

UTQAP Cyclical Review: Final Assessment Report and Implementation Plan

1 Review Summary

Program(s) Reviewed:	Undergraduate programs (<i>offered in association with the Faculty of Arts and Science</i>): Immunology, HBSc: Specialist, Major, Minor Graduate programs: Immunology, MSc, PhD
Unit Reviewed:	Department of Immunology
Commissioning Officer:	Dean, Temerty Faculty of Medicine
Reviewers (Name, Affiliation):	<ul style="list-style-type: none">• Professor Deborah Burshtyn, Dean, College of Graduate and Postdoctoral Studies, University of Saskatchewan• Professor Aaron Marshall, Head, Department of Immunology, University of Manitoba• Professor Gwendalyn Randolph, Department of Pathology & Immunology, Washington University in St. Louis
Date of Review Visit:	March 8-9, 2023
Review Report Received by VPAP:	May 8, 2023
Administrative Response(s) Received by VPAP:	March 12, 2024
Date Reported to AP&P:	April 10, 2024

Previous UTQAP Review

Date: February 1 – 2, 2017

Summary of Findings and Recommendations

Significant Program Strengths

- Timely and relevant undergraduate program that is intensive and flexible in its course and program offerings, with graduates who are sought after by many national and international graduate programs
- PhD graduates are now positioned in research leadership roles across Canada and internationally “World class” faculty research, with tenure-and teaching-stream faculty working together effectively in the delivery of the undergraduate program

Opportunities for Program Enhancement

- Increasing coordination and collaboration to address duplication in undergraduate course offerings to ensure courses complement one another, to develop new offerings (e.g., computational biology/bioinformatics), and to improve integration of the curriculum; considering curriculum and content mapping to help enhance the program
- Increasing research experiences and opportunities for undergraduate students
- Enhancing undergraduate teaching by supporting faculty development opportunities in new technologies
- Supporting cohort building and career exploration amongst undergraduate students
- Addressing graduate time to completion; enhancing the structure, checkpoints and outcomes of the PhD and mechanisms to manage student progress
- Enhancing support for graduate student travel to academic meetings
- Prioritizing efforts to address the asbestos and recurring water damage on the 7th floor in the Medical Sciences Building

Current Review: Documentation and Consultation

Documentation Provided to Reviewers

Confirmation/agreement Letter; terms of reference; self-study report; faculty CVs; course descriptions; schedule; previous review report (2016-17), the joint decanal and Chair's responses, and FAR-IP; Dean's Report 2022; Temerty Faculty of Medicine's Strategic Plan (2018-2023); University of Toronto Towards 2030; University of Toronto Quality Assurance Process.

Consultation Process

Temerty Faculty of Medicine

1. Vice Dean, Strategy & Operations
2. Vice Dean, Research & Health Science Education
3. Executive Director, Office of Advancement and Assistant Vice President, Advancement Relations with Health Care Institutions
4. Chair, Dept. of Biochemistry
5. Chair, Dept. of Laboratory Medicine & Pathobiology
6. Chair, Dept. of Medicine
7. Chair, Dept. of Molecular Genetics
8. Director, Institute of Biomedical Engineering

Dept. of Immunology

9. Chair
10. Associate Chairs
11. Faculty
12. Graduate Students
13. Postgraduate Fellows
14. Administrative Staff

Faculty of Arts & Science

15. Acting Vice Dean, Academic Operations
16. Acting Vice Dean, Undergraduate
17. Acting Associate Dean, Unit-Level Reviews
18. Undergraduate Students

Hospital Research Institutes

19. Chief of Research, The Hospital for Sick Children
20. Delegate for Vice President, Research & Innovation, Unity Health Toronto
21. Interim Director of Research, Lunenfeld-Tanenbaum Research Institute, Sinai Health
22. Vice President, Research & Innovation, Sunnybrook Health Sciences Centre

Current Review: Findings and Recommendations

1. Undergraduate Program(s)

Unless otherwise noted, all bulleted comments apply to all programs reviewed.

The reviewers observed the following **strengths**:

- Overall quality
 - ▶ Undergraduate offerings are aligned with the University's and Faculty's missions
- Admissions requirements
 - ▶ Reviewers remarked that admissions requirements are appropriate and rigorous
- Curriculum and program delivery
 - ▶ Learning outcomes align with degree-level expectations and are understood by students
 - ▶ The Minor program in Immunology has been well received
 - ▶ The Major is well established and draws pressure away from the Specialist program
 - ▶ Students are very pleased with the summer research program led by the department
- Assessment of learning
 - ▶ Students appreciate multiple modes of assessment and evaluation
- Student engagement, experience and program support services
 - ▶ "The undergraduate programs are clearly popular with undergraduate students"
- Quality indicators – faculty
 - ▶ The quality of teaching, supervision, and training is very high. "The department should be very proud of the feedback for the quality of the undergraduate teaching"

The reviewers identified the following **areas of concern**:

