

Self-Study Appendices

Temerty Faculty of Medicine, University of Toronto External Review Spring 2026

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Section 2 – Appendix A: Summary of Temerty Medicine Facts & Figures

THE U of T ADVANTAGE 2025

As Canada's leading faculty of medicine, Temerty Medicine offers access to world-class educators and teaching hospitals, excellent technological infrastructure, huge strengths in computational research, broad and deep health data sets, a history of cross-disciplinary collaboration, a remarkably diverse population, and leading expertise in health policy and management — all in the context of a single-payer health system. While other institutions may share some of these attributes, only at the University of Toronto are all of these strengths combined through one academic network.

WHO WE ARE

TEMERTY FACULTY OF MEDICINE AT THE UNIVERSITY OF TORONTO

71,000+

Alumni

8,065

Faculty

8,800+

Students & Trainees

1,112

MD Students

71

MD/PhD Students

103

Physician Assistant
Program Students

342

Medical Radiation
Sciences Students

3,183

Graduate Students

2,113

Clinical Residents

1,916

Clinical Fellows

45,000+

Registrants per year for
Continuing Professional
Development activities

917

Staff

14

Graduate units spanning
fundamental science,
clinical, rehabilitation
sciences, translational
research and health
systems

9

Departments teaching
undergraduate Arts &
Science students

9

Fully-affiliated hospitals

- Baycrest Health Sciences
- Centre for Addiction and Mental Health
- Holland Bloorview Kids Rehabilitation Hospital
- The Hospital for Sick Children
- Sinai Health System:
 - › Bridgepoint Health
 - › Mount Sinai Hospital
- Sunnybrook Health Sciences Centre
- Unity Health Toronto:
 - › St. Michael's Hospital
- University Health Network:
 - › Princess Margaret Cancer Centre
 - › Toronto General Hospital
 - › Toronto Rehabilitation Institute
 - › Toronto Western Hospital
 - › West Park Healthcare Centre
- Women's College Hospital

22

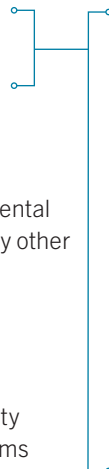
Departments

12

Extra-departmental
units (and many other
collaborations)

82

Clinical specialty
training programs



Anesthesiology & Pain
Medicine
Biochemistry
Family & Community
Medicine
Immunology
Laboratory Medicine
& Pathobiology
Medical Biophysics
Medical Imaging
Internal Medicine
Molecular Genetics
Nutritional Sciences
Obstetrics & Gynaecology

Occupational Science &
Occupational Therapy
Ophthalmology & Vision
Sciences
Otolaryngology – Head &
Neck Surgery
Paediatrics
Pharmacology & Toxicology
Physical Therapy
Physiology
Psychiatry
Radiation Oncology
Speech-Language Pathology
Surgery

23

Community-affiliated
hospitals and sites

- Canadian Blood Services
- George Hull Centre for Children and Families
- Georgian Bay General Hospital
- Humber River Hospital
- Kensington Eye Institute
- Kensington Health Centre
- Lakeridge Health
- Michael Garron Hospital
- North York General Hospital
- Oak Valley Health:
 - › Markham-Stouffville Hospital
 - › Uxbridge Hospital
- Ontario Forensic Pathology Service
- Ontario Shores Centre for Mental Health Sciences
- Orillia Soldiers' Memorial Hospital
- Royal Victoria Regional Health Centre
- Scarborough Health Network:
 - › Scarborough Birchmount
 - › Scarborough Centenary
 - › Scarborough General
- SickKids Centre for Community Mental Health
- Southlake Regional Health Centre
- Surrey Place Centre
- Trillium Health Partners:
 - › Credit Valley Hospital
 - › Mississauga Hospital
 - › Queensway Health Centre
- Unity Health Toronto:
 - › Providence Healthcare
 - › St. Joseph's Health Centre
- Waypoint Centre for Mental Health Care
- William Osler Health System
- Youthdale Treatment Centres

HOW WE COMPARE

WE'RE CANADA'S TOP MEDICAL SCHOOL AND AMONG THE BEST IN THE WORLD

International Rankings

- 2nd** National Taiwan University (Medicine 2025)
- 5th** U.S. News & World Report (Clinical Medicine 2025)
- 9th** Times Higher Education (Clinical & Health 2025)
- 13th** QS World University Ranking (Life Sciences & Medicine 2025)

HOW WE HAVE IMPACT

- We're the **single largest** educator of physicians in Canada
- We've been ranked as high as the **2nd most prolific university in the world** for health science research (*Nature*)

WE'RE A HUGE RESEARCH ENTERPRISE

\$1B

Total funding

8,810

Total awards 2023-2024

54

New priority patent applications*

7,487

Publications across 180 countries (2023-2024) produced through collaborations

150

New invention disclosures*

*over last five years (2019-2024)

OUR RECORD OF SUCCESS

For more than a century, the University of Toronto — together with our partner hospitals — has delivered revolutionary advances in health research.

1921 **Insulin**

Frederick Banting '16, '22, Charles Best '21, '25, J.B. Collip '12, '13 & J.J.R. Macleod

1930 **Pabulum**

Frederick Tisdall '16, Theodore Drake '14 & Alan Brown

1936 **Purification of Heparin**

David A. Scott & Arthur F. Charles

1936 **First Mobile Blood Transfusion Unit**

Norman Bethune '16

1951 **First Electronic Heart Pacemaker**

Wilfrid G. Bigelow '35, '38

1961 **Discovery of Stem Cells**

James Till & Ernest McCulloch '48

1961 **Discovery and Description of Progressive Supranuclear Palsy**

John Steele '59, J. Clifford Richardson '32, '35 & Jerzy Olszewski

1981 **The Glycemic Index**

David Jenkins

1981 **First Single Lung Transplant**

Griffith Pearson '49, '52 & Joel Cooper

1984 **T-Cell Receptor Gene**

Tak Mak

1988 **First Nerve Transplant**

Alan Hudson '68, '09 & Susan Mackinnon

1989 **The Cystic Fibrosis Gene**

Lap-Chee Tsui '07

1991 **Cell Receptor Discoveries Leading to the Development of New Cancer Drugs**

Tony Pawson

1995 **Discovery of Two Genes Responsible for Early-onset Alzheimer's**

Peter St George-Hyslop '84

2010 **Stem Cells Restore Sight to Blind Mice**

Derek van der Kooy '74, '80

2015 **Opening the Blood-Brain Barrier**

Todd Mainprize '08 et al.

Section 2 – Appendix B: Description of the Self-Study Process

The terms of reference of the self-study of the Temerty Faculty of Medicine are modeled on but outside the scope of the University of Toronto's Quality Assurance Process, or UTQAP. This cyclical process usually occurs every eight years and is initiated by the Provost. Known as a Provostial Review, it includes the preparation of a self-study and an external review by eminent scholars within the field of medicine and health sciences external to the University of Toronto. The self-study helps to inform the external review. The administration of the Faculty and the University then consider the feedback and recommendations of the external reviewers. This process culminates in the production of an Academic Strategic Plan that will guide the future direction of the Faculty over a five-year timeframe.

Preparation of the self-study document commenced in spring, led by Patricia Houston, Vice Dean of Medical Education, at the request of the Dean. The self-study highlights major initiatives undertaken in the Faculty, and comments on the achievements and challenges faced through those initiatives. The various chapters in this document address the terms of reference as provided by the Office of the Vice-Provost, Academic Programs, including: the quality, size and scope of undergraduate and graduate academic activities and the student experience; the Faculty's research activities; organizational and financial structures; physical, research and programming infrastructure; internal and external relationships; and student and faculty diversity. Faculty and administration leaders were responsible for completing drafts of the sections of this self-study report that correspond with their respective portfolios.

From January to October 2025, to prepare the self-study, Temerty Medicine engaged faculty, learners and staff from across the Faculty in three ways:

- *Information sessions and messaging* with existing committees, groups and their representatives to describe the academic planning process, timelines, data collection, and future opportunities to contribute. Engagements reached over 200 learner representatives on behalf of their undergraduate and graduate societies and associations or postgraduate programs, as well as key faculty and staff leadership bodies such as the Faculty Council, the Dean's Executive Committee, the All Chairs Committee, and the Group on Business Affairs.
- *Data collection* from faculty leaders and administration staff about the activities of Temerty Medicine units, led by an internal working group overseen by Patricia Houston.
- *Input and perspectives* were gathered through broad consultation about a draft of this document.

Section 2 – Appendix C: Faculty Departments and EDUs

I. DEPARTMENTS:	DEGREE PROGRAMS:
A. Basic Sciences	
Biochemistry	MSc, PhD
Immunology	MSc, PhD
Laboratory Medicine and Pathobiology (also Clinical)	MSc, MHSc, PhD
Medical Biophysics	MSc, PhD
Molecular Genetics	MSc*, MHSc, PhD
Nutritional Sciences	MSc, PhD
Pharmacology & Toxicology	MSc, PhD
Physiology	MSc, MHSc, PhD
B. Clinical	
Anesthesia & Pain Medicine	
Family & Community Medicine	BScPA* (Physician Assistant)
Medical Imaging	
Medicine	
Obstetrics & Gynaecology	
Ophthalmology & Vision Sciences	
Otolaryngology – Head & Neck Surgery	
Paediatrics	
Psychiatry	
Radiation Oncology	BScMRS* (Medical Radiation Sciences)
Surgery	

C. Rehabilitation Sciences

Occupational Science & Occupational Therapy	MScOT*
Physical Therapy	MScPT*
Speech-Language Pathology	MHSc*

II. Extra-departmental Unit** (EDU): As

[Terrence Donnelly Centre for Cellular & Biomolecular Research](#)

III. EDU:Bs

Institute of Medical Science	MSc, MHSc, PhD, MScBMC* (Biomedical Communications)
Rehabilitation Sciences Institute	MSc, PhD

IV. EDU:Cs

[Banting and Best Diabetes Centre](#)

[Centre for Advancing Collaborative Healthcare & Education \(CACHE\)](#)

Formerly known as: Centre for Interprofessional Education (CIPE)

[Centre for Faculty Development \(CFD\)](#)

[Centre for AI Research and Education in Medicine \(T-CAIREM\)](#)

[Centre for Quality Improvement & Patient Safety \(CQuIPS\)](#)

[Joannah & Brian Lawson Centre for Child Nutrition](#)

[Wilson Centre for Research in Education](#)

[Tanz Centre for Research in Neurodegenerative Diseases](#)

[Toronto Transplantation Institute](#)

*denotes an accredited program. See Section 2– Appendix D.

** *[Further information on Extra-departmental Units](#): EDU:A and B units serve some of the same roles as departments in terms of appointing faculty. Directors are appointed under the University's [Policy on Appointment of Academic Administrators](#). EDU:Cs are outside that policy and are usually established in partnership with affiliated hospitals.*

Section 2 – Appendix D: Accredited Programs

UNIT	PROGRAM / DEGREE	ACCREDITING AGENCY	PERIOD OF ACCREDITATION
Medical Education	Doctor of Medicine, MD	Committee on Accreditation of Canadian Medical Schools (CACMS)	2020-2028
	BSc Physician Assistant (BScPA)	Accreditation Canada	to August 31, 2029
	Postgraduate Medical Education (PGME) programs	Canadian Residency Accreditation Consortium (CanRAC)	2020-2028
	Continuing Professional Development	Committee on Accreditation of Continuing Medical Education (CACME)	2019-2027
Dept. of Radiation Oncology	BSc Medical Radiation Sciences, Radiation Therapy	Accreditation Canada	to June 30, 2031
	BSc Medical Radiation Sciences, Radiological Technology		to June 30, 2031
	BSc Medical Radiation Sciences, Nuclear Medicine and Molecular Imaging Technology		to June 30, 2031
Dept. of Occupational Science and Occupational Therapy	MScOT	Canadian Association of Occupational Therapists (CAOT)	to April 2031
Dept. of Physical Therapy	MScPT	Physiotherapy Education Accreditation Canada (PEAC)	to July 15, 2028
Dept. of Speech-Language Pathology	MHSc	Council for Accreditation of Canadian University Programs in Audiology and Speech-Language Pathology	to 2030
Institute for Medical Science	Biomedical Communications, MScBMC	Accreditation Review Committee - Medical Illustration / Commission on Accreditation of Allied Health Education Programs (CAAHEP)	Until 2031
Dept. of Molecular Genetics / SickKids	MSc Genetic Counselling	Accreditation Council for Genetic Counseling	to August 1, 2026 (Site visit in Dec 2025)
Dept. of Laboratory Medicine & Pathobiology	MHSc Laboratory Medicine, Pathologist Assistant	National Accreditation Agency for Clinical Laboratory Sciences (NAACLS)	Until 2028

Section 3 – Appendix A: Interdivisional Teaching

(SPOSt = subject program of study)

Enrolment of Students in SPOSts (A&S IDT)			Student Count on Count Date			
Department	Program Type	Program Code	2022-11-01	2023-11-01	2024-11-01	AVG
Biochemistry	Major	ASMAJ1762 - MA BIOCHEMISTRY	184	182	175	180
	Specialist	ASSPE1762 - SP BIOCHEMISTRY	70	59	61	63
Immunology	Major	ASMAJ1002 - MA IMMUNOLOGY	319	313	293	308
	Minor	ASMIN1002 - MI IMMUNOLOGY	1,135	1,306	1,549	1,330
	Specialist	ASSPE1002 - SP IMMUNOLOGY	29	23	18	23
Laboratory Medicine and Pathobiology	Specialist	ASSPE2025 - SP PATHOBIOLOGY	83	83	93	86
Molecular Genetics & Microbiology	Major	ASMAJ1387 - MA MOLEC GENETICS & MICROBIOL	184	173	190	182
	Specialist	ASSPE1387 - SP MOLEC GENETICS & MICROBIOL	36	19	9	21
		ASSPE1388 - SP MOL GEN&MICROBIO: GENETICS	17	25	36	26
		ASSPE1389 - SP MOL GEN&MICRO: MICROBIOLOGY	4	5	4	4
Nutritional Sciences	Major	ASMAJ1068 - MA NUTRITIONAL SCIENCES	216	214	206	212
Pharmacology & Toxicology	Major	ASMAJ2082 - MA PHARMACOLOGY	142	154	167	154
		ASMAJ2573 - MA BIOMEDICAL TOXICOLOGY	29	27	35	30
		ASMAJ2675 - MA PHARM & BIOMED TOX(GENERAL)	102	121	100	108
	Specialist	ASSPE0605 - SP ENVIRONMENT & TOXICOLOGY	5	4	4	4
		ASSPE2082 - SP PHARMACOLOGY	49	53	37	46
		ASSPE2340 - SP PHARM & BIOMED TOXICOLOGY	90	99	109	99
		ASSPE2573 - SP BIOMEDICAL TOXICOLOGY	4	8	8	7
Physiology	Major	ASMAJ0482 - MA PHYSIOLOGY	349	390	367	369

