Institute of Medical Science
UNIVERSITY OF TORONTO

Masters of Health Science in Translational Research
trp.utoronto.ca
What is TR/S?

According to NCATS:

Translation: process of turning observations in the laboratory, clinic and community into interventions that improve the health of individuals and the public....

Translational science is the field of investigation focused on understanding the scientific and operational principles underlying each step of the translational process.
Translational Research:

Systematic investigation, study and knowledge production that turns observations in the laboratory, clinic and community into interventions that improve the health of individuals and the public.
Figure 1: Translational pathway

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
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<tbody>
<tr>
<td>Potential Application</td>
<td>Efficacy</td>
<td>Effectiveness</td>
<td>Population-Based</td>
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<tr>
<td>Basic Scientific Discovery</td>
<td>Potential Clinical Application</td>
<td>Evidence Based Guidelines</td>
<td>Clinical Care of Intervention</td>
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<tr>
<td>Basic Knowledge</td>
<td>Theoretical Knowledge</td>
<td>Efficacy Knowledge</td>
<td>Applied Knowledge</td>
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Innovation Landscape

Figure 1 Translational pathway

T1 - Potential Application
- Basic Scientific Discovery
- Potential Clinical Application

T2 - Efficacy
- Theoretical Knowledge
- Efficacy Knowledge

T3 - Effectiveness
- Evidence Based Guidelines
- Clinical Care of Intervention

T4 - Population-Based
- Applied Knowledge
- Health of Community or Population

Research
- Molecules
  - Discovery Science
    - Mechanism, Targets & Lead Molecules
  - Clinical Science
    - Controlled & Comparative Studies

Clinic
- Cells
  - Clinical Practice
    - Diagnosis, Treatment & Prevention

Regulation
- Organs
  - Clinical Practice
    - Care Delivery & System Improvement

Practice
- Individuals
  - Community
    - Care Delivery & System Improvement

Humans
- Populations
  - Governance
    - Social Benefits & Common Good

Institute of Medical Science
University of Toronto
TRP Mission:

To provide opportunities, support & training for students to catalyze (scientific) discoveries into problem-solving designs that benefit the advancement of human health.
Educational ‘T’

TRP: Provides opportunities, support & training for students to catalyze (scientific) discoveries into problem-solving designs that benefit the advancement of human health.

Assumed a priori Knowledge based on selection

Breadth

Problem-solving / Design Thinking
Collaboration
Deployment & Integration

Depth

Life Science / Social Science Education
How is the Program Structured?

The two-year course-based Masters (8.0 FCE’s) includes:

• An overview of Translational Research;
• Wet-lab, clinical and knowledge translation modules;
• Scientific communication;
• Project planning; and
• Capstone Project.

“Learn by doing”
Program Highlights

• Professional Masters (MHSc)
  – Focused on the development, design and translation of research and discoveries into contexts where they have positive impacts on human health.

• Course-based (8.0FCE 2y)

• Research-focused (capstone)
  – Students generate new knowledge by translating knowledge from one domain to another
  – Generates problem-solving designs

• Modular Structure, Collaborative, mentored and flexible;
  – Incorporates communication skills & design thinking (creative problem solving) skills; and
<table>
<thead>
<tr>
<th>Cohort</th>
<th>Mentors</th>
<th>MSC 1000</th>
<th>Discussants</th>
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<td>2015</td>
<td>17 Students</td>
<td>36 Faculty 7 Industry</td>
<td>Fei-Fei Liu</td>
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<td>5 jr Grads</td>
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<td>Vinod Chandran</td>
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<td>2 MD/PhD</td>
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<td>Derek Newton,</td>
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<td>3 Researchers</td>
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<td>Gabriella Chang</td>
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<td>Rafi Hofstein</td>
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<td>3 MD / Res</td>
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<td>Raisa Deber,</td>
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<td>Sean Rourke</td>
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<td>Anna Gagliardi</td>
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<td>Muhammad Mamdani</td>
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<td>Jennifer Stinson</td>
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Meet the Student Cohort of 2015/16:
Capstone Projects

**Practice-oriented (Translational Medicine)**
projects engage with the mechanics of ‘moving’ a particular science finding into clinical practice or applying a clinical observation to discovery research. These projects focus on the ‘doing’ and involve one or more stages of translating a finding or insight into a specific tangible benefit for the advancement of human health.

**Research oriented (Translational Science)**
projects explore what kind of facilitation, techniques and technologies allow for ideas and knowledge to cross boundaries in a transformative fashion. These projects focus on the field of investigation, understanding and operational principles underlying the understanding and evaluation of translational attempts and practices by others.

**Implementation oriented (Knowledge Translation & Implementation Science)**
projects focus on knowledge translation and the evaluation of its communication and implementation. These projects look at the implementation and evaluation of communication strategies associated with knowledge translation and implementation science.

**Leadership oriented (Policy & Diffusion of Innovation)**
projects focus on developing policies and best practices around the identification and implementation of successful translational research initiatives. These projects allow students to identify and advance translational research by identifying existing needs and leading their own initiatives to propose and test translational solutions that try to address them.
Benefits

• CIP Non-thesis-based equivalent
  • Unique design, communication and translational focus

• Supervised & mentored Capstone
  • Faculty & domain experts help students find and generate solutions to ingenuity gaps in health sciences
  • Project Advisory Committees support collaborative translational projects

• Portfolio of Work & Networking
Minimal Requirements:
A 4 year Honours BSc (or reasonable equivalent) or MD from a recognized university program, and a minimum of A- (3.7/4, 80% or First Class distinction) in three of the four years (including the final year) of the degree;

Application Requires:
• Statement of Intent;
• 3 Letters of reference; and
• CV.