**RESEARCH AND SCHOLARLY OPPORTUNITIES**

**RESEARCH INFORMATION FOR MEDICAL STUDENTS**

**at Temple’s University’s Lewis Katz School of Medicine**

The purpose of this manual is to provide students enrolled at the Lewis Katz School of Medicine at Temple University (LKSOM) with information about the following:

1. **General Research Information**
2. **Process for Summer Research between first and second year**
3. **Independent Study Research Projects**
4. **Fourth Year Research / Academic Medicine / Scholarly Projects**
5. **MD / PhD Program**
6. **Extramural Fellowship Opportunities**
7. **Other Resources**
8. **Resources for Mentors**
9. **Guidance on Medical Student Authorship**
10. **General Research**

Students looking to engage in a research project or other scholarly opportunity should first consider time available through one or more of the following main paths below. Students should then seek to identify a project or scholarly focus they are interested in pursuing or a mentor who is actively working in this area of focus.

Typical paths for medical student research and scholarly activities:

* during the academic year through a range of information sharing activities and events;
* during the summer between the 1st and 2nd year
* an elective devoted to research or a scholarly activity during the third or fourth year
* a one year fellowship, usually between years 2 and 3 or years 3 and 4

How to identify a research or scholarly opportunity at LKSOM

Faculty who have opportunities for medical student scholarly projects can be found by reviewing postings for the summer programs and other funded projects through the SGA website as well as through Blackboard in the Student Affairs folder. Students should plan to attend some of the events and activities listed below to learn more about ongoing projects at the School of Medicine and to have a chance to speak with medical students directly engaged in the projects and faculty mentors who are discussing their work.

Events and Activities for students to learn about scholarly projects

The first step in identifying a mentor is to explore scholarly activities which are currently going on at LKSOM. Various events are held throughout the year, these can be found by checking the LKSOM Student Government Association (SGA) website and the LKSOM events page at <http://www.templemedsga.com/>. A brief summary of several such events are listed below.

Activities and events for learning more about ongoing research projects, scholarly opportunities, and areas of focus at the School of Medicine:

* MD/PhD Research Seminar Series - these monthly seminars feature translational research focused hour long presentations by LKSOM faculty members who are actively engaged in basic or clinical research at Temple. The presentations are attended by MD/PhD students and MD students are welcome to attend and participate.
* Student Interest Groups- faculty periodically attend medical student interest groups and highlight upcoming summer research opportunities in the Spring prior to each summer session. These sessions are posted on the LKSOM SGA website in the upcoming events section.
* Temple Translational Science Symposium -attend this one-day symposium held each Fall, where PhD students, MD/PhD students, MD students, and postdoctoral fellows present their research posters. Attend presentations from LKSOM researchers discussing their latest investigations. This event highlights in-depth research activities going on in the School of Medicine and across Temple University.
* Summer Research Open House - sponsored American Physician Scientists Association (APSA) - held in January with information about summer research positions.
* Scholarly Project Poster Day - fourth year students present the results of their projects as part of their fourth year capstone course. This will give you an opportunity to see what kinds of projects are actively going on, talk to MD students about their experience in conducting scholarly work, and identify potential faculty mentors for conducting projects.
* Dawn Marks Research Day symposium - attend this one-day symposium held each Spring where PhD students, MD/PhD students, MD students, and postdoctoral fellows present their research posters. This event highlights in-depth research activities going on in the School of Medicine and across Temple University.
1. **Summer Research**

The LKSOM Student Affairs Office coordinates the process for summer research. During the fall, information regarding summer research is gathered and assembled into a spreadsheet. It includes information about the position, the application process, etc. In December and early January, first year students receive information about summer opportunities:

* How to learn about existing positions
* Application / hiring process
* Human Resources / Payroll process
* Compliance measures
* Skill development

An open house, organized by the MD/PhD students is organized each January so that students can meet with faculty to learn about the research opportunities available. The application process takes place during February and early March and acceptances for summer positions are confirmed by early April.

Student research participants engage in full-time research (40 hours per week) starting in late May, early June until the beginning of August under the direction of an LKSOM faculty member. Previous research experience is helpful but not required.

Stipends of up to $4000 each can be available for summer research. If students are eligible for the Federal Work Study Program, 75% of the stipend cost is subsidized by the program. The department where the student is working is responsible for 25% and additional fringe benefit costs per federal guidelines. In order to determine eligibility, students must complete FAFSA forms and review with staff in the Financial Aid office the requirements and procedures for accepting a Work Study award. If a student is not eligible for work study, the summer stipend can be negotiated based on the funds a department has available.