	Minor	ASMIN0482 - MI PHYSIOLOGY	770	783	926	826
	Specialist	ASSPE0482 - SP PHYSIOLOGY	38	35	32	35
Total			3,855	4,076	4,419	4,117

2023-24 Life Sciences Undergraduate Teaching by Faculty of Medicine Departments			
Division	Arts & Science	Kinesiology & Physical Education	UofT, Scarborough
Number of Courses Taught	164	24 (2 of these are uniquely offered to KPE students)	2 (both offered at UTSC)
Total Half-Course Equivalents Taught	17,926 (an increase of ~50% since the previous self-study in 2017-18)	962	290
Departments Involved	Division of Anatomy (Dept. of Surgery), Biochemistry, Immunology, Laboratory Medicine and Pathobiology, Molecular Genetics & Microbiology, Nutritional Sciences, Pharmacology & Toxicology, Physiology	Division of Anatomy (Dept. of Surgery), Biochemistry, Immunology, Molecular Genetics & Microbiology, Nutritional Sciences, Pharmacology & Toxicology, Physiology	Nutritional Sciences, Rehab (Dept. of Occupational Therapy)

Section 3 – Appendix B: Undergraduate Life Sciences Awards

Undergraduate Research Opportunity Program: In 1973, the University of Toronto established the Undergraduate Research Opportunity Program (UROP) to foster advanced research experiences for undergraduate students. Within the Temerty Faculty of Medicine, the Research and Health Science Education (RHSE) office oversees the UROP award allocations to departments. These awards are made possible by generous donations in support of medical and health science research. Each award is valued at \$2,500, plus additional compensation from other sources managed by the sponsoring unit to meet Temerty Medicine's stipend requirement (equivalent to minimum wage). A named UROP, the John P. Mitchell award, is included in this category. Students are expected to engage in full-time research for at least 12 weeks during the summer.

RHSE Undergraduate Summer Research Studentship: RHSE annually awards Undergraduate Summer Research Studentships (USRS) to support the participation of life science undergraduate students in summer research programs. Each of the eight Temerty Medicine units that engage in undergraduate life science teaching in the Faculty of Arts and Science is allocated one studentship to be awarded by the unit on a competitive basis, considering students' academic excellence and interest in future graduate training. Each award is valued at \$2,500, plus additional compensation from other sources managed by the sponsoring unit to meet Temerty Medicine's stipend requirement (equivalent to minimum wage). Students are expected to engage in full-time research for at least 12 weeks during the summer.

University of Toronto Excellence Awards: The University of Toronto Excellence Award (UTEA) program is funded by the Vice-President, Research and Innovation. The UTEA program provides eligible U of T undergraduate students with opportunities to conduct summer research projects under the supervision of eligible U of T faculty members. The value of each UTEA award is \$5,250, plus additional compensation from the PI or unit to meet Temerty Medicine's stipend requirement. Students are expected to engage in full-time research for at least 14 weeks during the summer. See table below for more information.

RHSE Undergraduate Student Leadership Awards: RHSE awards annually up to three Undergraduate Student Leadership Awards to recognize outstanding leadership and scholarship of students in our life science programs. Each award carries a value of \$500. The award criteria and adjudication committee membership was recently revised in 2023 to reduce conflicts of interest and simplify the nomination process.

Undergraduate Faculty Teaching Awards: RHSE awards up to four annual Undergraduate Teaching Awards in Life Sciences in four categories to honour outstanding and sustained contributions by faculty members to undergraduate Arts and Science teaching and the undergraduate life science student experience. Each award carries a cash value of \$1,000 each and is presented at the Faculty of Medicine Annual Education Achievement Celebration.

Undergraduate Research Opportunity (UROP)		
Year	Number of Awards	Total Allocations (\$)
2021-2022	119	\$297,500
2022-2023	117	\$292,500
2023-2024	115	\$287,500
2024-2025	133	\$332,500

University of Toronto Excellence Awards (UTEAs)		
<p>Categories were renamed: SSHRC/SSH = social sciences & health; NSERC/NSE = natural sciences & engineering; CIHR/HLS = health & life sciences (new category introduced in 2023-24)</p>		
Year	Number of Awards Allocated	Total Awards Used by TFoM Dept
2019-2020	5 NSERC, 2 SSHRC	LMP (2), PSL (2), NFS (1), SLP (1), Psychiatry (1)
2020-2021	4 NSERC, 2 SSHRC	PCL (2), MGY (2), SLP (2)
2021-2022	4 NSERC, 2 SSHRC	BCH (2), IMM (2), SLP (1), OT (1)
2022-2023	6 NSERC, 2 SSHRC	LMP (2), PSL (2), NFS (2), OT (2)
2023-2024	8 NSERC/NSE, 4 SSHRC/SSH, 34 CIHR/HLS	BCH (7), IMM (4), LMP (5), MGY (8), PCL (9), PSL (5), Surgery (2), NFS (2)
2024-2025	8 NSERC/NSE, 5 SSHRC/SSH, 30 CIHR/HLS	BCH (6), IMM (4), LMP (1), MBP (1), MGY (9), NFS (7), PCL (5), PSL (4), ANA (Surgery) (1)

Section 3 – Appendix C: Graduate Departments and Programs

Breakdown of Temerty Medicine Graduate Programs with Enrolment (F2024), N = 3078

Department	Enrolment
Biochemistry	152
PhD in Biochemistry	108 ^a
MSc in Biochemistry	44
Immunology	137
PhD in Fundamental Immunology	113
MSc in Fundamental Immunology	0
MSc in Applied Clinical Immunology ^h	24
Laboratory Medicine and Pathobiology	305
PhD in Laboratory Medicine and Pathobiology	158
MSc in Laboratory Medicine and Pathobiology	68
MHSc in Laboratory Medicine (Clinical Embryology and Pathologist's Assistant)	20
MHSc in Translational Research in Health Science ^j	59
Institute of Medical Science	543
PhD in Medical Science	237
MSc in Medical Science	261
MSc in Biomedical Communications ^{b,j}	36
Medical Biophysics	329
PhD in Medical Biophysics	259 ^c
MSc in Medical Biophysics	70

Molecular Genetics	448
PhD in Molecular Genetics	314 ^d
MSc in Molecular Genetics	77
MSc in Genetic Counselling ⁱ	12
MHSc in Medical Genomics ^j	45
Nutritional Sciences	65
PhD in Nutritional Sciences	41
MSc in Nutritional Sciences	24
Occupational Therapy ^{e,j}	263
Pharmacology and Toxicology	181
PhD in Pharmacology	106
MSc in Pharmacology	42
MSc in Applied Clinical Pharmacology ⁱ	33
Physical Therapy ^j	261
Physiology	189
PhD in Physiology	119
MSc in Physiology	43
MHSc in Medical Physiology ^j	27
Speech – Language Pathology ⁱ	118

Rehabilitation Sciences	87
PhD in Rehabilitation Science ^f	53
PhD in Practice Science ^g	0
MSc in Rehabilitation Science	34
MSc in Practice Science ^g	0
Totals	3078

Notes

- ^a This includes 3 students participating in the U of T – Melbourne International Research Training Group overseen by the Vice-President Research (VP Research).
- ^b The MSc in Biomedical Communications operates out of UTM but administratively resides within IMS.
- ^c This includes one student participating in the Joint PhD Program with Li Ka Shing Faculty of Medicine, The University of Hong Kong.
- ^d This includes three students participating in the Joint PhD Program with Zhejiang University.
- ^e This program is split between two campuses: St. George (183) and UTM (80).
- ^f This includes two students participating in the U of T – Melbourne International Research Training Group overseen by the VP Research.
- ^g Both the PhD and MSc programs in Practice Science has suspended admissions since January 2021.
- ^h This is a research, non-thesis MSc Program
- ⁱ This is a course-based master's degree.
- ^j This is a professional master's degree.

Description of Graduate Departments

1. Basic Science

- a) **Department of Biochemistry** – Biochemistry occupies a central place among the life sciences at Temerty Medicine and encompasses traditional disciplines such as molecular biology and cell biology and newer areas such as bioinformatics. Our faculty members have active research projects in signal transduction and regulation, membranes and transport, proteomics and bioinformatics, molecular medicine, molecular cell biology, protein folding, gene expression and development, and biomolecular structure and function. The department offers both MSc and PhD programs where students present their research in a dynamic weekly seminar series.
- b) **Department of Immunology** – The department operates as an integrated, collaborative community which includes hospital-based university affiliated research institutes. It strives to advance biomedical discoveries in immunology, increase the understanding of fundamental immunological principles and develop new applications for immune based-therapies. There are eight main areas of expertise: adaptive immunity, innate immunity, developmental immunology, autoimmunity, cancer immunology, infectious disease, immune deficiency and transplantation immunology. This department offers doctoral stream research training leading to a PhD degree, and a MSc degree in the field of Applied Immunology, a non-thesis graduate program with advanced training in designing, implementing and evaluating immunological techniques.
- c) **Department of Laboratory Medicine & Pathobiology (LMP)** – LMP is Canada's largest department of laboratory medicine and pathobiology, comprising a diverse network of learners and faculty, ranging from basic scientists to translational or AI researchers, clinician scientists and clinicians. Members are located across five fully affiliated hospitals, seven research institutes, the University campus, Ontario Forensic Pathology Service, Canadian Blood Services, Public Health Ontario, and 11 community affiliated hospitals. The department offers an undergraduate specialist program in pathobiology through the Faculty of Arts & Science and graduate training through thesis-based PhD and MSc programs, as well as professional master's programs such as the MHSc in Laboratory Medicine training pathologists' assistants and clinical embryologists, and the MHSc in Translational Research in Health Science. In partnership with the Department of Computer Science, LMP also provides a concentration in artificial intelligence in healthcare within the MSc in Applied Computing. With expertise across all laboratory medicine specialties including diagnostic and molecular pathology, hematopathology, neuropathology, forensic pathology, clinical and medical microbiology, and clinical chemistry, LMP fosters a collaborative environment where clinicians, basic scientists and trainees drive translational research that accelerates personalized medicine. As home to The Temerty Centre for Artificial Intelligence Research and Education in Medicine (T-CAIREM), LMP is at the forefront of innovation in the field, preparing graduates to translate more effective strategies for the treatment of human illness.

- d) **Department of Molecular Genetics** – The faculty, postdoctoral fellows and students in this department are engaged in ambitious and interdisciplinary research that range from AI-driven genomics to human disease modeling, microbial pathogenesis and the development of sustainable biotechnologies. Our work happens across five key research sites: the Medical Sciences Building, Donnelly Centre for Cellular & Biomolecular Research, SickKids Peter Gilgan Centre for Research and Learning, Lunenfeld-Tanenbaum Research Institute at Mount Sinai Hospital and MaRS. Our proximity to Toronto’s major research institutes generates a highly collaborative environment, with access to world-class facilities and resources. Graduate training includes the traditional PhD and MSc thesis-based programs, as well as a course-based MSc in Genetic Counselling and a professional master’s program in Medical Genomics.
- e) **Department of Medical Biophysics** – The Department of Medical Biophysics is an interdisciplinary department with a strong history of excellence and discovery in cancer research, treatment and beyond. Since its inception, its research is increasingly interdisciplinary, cutting across the conventional boundaries of biology, physics, medicine, chemistry, engineering, computer science and mathematics. The department continues to address problems of medicine with a focus on the detection, prevention and treatment of cancer, as well as significant focus in cardiovascular disease and neuroscience. Graduate students receive training at some of Canada’s top medical research facilities, including the Princess Margaret Cancer Centre, Sunnybrook Research Institute, SickKids Research Institute, Techna Institute, Toronto General Hospital and Rotman Research Institute. These institutes provide the department with access to some of the most sophisticated, state-of-the-art research infrastructure in the country.
- f) **Department of Nutritional Sciences** – The Department of Nutritional Sciences is one of the few departments of nutrition in North America that is located within a faculty of medicine. Together with its close linkages with the University of Toronto’s Dalla Lana School of Public Health, its mandate is to explore the relationships between nutrition and human health and disease, and to influence clinical practice and public health programs. It also creates unique opportunities for collaboration with the highest concentration of university affiliated hospitals, clinicians and health researchers in North America. Its activities include basic science and clinical and community aspects of nutrition, as well as food and nutrition policy that range from “bench to bedside to populations.” The aim of its graduate research degree programs (MSc and PhD) is to develop the student’s abilities to conceptualize research problems in the area of human nutrition, synthesize ideas and approaches in the research problem, analyze and interpret data, transmit their findings to peers, and expand their knowledge in, and perspective of, the field of human nutrition. It also offers a Master’s in Public Health program in Nutrition and Dietetics through the Dalla Lana School of Public Health.

