/Year: 2011-2012

Comments/Notes/Justification Regarding Transfer and/or Substituted Courses

- INDI 775 Cellular and Molecular Biology (11 credit hours) covers BMSP 6330/6340/6350/6360 CPRA in Protein Structure and Catalysis, Genes and Genomes, Cell Membranes, and Cell Biology and Signaling

- INDI 780 Organ Systems (5 credit hours) covers BMSP 6310/6320 Systems Pathophysiology I and II

General Approvals:

- Student (printed or typed)
  - Signature
  - Date
- Advisor (printed or typed)
  - Signature
  - Date
- Chairman or Program Director (printed or typed)
  - Signature
  - Date
- Associate Dean, Degree Program (printed or typed)
  - Signature
  - Date
- Dean or Senior Associate Dean, Graduate College (printed or typed)
  - Signature
  - Date

Plan of Study for the Doctoral Program

Revised 07/2011