Students will work on their projects during the summer. Students will have an opportunity to present their work at the School of Medicine's Temple Translational Science Symposium held annually in the Fall.

Steps to apply**:**

* Select a project from the available opportunities**:**
* Review the list of Summer Research and Scholarly Opportunities
* Contact faculty members on the list and set up an appointment.
* Meet with the faculty member to discuss the project proposal, timeline, and expectations.
* Work with Financial Aid staff to determine work study eligibility, human resources and payroll management procedures.
* Ensure all compliance regulations are met.
* Only one student can apply for each position
* Develop your own project**:**
* Identify an LKSOM faculty member whose research interests you.
* Independently approach them to discuss a project.
* Meet with the faculty member to discuss the project proposal, timeline, and expectations.
* Work with Financial Aid staff to determine work study eligibility, human resources and payroll management procedures.
* Ensure all compliance regulations are met.
* Only one student can apply for each position
1. **Independent study and leave of absence.**

Students who pursue fellowship opportunities to conduct research may request a leave of absence to attend a year-long study program such as one of the HHMI Year-Long Medical Research Fellows Programs or the NIH Medical Research Scholars Program, see details below. For information on independent study, please see the Student and Faculty Handbook.

1. **Fourth Year Scholarly Project / Research / Academic Medicine**

During fourth year, students are encouraged to participate in a scholarly project which can be considered either research or academic medicine. All students who do scholarly projects must have faculty advisors who supervise the work, especially if it’s longitudinal. Students must complete proposals, share updates and produce posters, due in April of their fourth year describing their work. If selected by Dean’s staff and faculty, the posters are presented during the Fourth Year Scholarly Project Poster Day held during the Capstone course which takes place in May.

While time to conduct scholarly projects during the year is often limited, it is possible to plan for limited blocks of time in which to intensify activities or to complete a project. This can include scheduling Research Elective Clerkships.  Students meeting requirements will receive academic credit and an evaluation of their performance at the end of the clerkship. For more information on non-clinical rotations, please see the Student and Faculty Handbook.

Receiving academic credit for scholarly work

Regardless of the source of funding or the length of the project, it is possible to obtain academic credit for scholarly work. To obtain academic credit, students are expected to produce a manuscript, a poster or oral presentation, or other such presentation describing their results and conclusions. There are several opportunities in which students may present their projects at the School of Medicine. Each year, the school sponsors a "Scholarly Project Poster Day" as part of the fourth year Capstone course, in which students present their projects. This is coordinated with the Awards Day Ceremony and Graduation. Students may also present their research posters at two research symposia sponsored by the medical school, one held each Fall and one held each Spring. Students can also submit evidence of presentations at national or international meetings to satisfy this requirement.

1. **MD/PhD program and other dual programs.**

Students who may be interested in the rigorous pursuit of research during their medical training are encouraged to consider whether they might be interested in transitioning to a dual-degree program, such as the MD/PhD program or other dual program, such as MD/MBA, MD/MPH, MD/MS Biotechnology, MD/MA Urban Bioethics, etc. Please contact the appropriate academic office for further details on these programs at LKSOM.

1. **Extramural Fellowship Opportunities**

HHMI Year-Long Medical Research Fellows Program

The Medical Research Fellows Program gives students the opportunity to immerse themselves in a year of basic, translational, or applied biomedical research at an Academic or Nonprofit Research Institution. Medical Fellows experience the excitement and intellectual rewards of research before making plans for residency or postgraduate training. The students select their own mentor at any academic or nonprofit research institution in the United States (excluding the National Institutes of Health or any other federal agency) and work with the mentor to develop a research proposal. Mentor selection and the research project proposal are key components of the application. Working with an HHMI investigator or HHMI professor is encouraged but not required. (Application deadline is usually in January for fellowships starting in May of the same year)

HHMI Year-Long Medical Fellows Program at Janelia

The Year-Long Medical Fellows Program opportunities at HHMI's Janelia Research Campus are targeted to students with specific research interests and backgrounds, and have additional application requirements. (Application deadline is usually in November for fellowships beginning in May or September of the same year)

See the HHMI website at the link below for more information on both HHMI year-long programs:

<https://www.hhmi.org/programs/medical-research-fellows-program>

NIH Medical Research Scholars Program

The National Institutes of Health (NIH) Medical Research Scholars Program (MRSP) is a comprehensive, yearlong research enrichment program designed to attract the most creative, research- oriented medical, dental, and veterinary students to the intramural campus of the NIH in Bethesda, MD. Medical, dental, veterinary, and MD/PhD students are eligible for this program. This program is designed for students who have completed their initial clinical rotations (i.e., typically third year). However, students with strong research interests are welcome to apply prior to having completed these rotations. Accepted fourth-year students must defer graduation before participation. The MRSP is a residential program and participants are required to live in the housing provided.