- g) **Department of Pharmacology and Toxicology** – Offering three distinct graduate programs (PhD, MSc and MSc in Applied Clinical Pharmacology), students subsequently find themselves employed in exciting research, regulatory and administrative careers in academic, industrial and healthcare provision settings. Our faculty and research laboratories are located in the Medical Sciences Building, in addition to university affiliated research institutes and teaching hospitals. This strategic positioning enables a wealth of potential opportunities for interdisciplinary collaboration with internationally recognized investigators within one of the largest and densest concentrations of biomedical research expertise in North America.
- h) **Department of Physiology** – The Department of Physiology continues to remain at the forefront of innovation and the advancement of scientific discovery and medicine. Notably with the discovery of insulin in 1921, other significant contributions to research in the areas of neuroscience, cardiovascular science, reproduction and human development, and endocrinology throughout the department's history. Its ability to provide outstanding academic and research training in its PhD and MSc programs is possible through its partnership with some of the strongest research institutions in Canada, including SickKids Research Institute, UHN's Toronto General Hospital, Centre for Addictions and Mental Health and the Fields and Vector Institutes. Additionally, the professional MSc in Medical Physiology prepares learners to interpret big data and graduate workforce-ready.

2. Translational

- i) **Institute of Medical Science (IMS)** – This is the largest graduate department in Temerty Medicine and the primary graduate unit for Clinical Departments and the graduate unit of choice for MDs who wish to become clinician scientists. The department offers MSc and PhD programs as well as a two-year Master of Science in Biomedical Communication (MScBMC) at UT Mississauga (UTM) and a Graduate Diploma in Health Research exclusively for MD students interested in research training. These graduate programs support translational research relevant to human health from bench to bedside across multiple disciplines in biomedical and clinical/health sciences.

3. Rehabilitation Sciences

- j) **Department of Occupational Therapy and Occupational Sciences** – The Department of Occupational Science and Occupational Therapy is committed to providing graduate and continuing education programs that enable occupational therapists to be leaders in research, clinical practice and the promotion of health and well-being. Core and clinical faculty members provide dynamic, evidence-based and comprehensive instruction and mentorship. Graduate students in the accredited two-year MSc in Occupational Therapy (MScOT) program have the opportunity to study at one of two campuses: St. George or UT Mississauga.

- k) **Department of Physical Therapy** – This department is committed to educating future and current physical therapists, advancing practice, fostering leadership and contributing to its communities. Its vision is to advance the teaching, science and practice of physical therapy as an essential part of individual health and inclusive, flourishing communities. Offering an accredited two-year MSc in Physical Therapy (MScPT), its mandate is to improve the health of individuals through the discovery, application and exchange of knowledge. Starting Fall 2026, graduate students will have the opportunity to study at either the St. George campus or the Scarborough Academy of Medicine and Integrated Health (SAMIH) at UT Scarborough.
- l) **Department of Speech-Language Pathology** – The department’s vision is to provide global leadership in improving communication and swallowing through education and research partnerships. In doing so, its innovative curriculum in the MSc in Speech-Language Pathology (accredited by the Accreditation Board of Canadian Programs in Audiology and Speech-Language Pathology) enables graduates to bridge the gap between the theoretical knowledge learned in the classroom and practical applications in today’s demanding and evolving practice environments. Graduates are prepared to assume a variety of professional responsibilities including the assessment, treatment and management of speech, voice, language and swallowing disorders. Coursework and clinical internships are integrated and sequenced in a unique modular curriculum.
- m) **Rehabilitation Sciences Institute (RSI)** – RSI is the doctoral stream program (MSc and PhD) for the Departments of Physical Therapy, Occupational Science and Occupational Therapy and Speech-Language Pathology. Rehabilitation science is an integrated science dedicated to the study of human function and participation and its relationship to health and well-being. The academic activities of RSI students cover the full breadth of rehabilitation sciences expertise among Temerty Medicine faculty across our teaching hospitals and research institutes. The MSc and PhD graduate programs provide research opportunities in five key fields: movement science, occupational science, rehabilitation health services studies, rehabilitation technology sciences, and social and cognitive rehabilitation sciences.

Section 3 – Appendix D: Collaborative Specializations

Breakdown of Temerty Medicine Collaborative Specialization with Enrolment (F2024),
N = 393

Collaborative Specialization	TFOM students	Non-TFOM Students	Totals
Cardiovascular Sciences	41	9	50
PhD	29	7	36
Master's	12	2	14
Developmental Biology	39	25	64
PhD	35	20	55
Master's	4	5	9
Musculoskeletal Sciences	9	7	16
PhD	6	6	12
Master's	3	1	4
Neurosciences	169	92	261
PhD	114	72	186
Master's	55	20	75
Resuscitation Sciences*	0	0	0
PhD	0	0	0
Master's	0	0	0
Toxicology	1	1	2
PhD	1	1	2

Master's	0	0	0
Totals	259	134	393

*Admissions have been suspended.

Description of Collaborative Specializations in Temerty Medicine

1. **Toxicology** – The Collaborative Specialization in Toxicology is administered by the Department of Pharmacology and Toxicology and provides graduate students with a unique opportunity to gain breadth and depth of knowledge in toxicology beyond their thesis research. It aims to prepare participants for careers related to toxicology and emphasizes the development of critical thinking and communication skills in addition to acquiring greater knowledge of basic principles and specific aspects of toxicology.
2. **Cardiovascular Sciences** – The Cardiovascular Sciences Collaborative Program is an exciting program created to develop cooperative and joint graduate teaching and research across departmental boundaries under the [Faculties of Applied Science & Engineering, Kinesiology and Physical Education, Medicine](#) and [Pharmacy](#). The program builds on the strengths of the collaborating graduate departments (Chemical Engineering and Applied Chemistry, Dentistry, Exercise Sciences, [Institute of Biomedical Engineering](#), Institute of Medical Science, [Laboratory Medicine and Pathobiology](#), Medical Biophysics, Pharmaceutical Sciences, Pharmacology, Physiology and Rehabilitation Science) and the clinical departments of [Anesthesia](#), Medicine and Surgery — enhancing the visibility of cardiovascular studies and facilitating interdisciplinary training and research. The program offers diverse areas of training including two major streams of studies: cardiac and vascular.

Research in cardiovascular sciences at the [University of Toronto](#) has a long and illustrious history. This includes contributions to the discovery of atrial natriuretic factor (ANF) and the first clinical use of heparin. University of Toronto faculty were among the first to perform successful open-heart surgery and discover and implement the use of hypothermia to protect the heart during surgery. Many life-saving pediatric surgical procedures, now used worldwide, were first used by surgeons at the University of Toronto.

3. **Developmental Biology** – The Collaborative Specialization in Developmental Biology (housed in the Department of Molecular Genetics) brings together researchers in six university departments and two institutes: Biochemistry, Physiology, Cell & Systems Biology, Immunology, Laboratory Medicine & Pathobiology, Molecular Genetics, Institute of Biomaterials & Biomedical Engineering, and the Institute of Medical Science. The objectives of this collaborative specialization are below:
 - Promote and foster excellence in developmental biology research in Toronto
 - Provide a means for master's and PhD graduate students working on developmental biology projects to be exposed to a broad range of issues and approaches in modern developmental biology
 - Provide a single, comprehensive, advanced PhD-level graduate course to complement a number of introductory courses provided by different graduate units
 - Provide a forum for interaction between investigators in developmental biology in

different graduate units via participation in student seminars, supervisory committees, journal clubs, retreats and seminars/symposia

4. **Musculoskeletal Sciences** – Operating out of the Department of Laboratory Medicine & Pathobiology, this program focuses on educating and training graduate students to carry out musculoskeletal research and helping them see how their work fits into the larger community of musculoskeletal research that ranges from bench to bedside to society. The University of Toronto has a cohort of stellar faculty with expertise in all related medical research disciplines, constituting one of the largest musculoskeletal research communities in the world. Research areas include immunology, cell biology, molecular medicine and genomics, muscle physiology, imaging, pathology, bioengineering and related clinical areas such as orthopaedics, rheumatology, dentistry, kinesiology, rehabilitation, injury prevention and pain management. Advances in these areas are converging to allow major advances in translating research to musculoskeletal care and health. This collaborative specialization builds on this community to provide a unique education and training program.
5. **Neuroscience** – The Collaborative Specialization in Neuroscience (CSIN) is the largest collaborative neuroscience graduate program in Canada. There are over 400 faculty members and over 300 graduate students and postdoctoral fellows, from sixteen academic departments across seven faculties at the University of Toronto participating in the program. The CPIN faculty members and trainees are located at the University of Toronto and its affiliated teaching hospitals/research institutes. Such a large and versatile community provides the strong basis to cultivate a successful training program supporting excellence, collaboration, innovation and translational and trans-disciplinary research activities.

CSIN provides volunteer opportunities through organizing high school outreach activities to enhance the leadership training of its graduate students. CSIN aims to foster a strong and proactive collaborative neuroscience training program, recognizes and promotes excellence, increases the versatility of the trainees for their career development and enhances the national and international recognition of our neuroscience program, and ultimately attract the best graduate students and postdoctoral fellows to our program.

6. **Resuscitation Sciences** – The goal of the Collaborative Specialization in Resuscitation Sciences is to train scientists pursuing research in the optimal care of the acutely ill and injured patient and, ultimately, to create leaders in the discipline who will supervise others providing this level of scientific inquiry. The collaborative specialization appeals to students from a wide variety of backgrounds with an interest in any aspect of resuscitation science.

Resuscitation Sciences includes a number of medical areas such as trauma, critical care, emergency medicine, neurotrauma, anaesthesia, shock, sepsis, acute coronary syndrome, paediatric care, cardiovascular, peripheral vascular and rehabilitation medicine. Many non-medicine disciplines such as engineering, basic science and public health, as well as allied health professions such as nursing, pharmacy and paramedicine, will find synergies in the Resuscitation Sciences specialization. Research programs can use methodologies ranging from molecular medicine and genomics through clinical trials and outcomes to engineering,

health administration and health prevention strategies. Resulting advances in knowledge will ultimately be applied to the clinical setting.

Section 4 – Appendix A: Research Advances and Related News

2026

A ‘Peter Pan’ of the lab, Lewis Kay sheds light on the molecular machinery of life

Renowned U of T researcher’s work has [allowed scientists to study how molecular movements drive health and disease](#) — potentially unlocking new cures.

Are you forgoing penicillin during pregnancy because of an allergy? Not so fast, say researchers

In a recent systematic review, researchers at U of T and Sinai Health have [determined that nearly 95 per cent of pregnant patients who believe they’re allergic to penicillin are not actually allergic](#).

New study reveals a minimalist bacterial defense that disrupts viral assembly

U of T researchers have [expanded our understanding of bacterial immunity](#) with the discovery of a new protein that can both sense and counteract viral infections — pointing toward more effective phage therapy to neutralize specific bacteria.

Study reveals risk of death after surgery is much higher for residents of low-income neighbourhoods

Research from St. Michael’s Hospital and U of T [found patients from the lowest-income areas in Ontario had a 43 per cent higher chance of dying within 30 days of surgery](#) compared to those from the highest-income areas.

U of T researchers call for new approach to speech sound disorders in children

Rehabilitation scientists at U of T are [urging a reconsideration of how children are assessed for speech sound disorders](#), a group of conditions that make the correct pronunciation of words difficult.

Toronto researchers explore whether fully automated vehicles could reduce traffic injuries

A study by scientists at U of T [estimates that automated vehicles could result in an 80 per cent reduction in road traffic injuries](#) relative to human drivers, over the next decade.

2025

Study reveals how the gut builds long-lasting immunity after viral infections

A study led by U of T biologists has [shown that immune cells in the gut follow an atypical pathway to produce antibodies](#) that provide long-term protection against viruses.

Focused ultrasound combined with chemotherapy prolongs survival for people with deadly brain cancer

Ten years after researchers at Sunnybrook Health Sciences Centre and U of T used focused ultrasound to open the blood-brain barrier for the first time, a multi-site trial [shows the technique leads to a 40 per cent increase in survival time](#) for patients with glioblastoma.

A setback, a lizard and decades of work: The impact of Daniel Drucker's research extends far beyond Ozempic

In addition to diabetes and weight loss, [GLP-1 drugs are now targeting cardiovascular, kidney and metabolic liver disease](#), sleep apnea and more.

U of T researchers develop new approach using quantum computers to accelerate drug discovery

A study co-led by U of T scientists and Insilico Medicine [demonstrated for the first time the potential of quantum computing and artificial intelligence](#) to transform the drug discovery pipeline.

Made-in-Toronto cancer nanomedicine receives green light for clinical trial

Fourteen years after making a landmark discovery, researchers at University Health Network and U of T have [received Health Canada approval to test porphyrinsomes](#) in a world-first clinical trial.

Improving health at the earliest possible stage — before life begins

Researchers at Sinai Health, U of T and sites in four countries have [enrolled almost 22,000 young women and their families in the Healthy Life Trajectories Initiative](#), which is providing holistic data on early development, epigenetics, and health and disease.

Canadian preschoolers get nearly half of daily calories from ultra-processed foods: U of T study

Nutritional scientists at U of T are [sounding the alarm about the high consumption of ultra-processed foods among preschool-aged children](#) in Canada and its association with obesity development.

U of T to host new national hub for accelerating life sciences breakthroughs

The University of Toronto and its partners are [receiving funding to establish a national hub aimed at accelerating the commercialization of life sciences discoveries](#), part of \$32-million from the Government of Canada.

U of T researchers develop tool to fast-track measurement of protein interactions for drug discovery

A team led by scientists at U of T has [created a platform called SIMPL2 that revolutionizes the study of protein-protein interactions](#) by simplifying detection while improving measurement accuracy.

Surgical teams with more experience working together associated with fewer patient complications

Greater [familiarity between the surgeon and anesthesiologist is associated with lower odds of postoperative complications](#) after high-risk surgeries, according to a new study from Canadian researchers.

Skin-based test may allow better diagnosis of rare but debilitating neurodegenerative disease

Brain scientists at U of T have [developed a skin-based test that can detect signature features of progressive supranuclear palsy \(PSP\)](#), pointing toward the potential for a minimally invasive diagnostic test.

