

Master of Science in Translational Research

Emma A. Meagher, MD

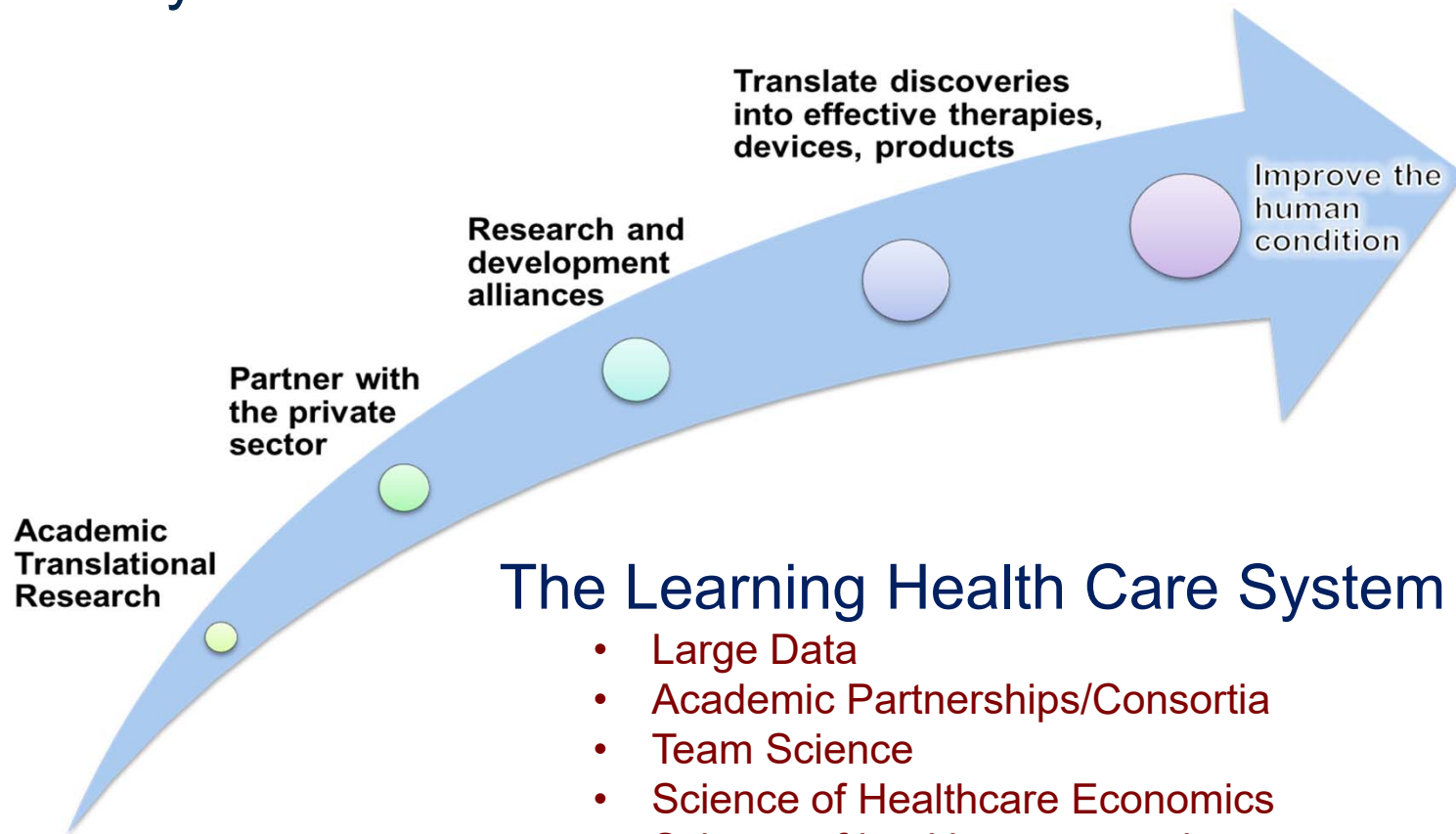
Program Director, MTR

Vice Dean, Clinical Research



The Shifting Interface of Academia and Healthcare

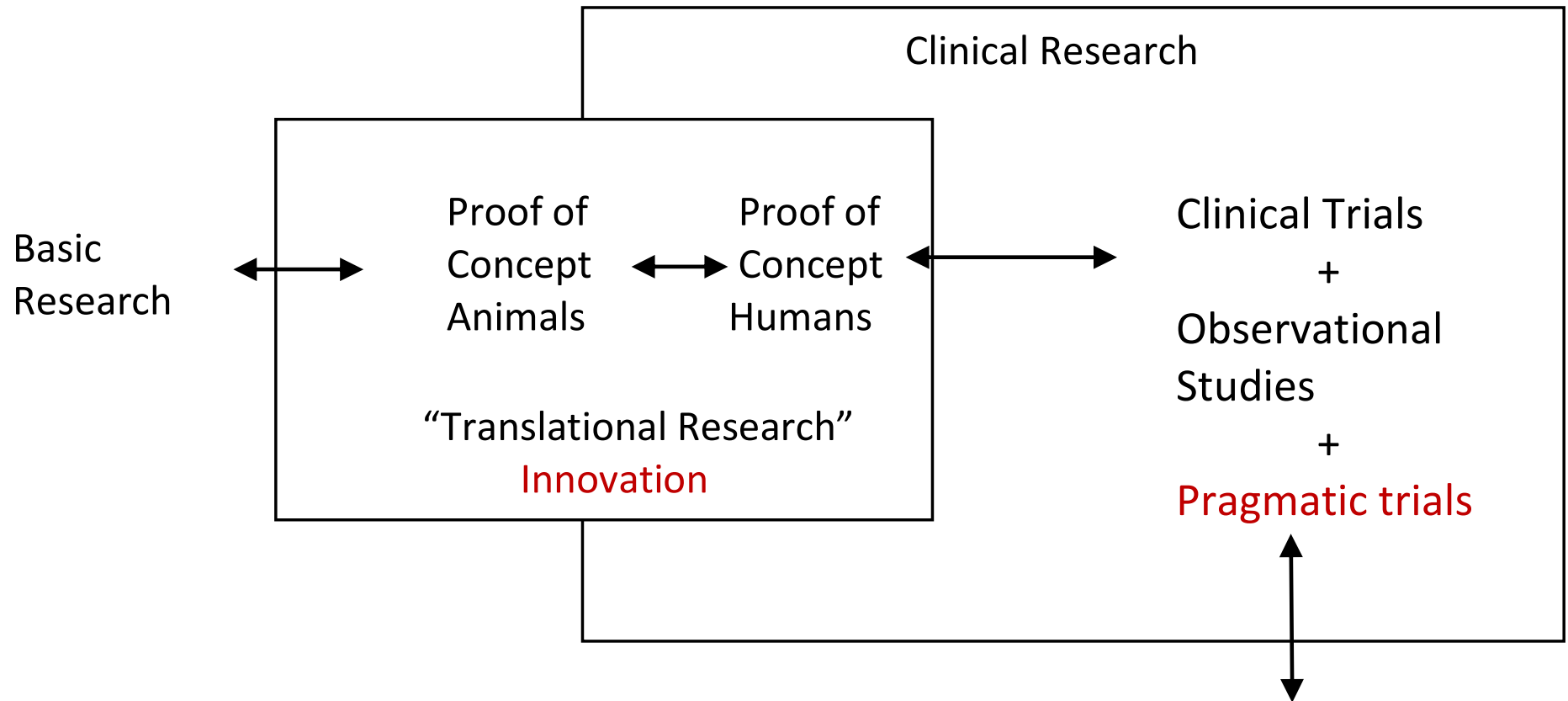
Integrating the translation of discovery into medical education



The Learning Health Care System

- Large Data
- Academic Partnerships/Consortia
- Team Science
- Science of Healthcare Economics
- Science of healthcare operations on outcomes

The Evolution of the Research Landscape



**The Learning Health Care System

Health Sciences Policy
+
Health Systems Research

Overall Goals of MTR Program

- Provide mentored training experience in translational research by combining didactic and experiential experiences in a structured degree granting program
- Prepare trainees to think critically to pose and answer research questions