- Curriculum and program delivery
 - ▶ There appears to be a large leap in expectations from third- to fourth-year courses when students are confronted with primary scientific literature; Specialist students appear to have an advantage
 - ▶ "The most significant concern is regarding access to research experience, as the growth in the Major program is likely outstripping the capacity to provide summer and senior project research opportunities."
 - ▶ Students shared some criticism of course evaluations for required courses taught through other departments where modes of evaluation were more traditional

The reviewers made the following **recommendations**:

- Curriculum and program delivery
 - ▶ Reviewers commented that the program learning outcomes appear to be framed identically at both the undergrad and graduate level and recommend the department consider further differentiation

- ▶ Consider teaching capacity for the Minor program in order to align with demand
- ▶ Evaluate the resources needed for the Specialist to ensure they continue to align with the size of the program
- ▶ Reviewers encourage examining course content to avoid potential overlap, particularly between IMM250, IMM340 and IMM350
- ▶ Consider differentiating between Major and Specialist versions of fourth-year courses to support offering a greater variety of courses at senior levels and smaller class sizes to enhance the student experience
- ▶ Explore adding a third-year laboratory course or converting an existing fourth-year lab course to a third-year offering to better align with other undergraduate immunology and microbiology programs

2. Graduate Program(s)

Unless otherwise noted, all bulleted comments apply to all programs reviewed.

The reviewers observed the following **strengths**:

- Overall quality
 - ▶ Graduate programs are aligned with the University's and Faculty's missions.
- Admissions requirements
 - ▶ Reviewers remarked that admissions requirements are appropriate and rigorous
 - ▶ The department is experimenting with ways to "level the playing field for applicants" by introducing a standardized set of questions to replace typical statements of research interest and interviews
- Curriculum and program delivery
 - ▶ The learning outcomes are in alignment with degree-level expectations
 - ▶ PhD curriculum is current and has evolved to meet the changing landscape
 - ▶ PhD courses appear to have evolved appropriately over time to reflect the field
 - ▶ Immunology has incorporated professional skills and career development into its programs, implementing professional skills courses tailored to the MSc that speaks to a commitment to build professional and transferable skills
 - ▶ Students enjoy a tremendous depth of immunology course offerings
- Innovation
 - ▶ The creation of the course (project)-based MSc In Applied Immunology is "highly innovative"
- Accessibility and diversity
 - ▶ The recently created EDI committee is making progress towards a more inclusive environment
- Assessment of learning
 - ▶ Students appreciate the multiple evaluation methods in Immunology programs
- Student engagement, experience and program support services
 - ▶ MSc in Applied Immunology students expressed satisfaction with supports in the program and recent adjustments to professional development courses
 - ▶ The PhD is "well structured to achieve a high quality of student experience"

- ▶ Students appreciate the current structure of graduate supervision that allows for private conversations with committee members as well as feedback on supervision through a form that affords a safe space for feedback and to raise concerns
- Quality indicators – graduate students
 - ▶ The department has undertaken several measures to address PhD time to completion since its last review, though reviewers acknowledge it may take several years to feel the impact
 - ▶ PhD students publish at high levels
 - ▶ Outcomes for the PhD program remain strong “with high levels of external funding relative to comparable programs within the Temerty Faculty of Medicine and to other programs in Canada”
- Quality indicators – alumni
 - ▶ Employment outcomes for the MSc align with the stated goals of the program
 - ▶ Employment outcomes are strong amongst PhD students that graduated over the review period
- Quality indicators – faculty
 - ▶ “The quality of the teaching, training and supervision are extremely high.”
 - ▶ Reviewers remarked that the department should be very proud of the support it offers its MSc students
- Student funding
 - ▶ Plans by the Faculty to increase standard PhD funding to address the high cost of living in Toronto is very positive and should assist students and future recruitment

The reviewers identified the following **areas of concern**:

- Curriculum and program delivery
 - ▶ First-authored publications are critical for students desiring to obtain postdoctoral fellowships which can result in tensions between expectations for publications and the desire to finish their PhD in a timely manner
 - ▶ Student feedback suggests the Scientific Skills for Immunologists course for MSc and PhD students needs revamping to reflect the advent of large data
 - ▶ Faculty attendance and engagement in the student seminar series has not returned to pre-pandemic or prior levels
 - ▶ An individual student concern was raised regarding instructor conflict of interest in a book reflection assignment
- Accessibility and diversity
 - ▶ Students noted a lack of sufficient diversity in invited speakers
- Student engagement, experience and program support services
 - ▶ “There is a sense that some students might be floundering in the PhD once they have completed their qualifying exam and that often there is a long period (greater than the one year) between supervisory committee meetings.”