2024

CHARTWatch AI tool reduces risk of unanticipated death in hospitalized patients by 26 per cent

A study by Toronto researchers [evaluates the use of CHARTWatch, an artificial intelligence early warning system](#) developed at Unity Health Toronto that monitors hospitalized patients in real time.

Growing up with a dog is healthier for your gut: Toronto study

Researchers from Sinai Health and U of T have [found that growing up with a dog is associated with a decreased risk](#) of developing Crohn's disease.

Study uncovers racial biases in research guiding rehab for traumatic brain injury

Using critical race theory, researchers at University Health Network and U of T analyzed over 40 studies on race, the TBI clinical care journey and Black populations to [identify practices that could lead to unequal care for Black patients](#).

U of T researchers develop deep-learning model that outperforms Google AI system to predict peptide structures

Researchers at U of T have [developed a deep-learning model called PepFlow](#) that can predict all possible shapes of peptides — chains of amino acids that are shorter than proteins, but perform similar biological functions.

U of T and CAMH receive over \$3 million to create national radiopharmaceutical hub

The University of Toronto and CAMH have [received funding to advance and commercialize radiopharmaceutical technologies for health care](#), and to train a new generation of scientists and clinicians.

Creating an inclusive and supportive space for LGBTQ+ microbiologists

With over 100 members from across the globe, [Pride in Microbiology seeks to enhance justice and belonging](#) among LGBTQ+ people studying or working in microbiology in academia and industry.

U of T researchers lead discovery of natural compounds that selectively kill parasites

An international team led by researchers at U of T has [found a family of natural compounds with potential as new and more effective treatments for parasitic worms](#).

Patients have better outcomes in hospitals with higher ratio of female surgical teams

Care in hospitals with greater than 35 per cent female anesthesiologist and surgeon teams was [associated with a three per cent reduction in the odds of postoperative complications](#) in the three months following surgery, according to a study from ICES, Sunnybrook Research Institute and U of T.

Toronto researchers uncover human DNA repair by nuclear metamorphosis

Biologists at U of T have [discovered a DNA repair mechanism that advances understanding of how human cells stay healthy](#), and which could lead to new treatments for cancer and premature aging.

Why the U.S. Department of Defense gave a Toronto company a \$350 million contract

Thornhill Medical, a company founded by two researchers based at University Health Network and U of T, recently [received a major contract to provide innovative anesthesia and life-support equipment](#) to the U.S. military.

Quitting smoking at any age brings big health benefits, fast

People who quit smoking [see major gains in life expectancy after just a few years](#), according to a study by U of T researchers at Unity Health Toronto.

2023

U of T-anchored hospital network among leading life sciences research hubs, report finds

The University of Toronto and its partner hospitals are [propelling the Toronto region as a leading global hub for life sciences research](#) — but its success is at risk from underinvestment, according to a comprehensive new report.

Cannabis use during pregnancy is associated with adverse birth outcomes, find U of T researchers

Infants prenatally exposed to cannabis are [more likely to be born preterm, have a low birth weight, and require neonatal intensive care](#) than infants without prenatal cannabis exposure, a study by U of T researchers has found.

Combining genetics and data science can help us understand why some people react more severely to COVID-19

Why do some people have a more severe course of COVID-19 disease than others? A [database created by an international collaboration of researchers](#) — including many from U of T and partner hospitals — may hold the answers to this question, and many more.

U of T researchers dispel long-standing theory guiding nanoparticle treatment of tumours

Scientists at U of T have [developed an alternative theory to explain how nanoparticles enter and exit the tumours they are meant to treat](#). This new principle debunks a leading theory in cancer nanomedicine that has guided research for nearly four decades.

Nature ranks U of T among top three institutions in the world for health sciences research output

The University of Toronto is the [third-most prolific institution in the world — and second among universities — for health sciences research](#), according to new rankings by the publisher of *Nature*.

Novel treatment for glioblastoma shows promising results

An international clinical trial led by U of T researchers at [University Health Network](#) has [shown that a new therapy for recurrent glioblastoma prolongs patient survival](#), in some cases by several years.

U of T researchers use generative AI to design novel proteins

Researchers at U of T's Donnelly Centre have [developed an artificial intelligence system that can create proteins not found in nature using generative diffusion](#), the same technology behind popular image-creation platforms such as DALL-E and Midjourney.

Hybrid immunity provides better protection from COVID-19 than prior infection or vaccination alone

People who have recovered from COVID-19 and been vaccinated against the virus have the [best and longest lasting protection against future infection](#), compared to people who have been only vaccinated or only previously infected, according to a new international study.

2022

Temerty Medicine increases graduate student stipends

The Temerty Faculty of Medicine at the University of Toronto will [substantially increase its graduate student stipends beginning in the 2023-2024 academic year](#), making them the highest in Canada.

Working across disciplines, U of T and UHN researchers are rapidly changing lung transplant surgery

About 80 per cent of donated lungs are deemed unsuitable for transplant, because they are more vulnerable to deterioration than other organs. But researchers at University Health Network and U of T are [finding a way to solve that problem](#).

U of T receives \$35 Million to modernize high containment facility

The University of Toronto has [received \\$35 million in funding from the federal government to revitalize the Toronto High Containment Facility](#), positioning the facility to play a major role in addressing future pandemics.

U of T report shows food insecurity persists across Canada, varies by province

The latest national data from nutritional sciences researchers at U of T show that food insecurity in Canada has [remained largely unchanged over the last three years, with stark differences among the provinces](#).

\$90-million Gift to the Ted Rogers Centre for Heart Research marks new era in cardiac health

The Rogers Foundation is [announcing a \\$90-million benefaction — matched with \\$94.2 million in institutional support and additional fundraising](#) — that will sustain, advance, and significantly expand the reach of the Ted Rogers Centre for Heart Research.

U of T and Toronto hospitals mount research response to monkeypox

The University of Toronto and its partner hospitals are [leading a rapid research response to the global monkeypox outbreak](#), to better understand disease symptoms, genetic evolution of the virus and transmission risks, among other factors.

Canadian COVID-19 deaths second-lowest among G10 nations: U of T researchers

University of Toronto scientists have [published the first analysis of how Canada compared to peer countries in terms of public health and control measures](#), deaths related to COVID-19 and economic costs.

Toronto scientists look to unleash the power of stem cells to repair brain injuries

Researchers at Sinai Health and U of T say they have [identified a new way to control the fate of neural stem cells](#), bringing researchers one step closer to unlocking the mystery of how to repair the brain after injury or stroke.

U of T launches COVID-19 Rehab Research Network

The University of Toronto has [established a research network to advance rehabilitation models of care](#) that will optimize health and well-being among people recovering from or affected by COVID-19.

Blood biomarker predicts complicated Crohn's disease years before diagnosis

An international team led by a U of T immunologist has [found that an antibody predicts severe Crohn's disease and is detectable in blood](#) up to seven years prior to disease diagnosis.

U of T professors John Dick and Zulfiqar Bhutta win Canada Gairdner Awards

A stem cell biologist and a global health researcher, both at U of T, have been [honoured with 2022 Canada Gairdner Awards](#) — the country's most prestigious awards for medical and health science.

U of T researchers expand target range of CRISPR/Cas systems

Pharmacology and toxicology researchers at U of T have created a genome editing technology that [allows for slight variations in target DNA but retains local specificity](#), and which could help realize the potential of CRISPR/Cas-based gene therapy and pathogen diagnosis.

Donnelly Centre researchers reveal largest catalogue of gene activators

University of Toronto researchers have [created a first-in-class functional catalogue of proteins that activate gene expression](#), with implications for tailored therapy for cancer and other diseases that occur when wrong genes are switched on.

2021

U of T launches study of school food programs across Canada

Implementation scientists at U of T have [begun a nationwide study of school-based meal programs](#), to better understand which programs work well and whether a long-discussed national program could improve child nutrition in Canada.

Researchers prevent disease progression in laboratory models of Parkinson's

A team led by U of T researchers has [prevented the development of brain changes and movement problems](#) associated with Parkinson's disease in mice.

Best evidence shows nuts do not increase body weight

Nutritional scientists at U of T have [found that nuts do not contribute to weight gain](#), in the most comprehensive review to date of quality research on links among nuts, fat consumption and body weight.

Urgent need for reconciliation in Canadian health care, U of T researchers tell the world

Two U of T researchers have written a piece in *The Lancet* [highlighting systemic racism in Canadian health care against Indigenous peoples](#), and urged action in addressing the problem.

Researchers develop ways to increase vaccination rates among Black people in Canada

Temerty Medicine researchers say to increase vaccination rates among Black people who are at high risk of COVID-19, [employing an Afrocentric health promotion approach](#) that is centred on respecting patients' values and perspectives can help.

Breakthrough paves way for more cancer patients to benefit from immunotherapy

A recent advance by researchers at University Health Network and U of T [paves the way for novel immunotherapies to help more patients](#), regardless of their genetic ancestry, live longer and healthier lives.

Insulin100 scientific conference draws world's leading diabetes researchers

Patient stories. Innovative diabetes therapies. A peek inside the bedroom of one of the scientists who discovered insulin at the University of Toronto. Those were just a few highlights of U of T's recent Insulin100 Scientific Symposium, which [drew more than 6,000 attendees from around the world](#).

Brain cancer linked to tissue healing, Toronto study shows

The healing process that follows a brain injury could [spur tumour growth when new cells generated to replace those lost to the injury are derailed by mutations](#), researchers at SickKids and U of T investigators have found.

International Gairdner Award Goes to U of T scientist for metabolism research

Daniel Drukcer has been [jointly awarded a 2021 Canada Gairdner International Award](#) for research that has helped revolutionize treatments for type 2 diabetes, obesity and intestinal disorders.

2020

U of T launches Temerty Centre for AI Research and Education in Medicine

The [Temerty Centre for Artificial Intelligence Research and Education in Medicine launched this week at U of T](#), solidifying Toronto's place as a world leader at the nexus of AI, data science and the health sciences.

'Genome archeologists' at U of T and UHN activate immune response against cancer

Researchers at University Health Network and U of T have [identified silent and ancient DNA elements buried in our genomes](#) that when reactivated can initiate a powerful immune response to kill colorectal cancer cells.

U of T receives single largest gift in Canadian history from James and Louise Temerty to support advances in human health and health care

A \$250-million gift will [support discovery, collaboration, innovation, equity and student well-being across the University of Toronto's Faculty of Medicine and its affiliated hospital network](#), advancing its leadership as a global centre of excellence in human health and health care.

U of T-led research reveals a common foundation for six psychiatric disorders

New work by a U of T brain scientist [shows that genes in people's brains that affect their cortical thickness may play a role](#) in the development of six major psychiatric disorders.

Antibiotics affect breast milk microbiota in mothers of preterm infants, U of T study shows

A team led by researchers at U of T and SickKids has [found that mothers of preterm babies have highly individual breast milk microbiomes](#), and that even short courses of antibiotics have prolonged effects on the diversity and abundance of microbes in their milk.

U of T antibody test detects past covid-19 infection and quality of immune response

A blood test designed by researchers at U of T and Sinai Health can [accurately detect whether a person was previously infected with the virus that causes COVID-19](#) — and whether their immune response is functional.

U of T and McMaster researchers at Sunnybrook Hospital isolate virus behind COVID-19

University of Toronto researchers based at Sunnybrook Health Sciences Centre and a McMaster University scientist have [isolated the novel coronavirus](#), an important step in understanding the virus at the centre of the ongoing COVID-19 outbreak.

Section 5 – Appendix A Temerty Medicine Guidelines for EDU:Cs (Updated September 2025)

Academic Review of EDU:C

- The academic review process supports a structured approach for creating, assessing, and implementing plans to improve academic units in the context of institutional and divisional commitments and priorities. As per the “[University of Toronto Guidelines for Extra-Departmental Units](#),” the academic rationale for the establishment of an EDU:C is paramount. The academic review returns to the original expectations and anticipated metrics or measures of success in its assessment of the EDU:C’s “*sustainability, performance and achievements relative to the goals set out at its establishment. Possible outcomes of the review could include closure.*”

The guidelines acknowledge that—

Many EDUs are established in collaboration with the University’s Fully Affiliated Health Care Institutions and are an expression of the strong relationship that exists between the University of Toronto and its health care partners. These EDUs may be physically located in hospital space; engage colleagues employed by the University’s Toronto Academic Health Science Network (TAHSN) partners and be bound by their rules; depend on hospital infrastructure including finance and HR services; and are often sustained by significant financial contributions from collaborating institutions.

- In the instance of a partnership with a TAHSN hospital, the academic review will accord with the Memorandum of Understanding between the University of Toronto and the hospital.
- The Dean and, where applicable, the President & CEO of a TAHSN hospital commission(s) an academic review to be conducted prior to the appointment of a new Director or an incumbent’s (re)appointment, typically every 5 years.
- The academic review will reflect Temerty Medicine’s strategic academic priority, Excellence Through Equity, and the principles of equity and social accountability (defined by WHO for medical schools as “*the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve.*”)
- The academic review will follow Temerty Medicine’s standard operating procedures, including templates, for EDU:Cs.

- Following consultation with the EDU:C, the Director will submit names of potential reviewers—at arms-length from within the University of Toronto—from which the Dean or delegate will select two reviewers.
- The review will not exceed 1 day.
- The preparation of a collective self-study report will be coordinated by the Director for distribution by the Office of the Dean to the reviewers and other participants in the review.
- Once approved by the Dean or delegate, the finalized terms of reference will focus the academic review.
- The report of the reviewers will be fact-checked by the Director before it is finalized.
- The Director will prepare a response to be shared, together with the reviewers' report of findings, with the EDU:C community.