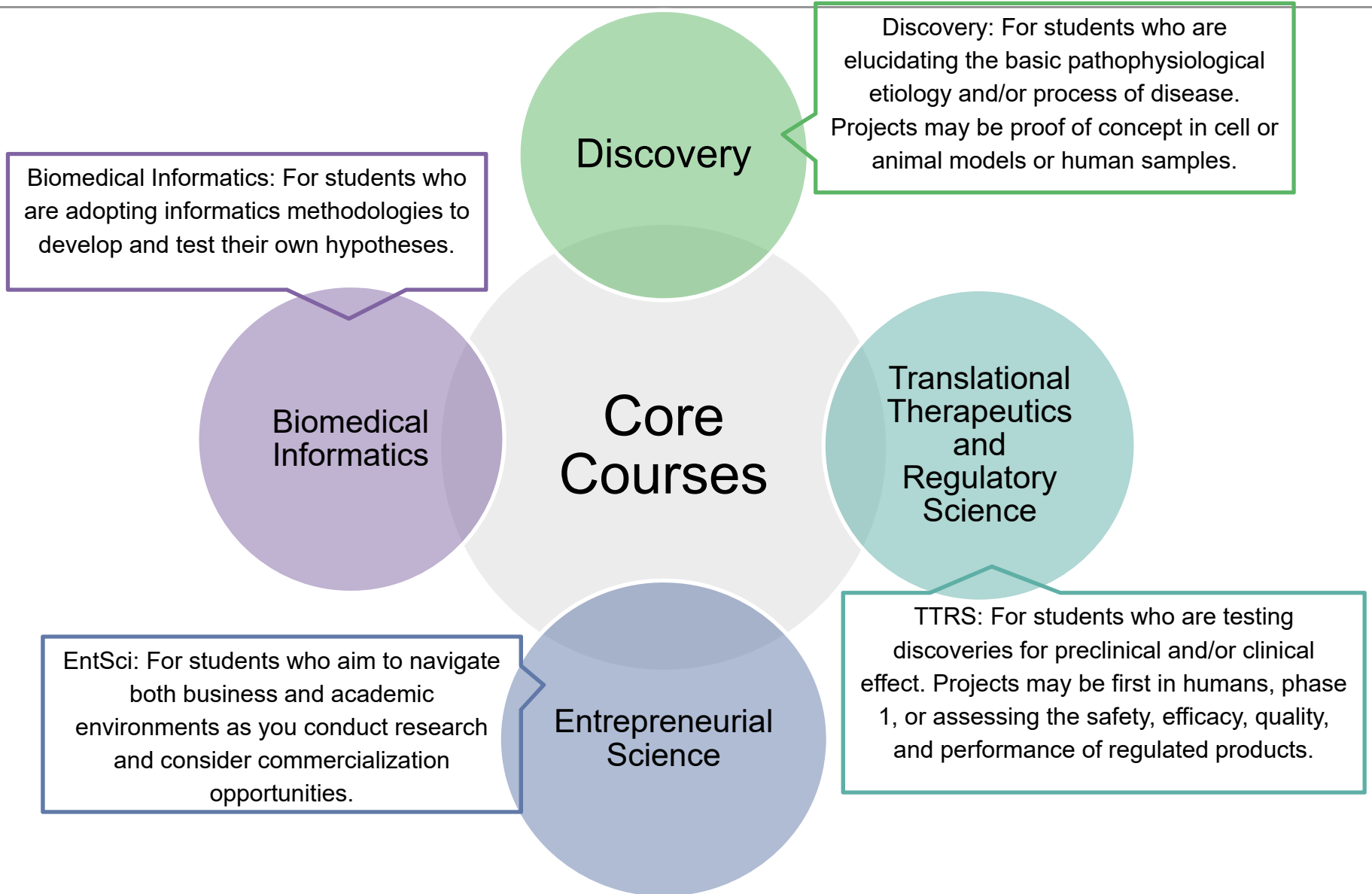
Providing the Educational Environment



General Information

- The program enrolls ~20 students per year
 - Includes a mix of MD Students, Residents, Fellows, Pre/Postdoctoral Scientists, and early stage Faculty
- 10 funded (TL1) trainee slots for predoc students per year
- Students apply early in their 3rd year of Med School (Sept/Oct)
- Selection occurs in December
- Students start program at the end of their 3rd year (July)