Visit the MRSP website for more details:

<http://www.cc.nih.gov/training/mrsp>

1. **Other useful links and resources:**

Temple's Ginsburg Library hosts seminars, online videos, and other events covering resource instructions such as introductions to literature searches, evidence based healthcare, science research posters, managing references, etc. See [ginsburgstudy.temple.edu/calendar/events](http://ginsburgstudy.temple.edu/calendar/events) for more information.

NIH Reporter - database of all NIH funding by investigator or by school. Google "NIH RePORTER".

PubMed - database for literature searches. From the library's home page, find the PubMed database link to directly access Temple's holdings (while on campus). To access the journals from off campus, log in through the TU Portal to directly access the library's authentication portal.

1. **Resources for Mentors**

Reporting medical student research

Please share the accomplishments of medical students who are working with you. Medical students and research mentors can send this information to the Office of Student Affairs. If reporting a publication, abstract, or poster presentation, please send the citation and the name of the student, along with acknowledgement of any relevant funding source.

Regulatory requirements

Per university policy, medical students must receive safety training commensurate with the potential hazards present and the following restrictions and approvals are required where applicable:

* May not work with human subjects without the prior approval of the university’s Institutional Review Board (IRB);
* May not work with patient records or protected health information without completing HIPAA training;
* May not work with research animals without the prior approval of the university’s Institutional Animal Care and Use Committee (IACUC);
* May not work with recombinant DNA or infectious agents without prior approval from the University Bio-safety Committee (IBC) – the individual should be listed as a visitor or volunteer on the protocol submitted by the sponsoring principal investigator.
* May not work with hazardous chemicals, radioactive substances, etc., without prior approval from Environmental Health and Radiation Safety (EHRS).

It is the responsibility of the Principal Investigator to ensure that the student understands and is compliant with all training requirements and that the student be added to the PI's relevant institutional committee protocols.

1. **GUIDANCE ON DETERMINING MEDICAL STUDENT AUTHORSHIP ON PUBLICATIONS**

**From the International Committee on Medical Journal Ethics:**

## Why Authorship Matters

Authorship confers credit and has important academic, social, and financial implications. Authorship also implies responsibility and accountability for published work. The following recommendations are intended to ensure that contributors who have made substantive intellectual contributions to a paper are given credit as authors, but also that contributors credited as authors understand their role in taking responsibility and being accountable for what is published.

Because authorship does not communicate what contributions qualified an individual to be an author, some journals now request and publish information about the contributions of each person named as having participated in a submitted study, at least for original research. Editors are strongly encouraged to develop and implement a contributorship policy. Such policies remove much of the ambiguity surrounding contributions, but leave unresolved the question of the quantity and quality of contribution that qualify an individual for authorship. The ICMJE has thus developed criteria for authorship that can be used by all journals, including those that distinguish authors from other contributors.

Who Is an Author?

The ICMJE recommends that authorship be based on the following 4 criteria:

* Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
* Drafting the work or revising it critically for important intellectual content; AND
* Final approval of the version to be published; AND
* Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

See the ICMJE website for more details on the above criteria at the following link: <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>

**TIMELINE/CALENDAR**

**Fall / Winter** Presentations to introduce first year medical students to the research and scholarly activities program

**September** Annual Temple Translational Science Symposium with Medical Student Summer Research Program poster presentations

**October** Informational sessions for medical students - Identifying research mentors and funding opportunities

**November** Informational sessions for medical students - Preparation of competitive research fellowship applications

**Early February** Applications due for Year One summer program fellowships

**Mid April** Notification to students of acceptance for summer program slots

**May** Annual Scholarly Projects Poster Day in conjunction with Awards Day Celebration and Graduation

**Late May/early June** Students begin their summer research positions.

**June** Annual Dawn Marks Research Day Symposium