(Re)Appointment of EDU:C Director

Appointment

- [“University of Toronto Guidelines for Extra-Departmental Units”](#)
- The appointment process normally follows an academic review of the EDU:C; the review would, therefore, inform the appointment process.
- In the instance of a partnership with a TAHSN hospital, the appointment process will accord with the Memorandum of Understanding between the University of Toronto and the hospital.
- The appointment process is strictly confidential and its scope internal to the University of Toronto.
- The appointment process will reflect Temerty Medicine’s strategic academic priority, Excellence Through Equity, and the principles of equity and social accountability (defined by WHO for medical schools as *“the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve.”*)
- The Dean and, where applicable, the President & CEO of the TAHSN hospital will strike an Advisory Committee comprising the Executive Committee of the EDU:C, which will be chaired by the Dean or delegate or the decanal representative on the Executive Committee. Additional members (e.g., learners, partners, administrative staff) may be added at the discretion of the committee chair.

- Following discussion and review of the documents from the last academic review—self-study report, reviewers’ report of findings, Director’s response—the committee will identify the credentials and qualifications sought in the next Director.
- A posting to invite applications will be circulated broadly to members of the EDU:C. (The position opening will not be advertised or otherwise circulated.) Submission requirements will consist of a (1) letter of interest briefly outlining relevant experience and vision for the future of the EDU:C, (2) brief statement on applications of the principles of equity and social accountability (as defined by WHO) and (3) CV.
- The Advisory Committee will invite up to three individuals to interview.
- The Advisory Committee’s recommendation for Director will be made to the Dean and, where applicable, the President & CEO of the TAHSN hospital.
- The Dean and, where applicable, the President & CEO of the TAHSN hospital will meet with the successful candidate to formalize the appointment.

(Re)Appointment

- The (re)appointment process for a second (and final) term will reflect Temerty Medicine’s strategic academic priority, Excellence Through Equity, and the principles of equity and social accountability (defined by WHO for medical schools as *“the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve.”*)
- The (re)appointment process normally follows an academic review of the EDU:C; the review would, therefore, inform the (re)appointment process.
- The (re)appointment process is strictly confidential.
- The Dean, and where applicable, the President & CEO of the TAHSN hospital will strike an Advisory Committee. The Advisory Committee will normally comprise the Executive Committee of the EDU:C, which will be chaired by the Dean or delegate (e.g., decanal representative on the Executive Committee). The Advisory Committee—including learners, administrative staff, partners, etc.—will be established at the discretion of the Dean or delegate.
- Following discussion and review of the documents from the latest academic review—self-study report, reviewers’ report of findings, Director’s response—the committee will convene to determine its recommendation to the Dean and, where applicable, the President & CEO of the TAHSN hospital: whether to reappoint for a second (and final) term or to initiate the appointment process for a new Director.

- The Dean and, where applicable, the President & CEO of the TAHSN hospital will meet with the incumbent to formalize the reappointment.

Section 5 – Appendix B: External Reviews of Departments, Extra-Departmental Units and Programs, 2019-20 to 2024-25

2019-20	Departments
	1. Dept. of Psychiatry
	EDUs
	2. Donnelly Centre for Cellular & Biomolecular Research (EDU:A)
	3. Centre for Faculty Development (EDU:C)
	Collaborative Specializations
	4. Collaborative Specialization in Musculoskeletal Sciences
	5. Collaborative Specialization in Toxicology
2020-21	Departments
	1. Dept. of Molecular Genetics
	2. Dept. of Family & Community Medicine
	3. Dept. of Surgery
	4. Dept. of Physical Therapy
	EDUs
	5. Rehabilitation Sciences Institute (EDU:B)
	6. Banting & Best Diabetes Centre (EDU:C)
7. Centre for Advancing Collaborative Healthcare & Education (EDU:C)	
	8. Wilson Centre for Research in Education (EDU:C)

2021-22	Departments
	<ol style="list-style-type: none"> 1. Dept. of Laboratory Medicine & Pathobiology 2. Dept. of Medical Biophysics 3. Dept. of Nutritional Sciences 4. Dept. of Physiology 5. Dept. of Anesthesiology & Pain Medicine 6. Dept. of Medical Imaging 7. Dept. of Ophthalmology & Vision Sciences 8. Dept. of Otolaryngology – Head & Neck Surgery 9. Dept. of Radiation Oncology
	EDUs
	<ol style="list-style-type: none"> 10. Heart & Stroke - Richard Lewar Centre (EDU:C)
	Degree Programs
2022-23	Collaborative Specializations
	<ol style="list-style-type: none"> 12. Collaborative Specialization in Cardiovascular Sciences 13. Collaborative Specialization in Neuroscience
	Departments
	<ol style="list-style-type: none"> 1. Dept. of Immunology 2. Dept. of Pharmacology & Toxicology 3. Dept. of Obstetrics & Gynaecology 4. Dept. of Speech-Language Pathology
	Degree Programs
<ol style="list-style-type: none"> 5. Biomedical Communications, MScBMC 	

2023-24	<p>Departments</p> <ol style="list-style-type: none"> 1. Dept. of Medicine
	<p>EDUs</p> <ol style="list-style-type: none"> 2. Institute of Medical Science (EDU:B) 3. Lawson Centre for Child Nutrition (EDU:C – Depts. of Paediatrics, Family & Community Medicine, Nutritional Sciences)
2024-25	<p>Departments</p> <ol style="list-style-type: none"> 1. Dept. of Paediatrics (Chair/Paediatrician-in-Chief) 2. Dept. of Psychiatry
	<p>EDUs</p> <ol style="list-style-type: none"> 3. Centre for Quality Improvement & Patient Safety (EDU:C) 4. Tanz Centre for Research in Neurodegenerative Diseases (EDU:C) 5. Temerty Centre for AI Research & Education Medicine (EDU:C)
	<p>Degree Programs</p> <ol style="list-style-type: none"> 6. BSc, Physician Assistant
	<p>Collaborative Specializations</p> <ol style="list-style-type: none"> 7. Collaborative Specialization in Developmental Biology

Section 7 – Appendix A: Space and Infrastructure

FIGURE 1: MAP OF ST GEORGE CAMPUS. SIZE OF CIRCLES INDICATES NET ASSIGNABLE SQUARE METRES (NASM) AT EACH SPACE IN 2031



FIGURE 2: NET ASSIGNABLE SQUARE METRES (NASM) BY BUILDING – TODAY

Campus Name	Building Name	Sum of Shared Area	% of Grand Total Shared Area
St. George	Medical Sciences Building	28,960.66	44.97%
	Terrence Donnelly Ctr for Cellular & Biomolecular Research	9,881.04	15.34%
	Rehabilitation Sciences Building	7,878.32	12.23%
	MaRS 2	5,710.35	8.87%
	777 Bay Street	2,980.58	4.63%
	C. David Naylor Building	2,119.25	3.29%
	TWH - Krembil Discovery Tower	2,084.85	3.24%
	263 McCaul Street	1,278.95	1.99%
	Stewart Building	508.29	0.79%
	CAMH South - 250 College	439.23	0.68%
	McMurrich Building	427.58	0.66%
	123 Edward Street	413.20	0.64%
	340 College Street	177.88	0.28%
	St. George Total	62,860.18	97.60%
Mississauga (UTM)	Terrence Donnelly Health Sciences Complex	1,543.55	2.40%
	GRAND TOTAL	64,403.73	100%

FIGURE 3: SPACE TYPE BY NET ASSIGNABLE SQUARE METRES (NASM) TODAY

Subcategory Description	Sum of Shared Area	%of Grand Total Shared Area
Academic Offices	4,683.18	7.27%
Active Learning Classroom Space	176.63	0.27%
Central Administrative Offices	14.14	0.02%
Central Computing Facilities	65.23	0.10%
Classroom Service Space	115.26	0.18%
Departmental Support Staff Office	6,200.68	9.63%
Food Facilities	298.98	0.46%
Graduate Student Office	2,123.79	3.30%
Health Service Facilities	20.49	0.03%
Inactive - Assignable	4,370.02	6.79%
Informal Study Space	489.80	0.76%
Non-Inst Agency Occu Univ Space	112.97	0.18%
Non-Tiered Classrooms	2,630.07	4.08%
Office Support Space	5,687.36	8.83%
Other Central Service	393.36	0.61%
Recreational Facilities and Service	19.70	0.03%
Research Lab Space	20,499.09	31.83%
Research Lab Support Space	8,297.89	12.88%
Research Office/Project Space	579.79	0.90%
Scheduled Class Lab	3,158.33	4.90%
Specialized Central Animal Areas	1,516.56	2.35%
Structured Formal Study Space	427.87	0.66%
Student Office and Support Space	81.15	0.13%
Tiered Classrooms	572.25	0.89%

Undergraduate Lab Support Space	1,707.00	2.65%
Unscheduled Class Lab	162.14	0.25%
GRAND TOTAL	64,403.73	100%

Section 9 – Appendix A: External Reviewers' Report, 2018-19 Review

Review Report

Terms of Reference: Part 1

UTQAP Review

Doctor of Medicine (M.D.)

Program under review:	Doctor of Medicine, M.D.	In conjunction with Provostial non-UTQAP review of Faculty of Medicine
Commissioning officer:	Vice-President and Provost	
Date of scheduled review:	February 27 th – March 1 st , 2019	
Reviewers (names, affiliations):	<ol style="list-style-type: none">1. David Brenner, Vice Chancellor – Health Sciences, Dean, School of Medicine, University of California, San Diego2. Dermot Kelleher, Dean, Faculty of Medicine, Vice-President, Health, University of British Columbia3. Moira Whyte, Vice-Principal and Head of the College of Medicine and Veterinary Medicine, University of Edinburgh	

The Terms of Reference are intended to establish the parameters of the cyclical review process and provide the framework of the review report. (UTQAP reviews are still required even when accreditation reviews have been conducted.) Reviewers are asked to comment explicitly upon the following:

1 Program

Overview

University of Toronto is a big, diverse University with a single medical school distributed across four academies on teaching hospital sites. It is a leading Faculty of Medicine by international standards with very high rankings across a range of international surveys. All interviewees were uniformly enthusiastic about Dean Trevor Young's leadership of the Faculty of Medicine. He was particularly noted for his commitment to diversity and inclusion, his skills in government relations, and his work to improve relations with the affiliated hospitals. Everyone also stated with pride the continued high international rankings of University of Toronto Medicine. The positive impact of his financial management of the Faculty was also highly commended. Furthermore, it was universally noted that Dean Young has a collaborative, considerate leadership style.

For **the M.D.** program under review, consider and comment on the following:

Objectives

Consistency of the program with the University's mission and Faculty of Medicine's academic plans.

- The Faculty of Medicine operates in accordance with the overall mission of the University. It is committed to, and succeeds in, fostering an academic community in which learning and scholarship flourish. Particularly under the current leadership, staff have shown clear commitment to the principles of equity, diversity and inclusion.
- The Faculty of Medicine Strategic Plan 2018-2023 emphasizes core objectives and initiatives in the following three areas (i) an ecosystem of collaboration (ii) ground-breaking imagination and (iii) excellence through equity. It is clear that the Dean and the Faculty of Medicine are committed to these goals and that much of the strategic activity is focussed on the achievement of objectives in these three areas. Examples include the enhanced approaches to admission of a diverse student community and the focus on increasing the coherence of TAHSN (the Toronto Academic Health Science Network).

Admission Requirements

Appropriateness of admission requirements to the learning outcomes of the program.

- The MD programme utilizes a combination of admission requirements which are in accordance with those used by other schools and which are appropriate for the requirements of the programme. In addition, the MD programme has developed enhanced-support admissions processes to increase recruitment of two specific student groups in accordance with its strategic plan, namely (i) an Indigenous student cohort and (ii) a black student cohort. The Faculty has built strong relationships with the relevant communities in advancing these programmes and has achieved significant recruitment, particularly in the black student cohort.
- In addition, there is a stream for admission of MD PhD candidates that has a limit of 8 students per year. While this appears to be progressing well, we suggest that capacity in this programme should not be limited to 8 per year in a research-intensive Faculty if adequate funding can be obtained.

Curriculum and Program Delivery

Curriculum reflects the current state of the discipline or area of study.

- The recently introduced curriculum (from 2016 entry) is very substantially changed in Years 1 and 2 and the Foundations curriculum fully reflects the current state of the discipline. Given the curriculum is in its third year, the final outcomes cannot be fully assessed but the Faculty are very actively seeking student feedback in “real time” and are making changes where indicated. The students are very engaged by the Foundations curriculum. The documentation does have some lack of clarity around the systematic approach to learning, described by some learners as organ-based and by others as specialty-based.

- Unlike the radical successful changes in the preclinical curriculum, the clinical curriculum is very traditional. There had been a serious and highly commendable attempt at a novel longitudinal clerkship experience which was discontinued because it was expensive, labor intensive, and not generalizable. Others have had similar experiences with such curricula. We hope that elements of this format can be incorporated into a hybrid model in the future.
- The clerkships varied with respect to responsibility given to the learners. Learners reported satisfaction with the clerkships however; they were identified as generally well structured and effective. By contrast, shadowing was felt to be of limited value during the Foundation period.

Appropriateness and effectiveness of the program's structure, curriculum, length and delivery to its learning outcomes and degree level expectations; clarity with which these have been communicated.

- The programme does appear to have been appropriately mapped using a spiral curriculum structure and there has been thoughtful input into the design of the clinical cases at the heart of the 72-week Foundations curriculum. Students in the third year of the programme were aware of how the spiral curriculum was informing their progression in their clerkship programmes. There is significant self-learning time designated during the Foundations curriculum and it will be important to monitor how effectively this time is being used with regard to learning objectives. The panel support the emerging consensus that exit to PhD for MD PhD students would be best occurring at the end of Y2.

Evidence of innovation or creativity in the content and/or delivery of the program relative to other such programs.

