The Howard Hughes Medical Institute - University of Chicago PhD/MS Translational Training Program (TTP) is designed to engage students in both basic biological and clinical research, and to bridge the gap between highly specialized research and human disease processes in the context of a formal PhD program. Graduates will receive a PhD in their chosen discipline and an MS in Translational Research.

In addition to gaining a strong understanding of modern research methodology, trainees will simultaneously be trained in pathophysiology and exposed to clinical problems that present them with opportunities to establish credentials as a biomedical researcher.

First-year doctoral students in the Biomedical Sciences cluster, which includes the Committees on Cancer Biology, Immunology, Microbiology, and Molecular Metabolism and Nutrition are eligible to apply. These four academic units share several common courses, seminar series, retreats and additional common events.

Students in the Neuroscience cluster, specifically the Committees on Neurobiology and Computational Neuroscience, are also welcome to apply. Neurobiology is an interdepartmental program designed to provide training and instruction for students interested in the biology of the nervous system, while computational neuroscience is concerned with how components of the various nervous systems interact to produce behaviors.

A call for applications will be issued to eligible students in late Winter Quarter through the program administrators of the eligible programs and on the program website, due early in Spring Quarter. The application includes a research statement and a UC transcript. Decisions are made by Translational Research faculty. Decisions are released in late Spring Quarter.

The Translational Training Program courses (several that were designed specifically for this program), lectures and workshops offer exposure to a wide array of clinical situations which would not be experienced in a regular basic science program. In addition, the requirement of having a thesis supervisor with a clinical background assures a medical focus in the research project.

Participants are also required to develop thesis projects focused on human biology or disease processes, and remain intellectually engaged with translational research topics through various conferences, seminars and the CTSA Translational Research and Outcomes
Research workshops. Each trainee will have two mentors: one from their primary program and one with a clinical background.

Molecular Pathogenesis & Molecular Medicine Courses

**MPMM 30900. Cancer Biology 2: Molecular Mechanisms in Cancer Biology. 100 Units.**
This course provides students with an in-depth understanding of how key cellular processes are deregulated in cancer and the molecular mechanisms underpinning these defects. The course covers cell cycle checkpoint control, cell death, tumor suppressor and oncogene function, DNA repair mechanisms, epigenetics of cancer, nuclear hormone receptor activity in cancer, tumor metabolism, hypoxia responses, angiogenesis and metastasis. In addition to material covered in formal lectures, discussion sessions cover tumor stem cells, "oncogene addiction," inflammatory responses, cancer therapeutics, mouse models of human cancer and other topical subjects relevant to understanding tumor initiation and progression, as well as how current research may facilitate cancer treatment.
Instructor(s): D. Vander Griend Terms Offered: Winter
Equivalent Course(s): CCTS 40200, CABI 30900

**MPMM 34300. Selected Topics in Molecular Engineering: The Engineering and Biology of Tissue Repair. 100 Units.**
This course will examine the biomolecular and cellular bases for tissue engineering, including biological processes and biomolecular actors underlying morphogenesis and tissue repair in a number of tissue systems. Biomaterials and drug release principles being developed for tissue engineering will be examined, and the means by which molecular engineering is interfaced with the biomolecules and cells involved in tissue morphogenesis for tissue engineering will be elaborated. Selected case studies in different tissue engineering applications will be considered both through didactic presentations and projects undertaken by the students. Course work or research experience in cell biology and biochemistry strongly recommended.
Instructor(s): Joel Collier Terms Offered: Spring
Prerequisite(s): BIOS 20186 or BIOS 20234

**MPMM 40500. Team Translational Project I. 100 Units.**
No description available.
Instructor(s): Louis Philipson and Richard Kraig Terms Offered: Summer
Prerequisite(s): Admission to HHMI-MiG program

**MPMM 40614. Team Translational Project II. 100 Units.**
No description available.
Instructor(s): Louis Philipson and Richard Kraig Terms Offered: Autumn
Prerequisite(s): Admission to HHMI-MiG program

**MPMM 40700. Team Translational Project III: Translational Research and Associated Clinical Trials. 100 Units.**
No description available.
Instructor(s): Nancy Schwartz Terms Offered: Winter
Prerequisite(s): Consent of instructor
MPMM 40800. Team Translational Project IV: Clinical Experience. 100 Units.
No description available.
Instructor(s): Nancy Schwartz Terms Offered: Summer
Prerequisite(s): Admission to HHMI-MiG program
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Trajan.

Times was used instead of Palatino.

The editor may contact Leepfrog for a draft with the correct fonts in place.