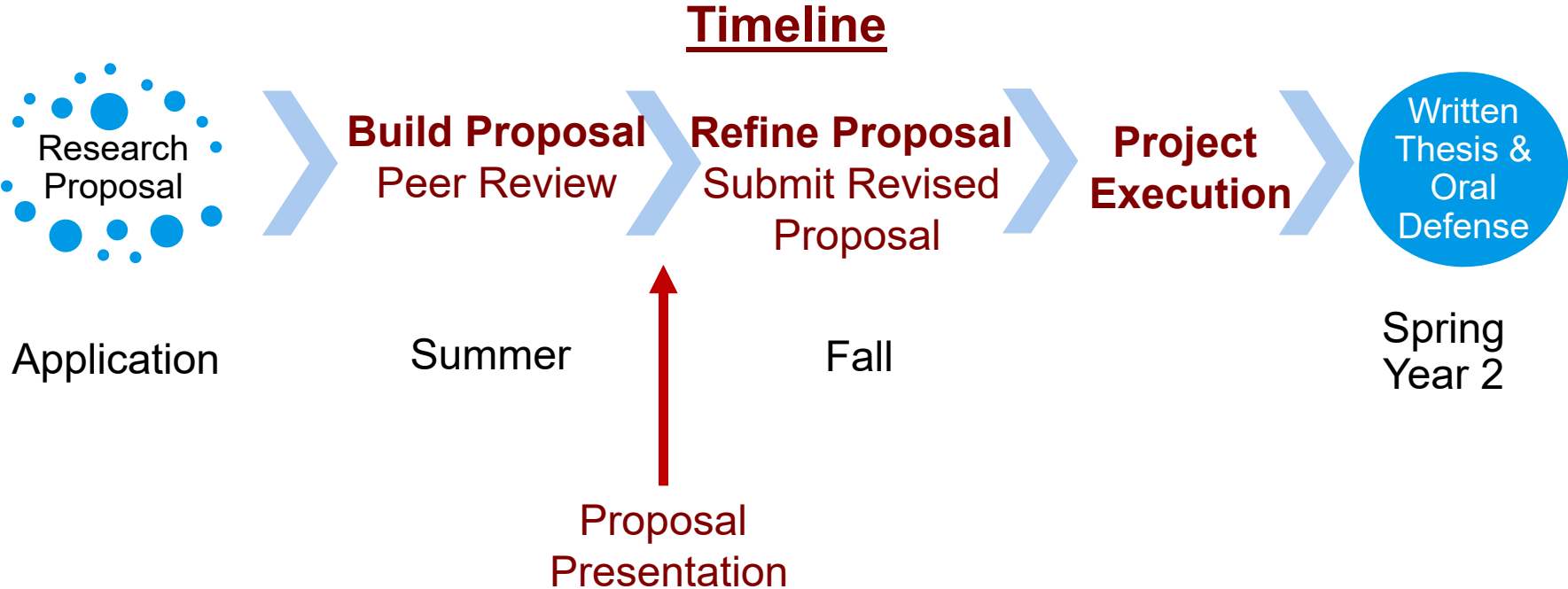
MTR Concentrations



Overview of Curriculum

- 12 credits
- 6 Required Courses
 - Biostats, scientific writing, measurement, protocol development, ethics
- 2 Elective Courses
 - a mix of one credit and/or half credit courses
- 2 Lab Rotations
 - Students learn 2 specific methods and are awarded 2 credits
- 2 credits for Thesis
 - Students are awarded 2 credits for completing their thesis successfully

Research Project



Professional Development Core (PDC)



Integration of Curricula - Sample MTR Study Plan

YEAR	FALL	SPRING	SUMMER
1	Module 1	Module 2	
2	Module 2	Module 4	Module 4
3	Module 4 Apply to program	Module 5 Step 1 USMLE	MTR 601, 602 (Summer II) Research
4	MTR 600, 603 Research	MTR 604, Elective 1 Research	MTR 605, MTR 999 (Summer I) Research
5	MTR 999, Elective 2 Research	Module 5 + 2 Thesis Credits Research	

Clinical Rotations

- ◆ Permitted times: July and August after year one or spring of your final semester
- ◆ Summer I Term at the end of year one is required and the only term when MTR 605 Data Manuscript Writing is offered

Year 1			
Summer Session II	Fall	Spring	Summer Session I
MTR 601 MTR 602	MTR 600 MTR 603	MTR 604 Elective 1	MTR 605 MTR 999 Lab 1
Year 2			
Summer Session II	Fall	Spring	
July/August Rotations Permitted	Elective 2 MTR 999 Lab 2	Rotations permitted Thesis Defense (MTR 607/608)	

Finances

YEAR	FALL	SPRING	SUMMER
1	Module 1 MD tuition	Module 2 MD tuition	
2	Module 2 MD tuition	Module 4 MD tuition	Module 4
3	Module 4 MD tuition	Module 5 MD tuition	MTR tuition TL1 starts July 1 st
4	MTR tuition TL1 grant	MTR tuition TL1 grant	MTR tuition TL1 ends June 30 th
5	MTR tuition	Module 5 + MTR MD tuition	

Grant Funding & Tuition Costs

- **Tuition Costs to student**
 - \$60,336 (Total degree cost in FY 19)
 - Subtract \$20,500 (Tuition funds provided by appointment to the TL1 grant)
 - Subtract \$10,012 (PSOM additional course policy for 2 courses)
 - This leaves \$29,824 estimated out of pocket costs for MTR tuition
- The out of pocket tuition cost is roughly equivalent to the one semester of MD tuition that is not charged during Fall of year 5.
 - If you receive a PSOM scholarship it may not be used during the MTR program, thus you are taking on an additional financial burden.
- Of note all TL1 scholars receive a cost of living stipend of \$24,324 for one year.