- There was significant evidence of innovation in programme content and delivery. The capacity to complete a degree programme in engineering provides substantial opportunity for students who choose this route as does the MSc in Health Policy, Management and Evaluation (Strategic Leadership and Innovation). The Computing for Medicine Not-For-Credit Certificate and the Graduate Diploma in Health Research are further evidence of an innovative approach to the overall programme. The Health Science Research component of the curriculum is innovative and has some attractive components, including the capacity to track review of research articles to other components of the spiral curriculum. The project component of the programme (writing a grant application) was, however, seen as artificial and of limited value by the students that we spoke to and we would suggest that the learning objectives be reviewed. The Community-Based Service-Learning (CBSL) component was seen as having mixed value by students as their time was variably utilized. Similarly this should also be reviewed. Early inter-professional learning opportunities through the Family Medicine Learning Experience are seen by the panel as innovative and a very useful introduction to integrated care practises.

The appropriateness and effectiveness of the program's clinical and service learning requirements and opportunities to its learning outcomes.

- As per notes above. It has not been possible to evaluate the full 4 years of the new curriculum (since it is only in its third year). However both Year 4 (old curriculum) and Year 3 (new curriculum) students expressed satisfaction with their experience and opportunities. Students spoke very highly of almost all their clinical experiences. Nonetheless much of the year 4 elective time is occupied by the process of preparing for

and applying to the Canadian Resident Matching Service (CaRMS) match. This represents a highly stressful time for students and one where the learning experiences may be sub-optimal. The current Year 4 curriculum misses opportunities, such as reviewing basic knowledge after the clinical experience, genomics and informatics.

Opportunities for student research experience.

- There is substantial opportunity for research experience within the curriculum both during self-learning time during the week in the spiral curriculum and in the summer in Y1, Y2 and Y4. The programme organisers could consider whether opportunities are equally accessible to students at Mississauga Academy of Medicine (MAM).

Assessment of Learning

Appropriateness and effectiveness of the methods used for the evaluation of student achievement of the defined learning outcomes and degree-level expectations, especially in the students' final year of the program.

- The students are assessed frequently within the programme using an impressive range of different assessment approaches, including quizzes, MCQs and OSCEs. The portfolio approach is commended in assessing the students' reflectiveness on their learning experiences.
- We understand that Y4 in the new curriculum will closely resemble current Year 4. There are challenges to providing equity of clinical experience in Y4 as a result of students' need to use elective and selective periods to gain relevant expertise for, and interview time in, the CaRMS matching process. This issue is common to all Canadian medical schools. Despite this, current Y4 students were clear that they feel very well-prepared by the programme for clinical practice.

Quality Indicators

Assessment of program against international comparators.

- A formal international assessment has not been completed. However, all three visiting Deans consider the structure of the curriculum is in line with international best practise.

Quality of applicants and admitted students; enrolment.

- The programme receives large numbers (approximately 15 per place) of very high quality applicants and those admitted have exceptional GPA and MCAT scores. A rigorous mini-interview process is conducted.

Student completion rates and time to completion.

- Completion rates are high and comparable to other medical schools. Similarly time to completion.

Quality of the educational experience, teaching, and graduate supervision.

- Student feedback across all years of the programme attested to a high quality educational experience, delivered by extremely well-qualified and committed Faculty. This was true in all 4 of the medical Academies and across all Departments as far as could be ascertained. Graduate supervision, principally for MD PhD students in the context of this programme, can

be seen to be somewhat remote from the University as many of the research sites are not on the main University campus. Although they have an excellent “re-entry” to clinical medicine course, the MD PhD students felt some thought could be given to keeping them in touch with the MD programme whilst they are undertaking their PhD.

- There is tremendous student stress about residency match, made acute by last year’s national failure to match. The CARMS match dominates Y4 including travelling.
- Student surveys reported 60% of students reported harassment, which includes student to student harassment. Students need skills to treat each other better and this has been recognised by Faculty with action plans being considered. The faculty should consider gathering additional information regarding the source and nature of such mistreatment and using such information to develop a comprehensive action plan.

Implications of any data (where available) concerning post-graduation employability

- While there were significant issues with regard to the CARMS match last year, in which the Dean was strongly involved in resolution, this year’s match appears to have been highly successful with a limited number of unmatched students on first iteration.

Availability of student funding.

- Student funding has been realigned to target benefit to those with greater need.

Provision of student support through orientation, advising/mentoring, student services

- The panel were impressed with the work of the Office of Health Professions Student Affairs (OHPSA), particularly commending the Resilience Curriculum and the focus on student wellness. The SCORE programme for returners from absence is also very effective. Student support is accessed by around a quarter of students and several students volunteered they were impressed by the quality and timeliness of the support offered. Careers advice and support has been identified as an area for further development.

Program outreach and promotion.

- See Section 2

Quality Enhancement

Initiatives taken to enhance the quality of the program and the associated learning and teaching environment.

- The Faculty have undertaken an internal assessment of quality enhancement and identified clear future aspirations. The near real-time quality improvement in the new Foundations curriculum was particularly noteworthy.

Extent to which initiatives have been undertaken to enhance the program’s diversity and accessibility (i.e., for students requiring physical or mental health accommodations).

- Dr Robinson's work on diversity and inclusion was warmly welcomed by the panel and she has identified disability as an area for further work, building on excellent achievements around equality of opportunity for gender and race. Many of the Faculty we met expressly volunteered their commitment to diversity and inclusion and referred to strong leadership from the Dean in this area.

2 Faculty/Research

For the M.D. program under review, consider and comment on the following:

Scope, quality and relevance of faculty research activities.

- Toronto's high position in a range of international league tables assessing research power and quality speaks to the excellence of research undertaken in the Faculty and the wider Toronto ecosystem of hospital partners and institutes. Research strengths in the Faculty underpin the basic science curriculum and support from other Faculty areas appears fully available, notably from the new Dalla Lana School of Public Health and the Faculty of Arts and Science.

Appropriateness of the level of activity and funding relative to national and international comparators.

- The Faculty has a research income of approximately \$130M and the wider Toronto partnership of \$900M, attesting to its international standing. Research overheads (IDC) provided by the main funder, CIHR, are however inadequate and do not allow full cost recovery. This impacts on financial balance in the Faculty and there is need for investment in the quality of research space in order to continue to recruit excellent researchers and undertake cutting-edge science. This issue is discussed in greater detail in Part 2 of this report.

Appropriateness of research opportunities and activities for medical students.

- Medical students have access to a wide and impressive range of research opportunities, beginning early in Year 1, and supplemented by further opportunities. The panel particularly enjoyed hearing about the Comprehensive Research Experience for Medical Students (CREMS) research taster programme and look forward to seeing how it progresses.

Appropriateness and effectiveness of the Faculty's use of existing human resources. In making this assessment, reviewers must recognize the institution's autonomy in determining priorities for funding, space, and faculty allocation

- The current Dean has effectively rebalanced budgets across the Faculty and there is a robust process for space review and allocation for new research space. Several Faculty members praised the openness and objectivity of the senior management team in reaching and explaining such decisions.
- Overall, despite the success in balancing the budget, we were concerned that the current budget provided insufficient funds for continued success and expansion that will be needed for new recruitments, new and/or renovated research space, new investments in research

cores, and scholarships. The leadership felt that the current budget model encourages silos and limits collaboration across U of T.

3 Relationships

For **the M.D.** program under review, consider and comment on the following:

Strength of the morale of faculty, students and staff.

- Morale appeared to be high among the faculty, students and staff. Students at all levels spoke freely and were appreciative of the support of faculty and staff. Faculty and staff were strongly supportive of the strategic approach of the Dean, which was noted to have increased the cohesion of the Faculty with regard to its partners and also to have strongly supported activities in equity and diversity. Of note, research faculty and graduate students did report a lack of association with the University as compared to the host research institute and favoured their stronger relationships with the partner institutions where the research was performed (whilst acknowledging progress in this area, particularly in the Dean's engagement of the TAHSN partners).

Scope and nature of relationships with cognate Faculties, academic departments and units.

- Relationships appeared to be collegial and strong with other faculties and such relationships have led to significant strategic developments, including for example the Biomedical Engineering programme and enhanced relationships with the Faculty of Science and Arts. The support of the Dean in enhancing relationships was noted by the cognate Faculties. Relationships with academic departments appeared to be collegial. Difficulties in strategic developments of departmental strengths were acknowledged relating to funding constraints.

Extent to which the Faculty has developed or sustained fruitful partnerships with other universities and organizations in order to deliver the M.D. program and foster research and creative professional activities

- Although not a particular focus of the review, the Faculty have developed some interesting international partnerships, taking a highly selective and strategic approach which the panel commends. The Faculty makes a major contribution to the University's Addis Ababa collaboration and has an interesting research partnership with the prestigious Zhejiang University in Hangzhou, China in the areas of neuroscience and molecular genetics. Family Medicine also has the prestigious status of a WHO collaborating centre.

Scope and nature of the Faculty's relationship with affiliated hospitals, external government, academic and professional organizations.

- The panel heard from many sources, including relevant CEOs, that TAHSN is working well and that the Faculty Dean and other staff are contributing to this. This was evident in almost all hospital CEOs attending a meeting with the panel and others described the value of new TAHSN committees for Practice, Clinical, Education and Research. This is a crucial relationship for the Faculty and there are opportunities to further strengthen this partnership working (see Part 2). Relationships with the community hospitals appear good.

- The Dean personally co-ordinates the relationship with external government, the Royal Colleges and AFMC, building communication and trust.

Social impact of the Faculty in terms of outreach and impact locally, nationally and internationally with respect to M.D. education.

- Please see Part 2

4 Organizational and Financial Structure

For the M.D. program under review, consider and comment on the following:

The appropriateness and effectiveness of the Faculty's organizational and financial structure, and its use of existing human, physical and financial resources in delivering the M.D. program. In making this assessment, reviewers must recognize the institution's autonomy in determining priorities for funding, space, and faculty allocation.

- The Faculty has a clear organizational structure for delivery of research and teaching, retaining a traditional Departmental model but with good integration for education across the academies. The new MD programme, by its nature (small group teaching is a key feature) is more labor-intensive and may stretch resources across some areas of curriculum delivery.
- There were a couple of areas that the reviewers felt might sit better at Faculty level, e.g. uniting the fundraising team rather than basing the majority in Departments and some aspects of graduate student training could be co-ordinated to support a Faculty identity. The panel recognized the lack of autonomy with regard to capital investment in research equipment and space.
- Because of the relationship with TAHSN and the concentration of resources within TAHSN, the U of T chairs have less resources and responsibilities than their peers at comparable institutions. Perhaps the function of the chairs could be expanded to work on greater synergies across TAHSN and UT.

The appropriateness with which resource allocation for the M.D. program, including space and infrastructure support, has been managed.

- As far as the review could ascertain, sufficient Faculty resource is invested in the MD programme, and investment in the new curriculum has been a Faculty priority. The programme administration operates from the Medical Sciences Building (MSB), with some significant space constraints. The programme has been identified as resource intensive and this is an area that will require further monitoring.
- The Dean is a Vice-Provost and not a Vice-President. The Dean, because of the enormity of his job, the nature of his relationships with the leaders of the health organizations and the size of the enterprise should have a seat at the table where major decisions are being made. We would recommend that consideration be given to structuring this position at a Vice Presidential level.

5 Long-Range Planning Challenges

For the M.D. program under review, consider and comment on the following:

Consistency with the University's and Faculty's academic plans.

- Please see Section 2

Appropriateness of:

Complement plan, including balance of clinical, tenure-stream and non-tenure stream faculty

- The panel consider that there is a good balance of staff across the programme but resource may be required to strengthen certain teams, e.g. OHPSA, in light of increasing student demand. High-quality teaching faculty, particularly for underpinning basic science, does require the ability to recruit and this will be hampered by the tight fiscal situation and poor-quality research space.

Plans for advancement and leadership in approaching alternative sources of revenue, and appropriateness of development/fundraising initiatives.

- Faculty success in fundraising is low by comparator standards both nationally and internationally and particularly in light of the Faculty's international stature. The panel recognise other strong local offerings competing in health philanthropy but think the Faculty could develop some "big ticket" collaborative strategic proposals. The panel recommend that the fundraisers are encouraged to focus more on larger strategic goals in addition to the priorities of individual departments.

Management, vision and leadership challenges

- The management and leadership have successfully addressed the challenge of a balanced budget and have invested in a transformation of the MD programme; there were multiple reports that the leadership is effective, strategic and popular. Future challenges around strategic research priorities and estate can only be addressed in partnership with the University.

Space and infrastructure considerations

- The MSB, which is now 50 years old, provides adequate but not luxurious space for MD students and delivery of the programme. Investment in new Anatomy facilities has been beneficial, as has a new Admissions and Enrolment Office and an MD Student Lounge.
- UT research space needs replacement or renovation with approximately 80% of space in unsatisfactory to unusable space. The older space is designated by departments without benchmarks (such as \$ per square foot) and does not seem to be redistributed based on needs. A UT Medicine space committee could be formed to assess space utilization and handle space for recruitment and redistribution.

6 International Comparators

Assessment of the M.D. program relative to the best, including areas of strength and opportunities.

- The panel consider the revised MD programme to be of high quality and internationally competitive. The curriculum redesign has been successful and adjustments are being made where required to optimise student learning and experience. A structured commitment to diversity and inclusion is allowing under-represented groups to access medical education. Innovations in the curriculum provide multiple opportunities for research experience in keeping with the academic reputation of the University of Toronto. Strong education science expertise in the Faculty provides an opportunity to assess those aspects of the curriculum that are most associated with positive outcomes for preparedness for practice.

Review Report

Terms of Reference: Part 2

2018-19 Provostial Non-UTQAP Review

Faculty of Medicine

Division under review:	Faculty of Medicine	In conjunction with UTQAP Review of M.D. program
Commissioning officer:	Vice-President and Provost	
Date of scheduled review:	February 27 th – March 1 st , 2019	
Reviewers (names, affiliations):	<ol style="list-style-type: none"> 1. David Brenner, Vice Chancellor – Health Sciences, Dean, School of Medicine, University of California, San Diego 2. Dermot Kelleher, Dean, Faculty of Medicine, Vice-President, Health, University of British Columbia 3. Moira Whyte, Vice-Principal and Head of the College of Medicine and Veterinary Medicine, University of Edinburgh 	

The Terms of Reference provide the framework for the review report. Reviewers are asked to comment explicitly on the following:

1. The consistency of the Faculty’s academic plan with the University’s long-range plan in particular, the commitment to excellence in teaching and research.

