MD/Special Training in Research: Enhancing medical education through research

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Scientific research

Somewhere, something incredible is waiting to be known.

— Carl Sagan —

If I have seen further it is by standing on the shoulders of Giants.

Isaac Newton

It amounts to a truism to say that progress in the practical arts of medicine in any of its branches, whether preventive or curative, only comes from the growth of accurate knowledge as it accumulates in the laboratories and studies of the various sciences.

Walter Fletcher

First scientist to clone HIV and map its genes

"It adds to the joy of discovery to know that your work may make a difference in people's lives."

Flossie Wong-Staal
Incorporating research into medical training

- Undergraduate—MD/Special Training in Research
- MD/PhD
- CIP
MD Special Training in Research (MD/STIR)

- What is MD/STIR?
  - Program that oversees and formally recognizes research by undergraduate medical education (UME) students
    - ~6 months of research (e.g. summers after 1\textsuperscript{st} and 2\textsuperscript{nd} yr)
  - How is the research recognized?
    - Annotation on diploma and transcript
    - “MD with Special Training in Research”
    - Typically ~5-15 students in each graduating class
  - You MUST apply in your first year
  - No risk to enroll
    - Students that do not complete the program (for whatever reason) are not recorded
Where can you find information on STIR?

Step 1. Identify a research supervisor

- Supervisors direct MD/STIR student research activities and in some cases contribute to stipend support
- Not all potential supervisors are familiar with STIR, so be prepared to describe the program
- Important points:
  - Supervisors must be full-time academic member of the University of Alberta (UofA).
  - Find a strong supervisor. It is extremely important that the supervisor has an active research program and is willing to put in the time to guide the student through the program.
  - Strong supervisors usually have:
    - peer-reviewed research grant support
    - successfully supervised research trainees
    - published with their trainees (typically as first- or last-author)
Step 2. Apply for summer stipend support

- All MD/STIR students must be paid for the summer research portion
  - From scholarship or from supervisor
- Students must apply for an Alberta Innovates (AI) summer research award (AI SRS)
  - Application call is already out with deadline ~February
  - This application automatically makes you eligible for MD/STIR support
    - MD/STIR support is limited to ~8-10 students
- Students should also apply to any other studentship stipend competition
- Students will NOT be accepted into the program without stipend support
Step 3. The Application: Proposal

- The student is responsible for writing the research proposal.
- *The proposed research must be hypothesis-driven and requires collection of primary data.*
- The supervisor should actively guide the student during the writing of the proposal.
  - If not, the student may need to reconsider whether this is the best environment for a successful MD/STIR.
- The student should start writing the proposal early January if not sooner!
Step 3. The Application: Ethics

• The student MUST attach documentation that all ethics approval is in place or pending or the application will be denied.

• If the supervisor does not have or is not actively applying for ethics approval for the STIR project, the student should re-consider whether this is the best environment for a successful MD/STIR.

• Lack of timely ethics approval is a major reason for student withdrawal from the program.
Step 3. The Application: CVs

• Student CV
  – No previous research experience is required

• Supervisor CV
  – The reviewers will assess the supervisor with respect to (i) peer-reviewed research grant support, (ii) successful supervision of research trainees, (iii) publications from their own group (typically as first- or last-author), (iv) publications with their trainees
### Step 3. Identify timeline for 24wk of research

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- FT Research (16wk)
- FT Research (8wk)

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- FT (4wk)

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Step 3. Submit your application

- The application is due **February 2023** to Nicole Kosturic, nkosturi@ualberta.ca
- The applications are assessed by members of the MD Research Committee
  - The research must be novel, hypothesis-driven and requires collection of primary data
  - The proposal must be scientifically sound
  - Feasibility
    - is the proposed research “doable” within the 24-week timeframe?
    - is the proposed work in line with supervisor’s research program?
    - Is the proposed work reasonable with respect to the student’s research background?
MD/STIR Committee oversees program

- Adetola Adesida, PhD - Division of Orthopaedic Surgery, Surgery
- Oana Caluseriu, MD, Chair of Committee - Medical Genetics
- Sandra Cockfield, MD - Division of Nephrology, Medicine
- Michelle Graham, MD - Division of Cardiology, Medicine
- Kieran Halloran, MD - Division of Pulmonary Medicine, Medicine
- Lisa Hartling, PhD - Division of Pediatric Emergency Medicine, Pediatrics
- Jennifer Hocking, PhD - Division of Anatomy
- Jacob Jaremko, MD - Radiology & Diagnostic Imaging
- Sanjay Kalra, MD - Division of Neurology, Medicine
- Paul LaPointe, PhD - Cell Biology
- Jean-Michel LeMelledo, MD, MSc - Psychiatry
- Janis Miyasaki, MD - Division of Neurology, Medicine
- Silvia Pagliardini, PhD - Physiology
- Jason Plemel, PhD - Division of Neurology, Medicine
- Elena Posse de Chaves, PhD - Pharmacology
- Trevor Steve, MD - Division of Neurology, Medicine
- Yan Yuan BSc, MSC, Mmath, PhD - School of Public Health
- Gregory Funk, PhD, Professor - Associate Dean Research, Graduate Programs
- Darryl Rolfson, MD, Associate Professor - Associate Dean, MD Program
- Abrar Alam, Claudia Turco, Keith Lau - Student Representatives
- Nicole Kosturic - Program Coordinator
Step 4. Complete program requirements

- Immerse yourself in the research experience (24 weeks)
- Oral presentation to fellow MD/STIR students in the format of a “3 minute pitch” at the beginning of the program
- Midterm report submitted by July 1 of the first summer
- Oral presentation to an appropriate group (e.g. lab meeting, group meeting, conference) arranged by the supervisor
- Poster presentation at FoMD Summer Student Research Day or equivalent
Step 5. Final written report

• Research manuscript format
  – 10-15 typewritten pages in length (double-spaced) excluding figures, tables and references
• “Student contributions to research” that clearly describes the student’s technical and intellectual contributions to the project
• The supervisor submits a confidential Student Evaluation form
Step 6: Oral defence

- 10-minute seminar to the examining committee
- 10-minute question period
- The student is expected to understand the basis and selection of methodologies used, the interpretation of results and the impact of findings
• **Pros:**
  – Opportunity to participate in the design and execution of a peer-reviewed research project
  – Time commitment of 24 weeks dedicated to research provides opportunity for student to become a valued member of a research team
  – Opportunity to assess interest and aptitude for research that may influence future career decisions
  – Formative feedback helps student develop skills in critical thinking and communication
  – No risk to enrollment. No indication if the student withdraws from the MD/STIR program.
  – Formal recognition of research training with the notation of “Special Training in Research” on student MD degree parchment and university transcript.

• **Cons:**
  – Time commitment of 24 weeks dedicated to research may be a challenge to students wishing to participate in other UME programs, e.g. extra clinical electives.
“Science makes people reach selflessly for truth and objectivity; it teaches people to accept reality, with wonder and admiration.”

—Lise Meitner