Current MD-MTR Students

Student	Research Area	Research Project	Mentor
John Arena, BA	Neurosurgery	Mechanisms of Axonal Degeneration Following Traumatic Brain Injury	Douglas H Smith, MD
Christopher Corbett, BS	Thoracic Surgery	Intraoperative Molecular Imaging for Pulmonary Adenocarcinoma: Does the Use of Multiple Biomarkers Increase Specificity?	Sunil Singhal, MD
Julia D'Souza, BS	Radiology	Trapping of Chemotherapeutics in Tumors via Antivascular Ultrasound	Chandra Sehgal, PhD
Yohannes Ghenbot, BS	Neurosurgery	Augmenting Perception Through Direct Electrical Stimulation of the Adult Somatosensory Cortex	Timothy Lucas, MD, PhD
Anthony Martin, BS	Orthopaedic Surgery	Acellular Hyaluronic Acid Scaffold with Embedded Biofactors for Cartilage Regeneration in a Minipig Cartilage Defect Model	Robert L. Mauck, PhD
Alexander Morrison, BS	Immunology	Mechanisms of CD40-dependent T cell trafficking in pancreatic ductal carcinoma	Robert Vonderheide, MD, Dphil
Neil Patel, BS	ENT: Head and Neck Surgery	Do Solitary Chemosensory Cells drive an IL-25 mediated eosinophilic inflammatory response in chronic rhinosinusitis with nasal polyps?	Noam A. Cohen, MD, PhD
Robert Schwab, BS	Immunology	Heart CAR-T	Avery Posey, PhD
Nicolas Seranio, BS	Radiation Oncology	Elucidation of the role of circulating tumor cells as biomarkers in the management of bladder cancer	Gary Kao, MD
Elliot Stein, BA	Interventional Radiology	Coaxial Electrochemical Ablation Device	Greg Nadolski, MD
Rosaline Zhang, BS	Pediatric Plastics Surgery	"Black Bone" MRI as alternative to CT for craniofacial imaging and evaluation of common bony pathologies	Scott Bartlett, MD
Steve Cho, BS	Neurosurgery	Enhancing and understanding intraoperative detection of tumors using near-infrared fluorescence	John Y.K. Lee, MD
Alexandra Dreyfuss, BS	Radiation Oncology	A Mouse Model to Study Image-Guided, Radiation-Induced Cardiac Injury and Potential Clinically Targetable Biologic Mediators	Constantinos Koumenis, PhD
Drew Goldberg, BA	Cardiovascular Surgery	Proteomic analysis and hemodynamic assessment of endothelial progenitor and mesenchymal stem cell exosome therapy in a heart failure model	Pavan Atluri, MD
Carissa Livingston, BS	Cardiology	Sunitinib-Induced Cardiotoxicity in an Engineered Cardiac Microtissue Model	Kenneth Margulies, MD
Abhinay Ramachandran, BS	Cardiology	Manipulation of Pro-Hypertrophic Molecular Targets to Alter the Hypertrophic Cardiac Myocyte Response to Increased Stiffness	Kenneth Margulies, MD
Leah Zuroff, BA	Neurology	Characterization of functional immune response phenotypes at various stages of ocrelizumab therapy: predicting treatment response and	Amit Bar-Or, MD

MTR Contact Information

Emma A. Meagher, MD

Program Director

emma@upenn.edu

Rachel Bastian, MEd

Administrative Director

bastianr@upenn.edu

Megan Maxwell, MSW

Program Coordinator

mmaxwell@upenn.edu

Visit website:

<http://www.itmat.upenn.edu/mtr/>

MTR Tuition & Fee Distribution

based on 2 cu per term and FY19 Tuition rates

YEAR	FALL	SPRING	SUMMER
1	Module 1 MD tuition	Module 2 MD tuition	
2	Module 2 MD tuition	Module 4 MD tuition	Module 4
3	Module 4 MD tuition	Module 5 MD tuition	TL1 begins July 1 9,694 (MTR tuition 2 c.u.) - 9,694 (TL1 grant) = 0 balance to student on Summer II bill
4	10,056 (MTR tuition 2 c.u.) -5403(TL1 grant) = 4653 balance to student on Fall bill	10,056 (MTR tuition 2 c.u.) -5403 (TL1 grant) = 4653 balance to student on Spring bill	TL1 ends June 30 9,694 (MTR tuition 2 c.u.) = 9,694 balance to student on Summer 1 bill
5	10,056 (MTR tuition 2 c.u.) =10,056 balance to student on Fall bill	31,568 Module 5 (MD Tuition) +10,056 (MTR Tuition 2 c.u.) -10,056 (PSOM Addt'l course) = 31,568 balance to student on Spring bill	