The University of Toronto long term mission is stated as per the Framework document as “The University of Toronto will continue to be distinguished by a research-intensive culture, the academic rigour of its educational offerings and the excellence of its faculty, staff and students across three distinctive campuses and in many partner institutions”.

The Faculty of Medicine is consistently highly ranked in international rankings relating to both research and educational activities. Its success is highly dependent on a range of collaborative activities with partner institutions, most notably within the TAHSN group of health partners including the Trillium group responsible for the newest Academy at Mississauga. It is clear that the relationships between the Faculty and its external partners through TAHSN have improved substantially during the period of the present Deanship and that more effective and meaningful collaboration is taking place. However, the University role in developing strategic initiatives in research is hampered by aspects of the current budget model which impact on the Faculty’s ability to effectively lead with regard to the research agenda of TAHSN. Consideration should be given to providing financial support in a new budget model or through complementary funding

with the budget model to enable the FoM and the University to provide more comprehensive co-ordinating research functions at TAHSN, thereby strengthening its leadership potential in research strategy.

2. Progress towards the Faculty's academic priorities, including the capacity to meet opportunities and challenges ahead successfully.

The FoM has outlined three major domains of focus: (i) Ecosystem of Collaboration (ii) Ground-breaking Imagination and (iii) Excellence through Equity.

(I) Ecosystem of Collaboration

- The FoM has invested substantial energy in enhancing the nature of the interactions with TAHSN as reflected by the supportive comments of the CEO's, the Heads of Department and the cognate Deans. The contribution of TAHSN to the educational mission is readily demonstrated through the Academies, whereby the partner organization provides physical learning spaces for undergraduate and postgraduate education within the system, and by the large and successful postgraduate medical education programmes.
- At a research level, the TAHSN CEO's have identified two major priorities for University collaboration, namely AI/Machine Learning and Wellness. There are clearly significant opportunities for cross-institutional collaboration across the AI/Data Science domain which can be supported within the FoM and the University and would map well to local, national and international opportunities. Integration of wellness, respect and resilience is a priority for all elements of TAHSN and University leadership in this area can be further extrapolated through integration of FoM hiring policies and practises with the TAHSN partners.
- We believe that further strengthening of collaboration with respect to research co-ordination and management will require University and FoM investment to produce co-ordinated approaches in areas such as joint research ethics, joint grant coordination and ultimately joint research strategy setting. Integration of research process would demonstrate exceptional value to members of TAHSN at all levels and provide a platform for further joint working to the benefit of the University.

(ii) Groundbreaking Imagination

- The FoM has a demonstrated capability to work in an interdisciplinary way across the faculty boundaries with substantial successful collaborations with Engineering, Arts and Science, Nursing among others. Continuation of these efforts are encouraged with considerable encouragement for the development of cross-cutting data science / AI initiatives. Some of this activity is likely to require funding in the data science/ AI space in order to catalyze meaningful activities intended to influence the likely changes in medicine over the next 10-20 years.
- FoM is taking a concerted approach to broadening the horizons for future medical graduates with a series of complementary programmes from certificate to diploma level in engineering, management and leadership and data science in addition to

increasing the research focus of the UG curriculum. It would be useful to enhance the current approaches to entrepreneurship through enhancing co-operation on IP and tech transfer across the partners in TAHSN and consideration of joint programmes with the Business School.

- A novel program is the IMS translational research program that includes a masters in translational research. This includes a very clever student incubator with connections to biotech experience and investors.
- Rehabilitation research should benefit from enhanced interdisciplinarity between clinical areas and with areas such as biomedical engineering.
- The clinician scientist will have a critical and enlarging role in translational research and in academic medicine. Because of the current complicated mechanisms for flowing funds, there is a serious concern that the clinician scientist in the Faculty of Medicine will be overwhelmed with patient care and administration.

(iii) **Excellence through Equity**

- It is very clear that Dean Young has invested considerable leadership in the issue of equity and that this is recognized Faculty-wide. Notable success has been achieved in increasing the number of black and Indigenous students and in promoting the concept of equity with regard to both student and faculty recruitment and promotions. We were very impressed that the requirements for admission were not changed for URM applicants. Data indicated that URM applicants had issues with logistics, not academics. We were impressed with the commitment to recruit a more diverse medical school class. This included summer mentorship program, application navigators, mock interviews, free MCAT prep course, and the presence of community members on selection committee.
- It will now be important to ensure that external partners are fully aware of the Faculty's approach to equity in faculty hires and that this approach begins to inform recruitment processes within the partner organizations.
- An effective and responsive OHPSA has been established with most student queries having a response time of less than 24 hours. The students were pleased with the mental health support, including counselors and referrals. Of particular importance, 2 students freely stated without any stigma that they had used the services.

3. The appropriateness of the approach to undergraduate and graduate education and its enhancements to support students' academic experience.

- The new undergraduate medical curriculum has been well received by students and faculty alike. It is apparent that the curriculum is substantially more resource intensive than its predecessor and the future resource implications will have to be managed carefully.

- The students were pleased with the mental health support, including counsellors and referrals. Of particular importance, 2 students freely stated without any stigma that they had used the services. It was impressive that there appeared to be no stigma attached to the use of the mental health services.
- Post MD education appears to be well organized and co-ordinated with considerable effort going in to addressing the uniform quality of the experience.
- Graduate students with a significant research component are largely placed in partner organizations. While the quality of the experience appears to be monitored through University procedures, students otherwise report a disconnect with the University and a lack of identification as U of T students. Efforts should be focussed on connecting research-based students with their identity as U of T students and alumni and in enhancing the quality of the U of T experience.
- As most such students do NOT pursue an academic career there is a need for additional alternative career advice. In some departments this is provided by alumni. Some but not all departments have professional development personnel for their graduate students and we recommend that if assessment shows that this is effective, this approach should be extended across the system.

4. The effectiveness of the Faculty's efforts to foster a strong culture of excellence and achievement in research and scholarly activity, including the effectiveness of support structures.

- The Faculty has a clear commitment to excellence in research and scholarly activity. However, much of this activity takes place within the partner organizations supported by U of T structures with regard to students and faculty. It was noted that PhD scientists within the partner institutions do not receive the same faculty privileges as their MD counterparts and this may be a cause of some disenfranchisement. The University is aware of this issue and the background is complex but we feel that consideration should be given to approaches that enhance inclusiveness for this cohort.
- Further consideration should also be given as to how the University can invest in providing the "glue" to help co-ordinate the overall research effort of the TAHSN in particular e.g. coordination of research ethics, joint research management activities, creation of a Joint Research Office as discussed above, demonstrating both leadership and added value within the network. Such investment could not only facilitate the co-ordination of research but could enhance the University's ability to more strongly drive the co-ordination of research strategy.
- In order to operate more effectively within this milieu and to provide leadership within the system, due consideration should be given to appointment of the Dean as a Vice President as such a position would more accurately reflect the system-wide activity and responsibility of the Dean with regard to healthcare partners at President/CEO level.

5. The effectiveness of the Faculty's internal organizational and financial structure including the appropriateness of resource allocation with respect to budget, plans for new revenue generation, faculty complement, infrastructure and advancement.

- While structures internally appear to be efficient and have proved effective in reducing the faculty budget deficit substantially, it does appear that it will be impossible for the Faculty to grow strategically in a manner reflecting its current international status within the current budget model. There are pressing needs for strategic recruitments and for capital investment in research which cannot be met effectively.

6. The scope and nature of the Faculty's relationships with other University of Toronto campuses and divisions.

- These relationships appear to be strong and appropriate. The collaborations with Engineering and Public Health were particularly strong. The teaching of courses in the biological sciences by the Faculty of Medicine is a creative way to encourage cross-campus synergies.

7. The scope and nature of the Faculty's relationship with affiliated teaching hospitals and community health sectors.

- Much of this has been commented on in preceding sections. The Dean clearly commands the respect of the TAHSN network and has contributed significantly to a more collaborative approach at this table. Relationships with community organizations have developed very substantially, with a large community contribution to family practise and an enthusiastic engagement with the Faculty of Medicine. This will likely be further enhanced through partnership working to deliver the revised curriculum and an increased emphasis on interprofessional learning.
- Although the TAHSN construct has demonstrated significant benefits, in order to unlock its full potential, TAHSN will need to better harmonize IRB approvals, intellectual property agreements, contracts, data sharing, and uniform forms. A barrier to commercialization was the concerns over I.P. distribution between UT and hospitals. Because of the relationship with TAHSN, the U of T chairs have less resources and responsibilities than their peers at comparable institutions. Perhaps the function of the chairs could be expanded to assist in the focus on greater synergies across TAHSN and U of T.
- More substantial influence, particularly with TAHSN, will depend on University investment to enhance true strategic collaboration in this domain.

8. The scope and nature of Faculty's societal impact in terms of outreach to local, national, and international organizations and communities.

- These issues are being addressed at an educational, research and systemic level. Increasing reflection by students regarding their role in society is encouraged through the portfolio elements within the curriculum, in addition to the CBSL component in the Foundation Programme. Success in recruitment of black and Indigenous students has been made possible by deep and meaningful community engagement. Outreach to society is also reflected in many of the research programmes which address current pressing societal needs, including

for example mental health and addictions, and in international activities in places like Ethiopia. Systemic engagement should be facilitated through engagement with current health re-organization and it is important that the FoM, in addition to other health and social care partners within the University, engage actively with this process.

9. Extent to which initiatives have been undertaken to enhance the accessibility (i.e., for students requiring physical or mental health accommodations) and diversity of the Faculty in the areas of academic programs, student and faculty complement and recruitment.

- This issue has largely been addressed in item 1. In the area of disability we have been informed that there has been an increase in the number of individuals self-reporting disability status, which has enabled support services to more effectively engage.

Section 9 – Appendix B: Dean’s Response to External Reviewers’ Report, 2018-19 Review



UNIVERSITY OF TORONTO
FACULTY OF MEDICINE

L. Trevor Young, MD PhD FRCPC

Dean

Vice Provost, Relations with Health Care Institutions

September 25, 2019

Professor Susan McCahan
Vice-Provost, Academic Programs
University of Toronto
Room 225, Simcoe Hall
27 King's College Circle
Toronto M5S 1A1

Dear Professor McCahan,

I write in response to your letter of July 26, 2019 regarding the February 27 to March 1, 2019 external review of the Faculty of Medicine and the MD Program, commissioned by the Vice-President and Provost.

The external review process was an important opportunity to share our tremendous successes and to reflect on our strengths and challenges. We thoroughly enjoyed the visit by Drs. Brenner, Kelleher and Whyte and appreciate the thoughtful report that they prepared in response.

I am pleased to address the specific issues you outlined in your letter, first about the MD Program specifically, and then about the Faculty as a whole.

The reviewers found most aspects of the MD program to be working well, but they singled out some areas that need attention:

- i. The reviewers reflected the statistic that 60% of MD students reported harassment, which includes student to student harassment. They encouraged program leadership to gather additional information regarding the source and nature of such mistreatment and use this information to develop a comprehensive action plan.***
- ii. The reviewers discussed the tremendous stress students face with respect to the MD residency match.***
- iii. The reviewers acknowledged that changes have been attempted to the clinical curriculum. However, they hoped that innovative elements could be incorporated, because it remains very traditional. They also reflected the MD students' view that grant writing and community-based service-learning projects have limited value.***
- iv. The reviewers identified the need to monitor whether opportunities for research experience for MD students are equally accessible to students at the Mississauga Academy of Medicine***

I have asked Patricia Houston, Vice Dean of the MD Program, to provide a detailed response to these program-specific issues. Please see the attached Appendix for details, including implementation plans. I support the response provided by Prof. Houston. The responses to the remaining items are outlined below.

Regarding the overall Faculty:

- v. ***The reviewers observed that graduate faculty and students based at research sites located off the St. George campus have stronger relationships with the host sites than with U of T. The reviewers observed some challenges that could prevent clinician scientists from playing a full role in translational research, and PhD scientists from being fully enfranchised.***

The Faculty of Medicine (FoM) will continue to make strong efforts to connect hospital-based research students and faculty to the University. Notably, beginning in October 2019, the Faculty of Medicine will become the administrative home of the Toronto Academic Health Science Network (TAHSN). One of the key objectives of this greater integration between the University and its affiliated hospitals is better coordination and seamless approaches to issues across member institutions. Numerous TAHSN subcommittees (including Education, Research and Medical Affairs) are engaged in facilitating this integration across the system, to the benefit of our learners, faculty and staff.

The FoM and its departments use a number of mechanisms to enhance the engagement of students and faculty located off-campus, including:

- The ability of faculty members based off-campus to supervise graduate students, with U of T being the degree-granting body to students who undertake their studies at affiliated sites;
- Participation by clinical and status-only faculty in departmental teaching and other academic activities (e.g., committee work);
- The Centre for Faculty Development (CFD) in the FoM (<https://cfd.utoronto.ca/>) provides numerous activities designed for faculty career growth and development;
- Departmental Research Days, symposia, workshops, career events, student exchanges, receptions, banquets that cross institutional boundaries;
- Social functions, extracurricular activities, intramural sports that build U of T esprit de corps;
- Academic promotion and awards at U of T provide recognition and a sense of being valued at the University;
- MD students and clinical residents are registered at U of T and train at more than one site during their programs. The University connection is continually reinforced by clinical trainees;
- Clinical fellows are increasingly being registered at U of T (Post MD) and receive a U of T certificate upon successful completion of fellowship training.

- vi. ***The reviewers suggested moving fundraising out of departments up to the Faculty level and encouraged a greater focus on larger strategic goals.***

We very much agree with the reviewers' suggestion. Our Advancement Office, in conjunction with Faculty and departmental leadership, is working towards a more balanced model, one that is more market-focused and donor-centric.

- vii. ***The reviewers also observed that some aspects of graduate student training could be taken on by the Faculty rather than by individual departments and flagged the need to build on current efforts to provide additional alternative career supports for graduate students.***

The Faculty of Medicine Graduate Life Sciences Education (GLSE) office has established a Graduate Professional Development (GPD) program and appointed a Director. The GPD consists of seminars, workshops, opportunities for interaction with the private sector, and individual career counseling for graduate students who wish such assistance. This is in addition to the training that individual departments may be providing for students in this domain.

The GLSE office has also initiated a number of other innovative programs to support graduate students and will continue to explore ways to enhance these supports. These include embedded mental health counselors specifically for our graduate students and a leave of absence stipendiary program for students who require time off for mental health reasons and require financial support to do so.

GLSE will strengthen its relationships with the University Career Centre and with the School of Graduate Studies Graduate Professional Skills Program to better promote access to the University mentorship programs, as well as improving access for our students to existing workshops focused on preparing for careers outside of academic medicine.

viii. The reviewers highlighted the difficulty the Faculty faces, given the current budget model, in further investing in recruitment, space, research and scholarships in line with its international reputation.

We concur with this observation. Under the current budget model, the Faculty has undertaken aggressive pursuit of efficiencies and management of costs within its control, while striving to generate additional net profits through new programming, online learning, and non-accredited education and skills development opportunities. More specific to research, the Faculty has undertaken to centralize scientific resources into shared or core facilities to improve their utilization and thus lower costs. While such efforts will continue, they are likely inadequate to enable the Faculty of Medicine to maintain its international reputation for excellence into the future.

The reality is that the current budget model at the University recognizes but does not address a significant gap in revenues to cover institutional research costs – often referred to as research indirect costs. As calculated by the University’s Budget Office, a revenue of 57 cents is required to fully fund indirect institutional costs for every 1 dollar of research grants received. The Faculty of Medicine receives some \$130m in research grants annually, which would therefore require some \$74m of revenue for indirect cost support. In reality though, both the Federal granting agencies as well as private sponsors of research are loath to pay this level of indirect cost support, suggesting that it is a University responsibility. As a result, the Faculty receives only about \$20m worth of revenue for indirect cost support from granting agencies and corporations – leading to an annual estimated gap of some \$54M.

On the revenue side provincial regulations significantly constrain the Faculty’s ability to increase enrollment and tuition fees. Over the period of 2018-2024, the Faculty’s total attributed revenue is projected to grow by 7%, while over the same period University Wide Costs are projected to increase by 14%. The combined effect of the research indirect cost gap and disproportionate escalation in University Wide Costs makes it difficult for the Faculty to balance its budget while investing appropriately to maintain accreditation, fulfill its academic mission and optimize its research enterprise.

Given this context, the Faculty has had to, among other measures:

- Reduce the level of funding to its academic programs to such an extent that concerns about adequate faculty student ratios, and longer-term fiscal sustainability, have been raised during two recent accreditation reviews;
- Severely limit what it can do in terms of renewing some 75% of its research laboratories which, in most instances, are over 30-40 years old and in dire need of investment;
- Struggle to find funding to repair, replace and maintain aging laboratory equipment; and
- Significantly deplete its operating reserves and borrow internal funds to cover annual deficits.

One possible approach to addressing this funding gap would be for the University to endeavor to invest at least 1% of its operating budget (\$27.7m per 2019-20 budget) each year in supporting indirect cost of research. This amount can then be allocated to the various research-intensive divisions on a demonstrated need basis. This would be consistent with the approach being taken across the country, including by several other Ontario universities.

- ix. Further to that, the reviewers stressed the need to consider how the Faculty and University can realize its leadership potential in research strategy, including providing more comprehensive coordinating research functions at Toronto Academic Health Science Network (TAHSN), and they found that the budget model hampers this. They suggested ways in which joint efforts (research ethics, grant coordination, research strategy setting) could facilitate this. They also advised that consideration be given to appointing the Dean as Vice President to provide leadership within the system.***

Collaboration between the University and its TAHSN partners has never been greater. Through the work of the TAHSN Research Committee, co-chaired by the Vice Dean of Research and Innovation, we have already made great strides in developing harmonized research policies and procedures. Going forward, a key pillar in the FoM Strategic Academic Plan – Groundbreaking Imagination – seeks to develop a pipeline for research and innovation leadership in the Faculty through training and faculty development; building education opportunities in research and innovation leadership across our network; and work in concert with TAHSN partners to leverage expertise, technology and infrastructure to improve coordination of activities and effort, reducing redundancies where possible.

As noted above (v), beginning in October 2019, the Faculty of Medicine will become the administrative home for TAHSN. This provides us with a unique opportunity to further coordinate with our partner hospitals in the areas of research, education and administration, and to re-think the TAHSN model. We have studied other jurisdictions, such as University College London and look forward to taking advantage of greater integration amongst the TAHSN partners.

The issue of appointing the Dean as Vice President is the purview of the Provost and I defer to her on this matter.

- x. The reviewers encouraged strengthening connections and interdisciplinary collaborations in a number of areas, including development of cross-cutting data science/AI initiatives, enhancement of approaches to entrepreneurship, and enhancement of rehabilitation research.***

We agree with the reviewers' assessment. The Faculty of Medicine is continually strengthening connections and building interdisciplinary collaborations, and TAHSN provides a key enabling

mechanism, through harmonized approaches to research ethics approvals, understanding the full costs of research, and the importance of having updated data sharing agreements for realizing the promise of data science/AI. Building capacity to reflect the emerging role of artificial intelligence in health professions is a key element in the Faculty's Academic Strategic Plan for 2018 to 2023.

Thematically based extra-departmental units (EDUs) provide a mechanism whereby multiple disciplines convene and work together across campus and affiliated hospitals and institutes. A new EDU pertaining to AI in medicine and health is in development. In addition, the Faculty of Medicine undertakes joint recruitments with other UofT units to strengthen collaborations in AI. For example, the recruitment of Prof. Marzyeh Ghassemi, Assistant Professor in the Departments of Computer Science and Medicine, a Vector Institute faculty member, who holds a Canadian CIFAR AI Chair and Canada Research Chair and whose scholarship focuses on Machine Learning for Health - a Vector Institute priority. Several new faculty positions have recently been announced for the Vector Institute and Medicine will have a key role in recruiting for a number of them.

The Faculty has committed resources toward PRiME, a new initiative in precision medtech being led by the Leslie Dan Faculty of Pharmacy, for which a ~\$10M CFI-IF application will be submitted in early 2020. In addition, the Faculty is involved in CRAFT, a new initiative in microfluidics between UofT-NRC, being led by the Faculty of Applied Science and Engineering. The Faculty is providing funding to CRAFT's infrastructure startup costs, and contributing to the development of the operation's business model. Further, the Faculty supports mitoNET – an interdisciplinary, pan-Canadian network of researchers and partners working together to unveil how mitochondria act as the common thread connecting most chronic diseases. The Faculty has supported major funding proposals for mitoNET, including NCE, CFI, and fundraising through Advancement.

Regarding approaches to entrepreneurship, the Health Innovation Hub (H2i) has undergone a period of tremendous rapid growth, from ~\$40,000 invested into its startup companies in 2015-16 to >\$20M in 2018-19. In anticipation of decreased support from the provincial government for campus-led accelerators, H2i has embarked on a strategy for sustainability and support of student entrepreneurship. As part of the Faculty of Medicine's updated Academic Strategic Plan, a committee has been formed to develop a pipeline for leadership in research and innovation relevant to different career stages, and will include an "Entrepreneur-in-Residence" to act as a resource for accelerating the innovation agenda. Another recent development in the Faculty's innovation portfolio is the creation of the Accelerator for Donnelly Collaboration (AcDC). Supported by a \$10 million gift from Terrence Donnelly, AcDC co-locates Donnelly Centre faculty alongside industry partners on the 4th floor of the MSB to accelerate the path to commercialization of discoveries made by Donnelly scientists.

Regarding research in the rehabilitation sector, the Rehabilitation Sciences Institute, directed by Professor Angela Colantonio, is developing a new Research Strategic Plan, in alignment with the Faculty of Medicine's updated Academic Strategic Plan, and will have a major emphasis on developing strategies to enhance research performance and distinction across the entire rehabilitation sector (Departments of Physical Therapy, Occupational Science and Occupational Therapy, and Speech-Language Pathology). An Advisory Group on Research Capacity in the rehabilitation sector has been formed. Current priorities of the Advisory Group include developing a compendium of research accomplishments that can be presented to diverse audiences; preparing an advancement plan; and establishing a bi-weekly Leadership in Rehabilitation Colloquium. An Academic Rehabilitation Research Retreat and Rehabilitation Summit are planned for 2020, the goals of which are to promote greater awareness of the breadth and extent of the rehabilitation sector within the Faculty of Medicine, promote greater

integration of rehabilitation research in the Faculty, and provide a platform for the development and expansion of rehabilitation research and training at UofT.

The Faculty's commitment to strengthening those areas identified by the reviewers is also exemplified by its most recent round of successful Canada Research Chair (CRC) awardees, announced in June 2019. Its three new CRC Tier 2 awardees are: the aforementioned Prof. Ghassemi, Prof. Emily Nalder from the rehabilitation sector, and Prof. Michael Garton from the Institute of Biomaterials and Biomedical Engineering (IBBME, an interdisciplinary EDU formed by Medicine, Engineering, and Dentistry). These early-career researchers are exceptionally productive and represent the Faculty's commitment to a diverse and inclusive body of CRC holders and aligning with the Academic Strategic Plan's focus on an "Ecosystem of Collaboration".

xi. The reviewers found the Faculty's success in fundraising to be comparatively low, relative to national and international institution comparators, and particularly in light of the Faculty's international stature.

In December 2018 the University of Toronto wrapped up the Boundless Campaign, the largest fundraising campaign in Canadian university history – raising a total of \$2.64 billion. Other recent Canadian campaign totals include McGill (\$1.06 billion); UBC (\$1.64 billion); McMaster (\$437 million); and Queen's (\$640 million).

During the Boundless Campaign, the Faculty of Medicine raised a total of \$639.47M. It's difficult to compare the Faculty of Medicine to others across Canada, as structures vary (i.e. some include dentistry, rehabilitation sciences, public health etc., and some do not). One close comparator is UBC's Faculty of Medicine, whose campaign raised \$437.6 million.

On an annual level, UofT's Faculty of Medicine is competitive with the top schools for fundraising performance in Canada. During fiscal 2018-2019 we raised \$82.2 million. Annual revenue from our peers have been: \$74.7M UBC Faculty of Medicine (FY19); \$28.2 million McMaster Faculty of Health Sciences (FY18); \$12.8 million Queen's Faculty of Health Sciences (FY18).

From an international perspective, it is very difficult to compare fundraising at faculties of medicine, as many US universities own their hospitals. Here, in our 9 fully affiliated teaching hospitals, there are 11 individual and independent hospital foundations. However, we compare favourably with other public sector peer institutions including University of Virginia, Penn State, Ohio State, University of North Carolina and University of Florida.

Although the University of Toronto – and our Faculty of Medicine – are leading the way in Canada for fundraising, there are many growth and partnership opportunities. We will continue to grow our annual revenue and donor activities for an even greater impact on the priorities of the Faculty of Medicine.

In conclusion, I would like to reiterate three key issues for the Faculty of Medicine in the coming years:

1. **Research Funding** – the single biggest threat to maintaining and indeed improving our international rankings is the gap in research funding, outlined in detail above (viii). While we are committed to pursuing philanthropic fundraising goals, the more fundamental problem lies with the research funding model and the resulting gap in research indirect costs. We feel strongly

that this model needs to be reviewed and addressed in order for the Faculty of Medicine to maintain its position as a research powerhouse, and to continue to improve our international rankings.

2. **New Educational Space** – As we continuously develop and enhance our educational offerings across the Faculty it is imperative that our physical space keeps pace. This issue, which the reviewers recognized, was succinctly summarized in our self-study document:

Although great progress has been made in terms of the quality of space available for both academic and research needs, significant challenges continue to create risk for the Faculty. Deferred maintenance, the ongoing responsibility of the central University, is falling behind annually and there continue to be risks such as flooding from leaking roofs and blocked drains. The Faculty's largest single building, the Medical Sciences Building, dates from 1968 and houses a vivarium, *in vitro* CL3 laboratory, flow cytometry, gross anatomy, campus teaching facilities, and basic science biomedical research labs, and continues to require significant renovations. All Faculty buildings are at capacity, and new initiatives will be difficult to house within existing facilities. Leased space, which comes at a higher cost than campus-based space, continues to strain Faculty finances. A new Master Plan process is currently underway to identify needs for the foreseeable future; this will help demonstrate the Faculty's position that a new building is necessary, both from a research and from a pedagogical perspective.

3. **The Future of TAHSN** – Beginning in October 2019, when the Faculty of Medicine takes on responsibility for the administration of TAHSN, we have an opportunity to engage in a fundamental rethink of the relationship between the University and our partner hospitals. As noted by the reviewers on numerous occasions, and as demonstrated in the work we do every day, a collaborative and committed relationship between the University and its hospital partners is fundamental to the success of our research and education enterprise. We look forward to undertaking a strategic visioning exercise over the next year to more fully develop the TAHSN partnership.

Thank you again for the opportunity to respond to the findings of the external reviewers. Please don't hesitate to contact me if you have any further questions or comments.

Sincerely,



Trevor Young

cc. Daniella Mallinick, Director, Academic Programs, Planning and Quality Assurance
Justine Garrett, Coordinator, Academic Planning and Reviews
Meg Connell, Director, Office of the Dean, Faculty of Medicine