- Quality indicators – graduate students
 - ▶ While improvements have been made since the last review, time to completion for PhD students remains a concern. The department is undertaking several initiatives to try to address this matter.
- Student funding
 - ▶ MSc students have funding supports to equal tuition payments but do not receive a stipend until the final term, despite working long hours in research labs alongside PhD students who receive greater financial support

The reviewers made the following **recommendations**:

- Admissions requirements
 - ▶ Monitor recent changes to admissions requirements and provide EDI training to the graduate admissions committee to ensure they are addressing goals to ‘level the playing field’ in evaluating applicants from diverse backgrounds and differently abled
- Curriculum and program delivery
 - ▶ Further differentiate between program learning outcomes at the undergraduate and graduate level
 - ▶ Continue to engage in further fine-tuning of the relatively new MSc in Applied Immunology to ensure it continues to meet the goals of the department
 - ▶ Consider developing a rotation of committed faculty attendance in the student seminar series to ensure sufficient levels of participation
 - ▶ “It is necessary to raise here that [in] increasing the core course requirements to add courses such as biostatistics to ensure a solid foundation, it is also important to balance with removing outdated requirements to guard against creating too many course requirements and placing too many demands on students that will interfere with making progress in research”
- Accessibility and diversity
 - ▶ “Continue to invest in EDI and Indigenization initiatives and support faculty, staff and students to consider EDI for all aspects of teaching and research events.”
 - ▶ Articulate goals concerning diversity, such as a graduate student body reflective of the Toronto population and strategies to achieve that objective
- Quality indicators – graduate students
 - ▶ Reviewers advise careful consideration of the well-being of students and the expectations for a thesis, scope of publications when addressing time to completion
 - ▶ Explore a more granular approach to data on student publication levels to ensure expectations for the number of first-authored papers evolves appropriately and aligns with time to degree expectations
- Quality indicators – alumni
 - ▶ Reviewers advise assessing a larger cohort of alumni “to illustrate where graduates end up following postdoctoral fellowships”
- Student funding
 - ▶ Consider managing MSc-level expectations for stipends while ensuring expectations for project components “are in line with programs that do not offer full stipends”

- ▶ Continue to support the valuable funds to cover rotations for PhD students

3. Faculty/Research

The reviewers observed the following **strengths**:

- Research
 - ▶ “The quality and quantity of researchers and research outputs is outstanding and place the Department as one of the leaders in Immunology research in North America.”
 - ▶ The department has several areas of research strength, including developmental immunology, adaptive immunity, innate immunity, autoimmunity and cancer immunology
 - ▶ Researchers are highly collaborative, fostering collaborations and partnerships within and outside of Toronto
 - ▶ Both undergraduate and graduate programs greatly benefit from and help drive faculty research programs
- Faculty
 - ▶ Reviewers praised the department’s response to the last review that addressed the majority of recommendations, including investments in the MSB core faculty complement
 - ▶ Immunology faculty cover a broad scope of research activity with a strong core group at MSB as well as throughout the hospital-based research institutes
 - ▶ The department has utilized effective strategies to promote relevant recruitment and engagement of “status only” faculty who make substantial contributions to the Toronto Immunology research community

The reviewers identified the following **areas of concern**:

- Research
 - ▶ Human Immunology is a critical research area that requires additional development and resources as well as patient-oriented Immunology research
 - ▶ Computational biology/informatics is a priority area to be strengthened
- Faculty
 - ▶ “The involvement of multiple institutions in recruitment and development of Immunology’s Faculty complement can however present planning challenges regarding diversity and research area coverage.”

The reviewers made the following **recommendations**:

- Research
 - ▶ Explore the creation of a leadership structure and formalized framework to support human immunology research, such as the proposed Centre for Human Immunology Research and Education

- ▶ Consider developing additional strategies beyond joint recruitments with other departments to support acknowledged priority areas of computational biology/informatics and human immunology
- ▶ “In line with the previous program review, we agree that strategic integration of Immunology and relevant Medical Genetics/Biomedical Engineering researchers on the 7th floor of MSB to generate a core of complementary expertise in immunology, infectious disease and computational biology would generate substantial synergies, and could be facilitated in part by joint hiring.”
- Faculty
 - ▶ “Continue to ensure the faculty in the MSB are supported and replenished as the core continues to be instrumental in the success of the department”

4. Administration

Note: Issues that are addressed through specific University processes and therefore considered out of scope for UTQAP reviews (e.g., individual Human Resources issues, specific health and safety concerns) are routed to proper University offices to be addressed, and are therefore not included in the Review Summary component of the Final Assessment Report and Implementation Plan.

The reviewers observed the following **strengths**:

- Relationships
 - ▶ Overwhelmingly positive assessment of the department in discussions with faculty, staff, and students
 - ▶ The department has done an extraordinary job of maintaining and building relationships among faculty and students physically located in various buildings and institutes
 - ▶ Strong culture that values excellence in mentorship
 - ▶ The department is well recognized nationally, with faculty members taking leadership roles in grant panels and relevant professional organizations. Toronto is recognized as a “major hub for Immunology research and leadership”
 - ▶ Reviewers commend the department’s steps to ensure the well-being of graduate students noting it has led the way in identifying reasons for why students do not necessarily take advantage of leaves and by establishing a fund for said students
 - ▶ “The department displays dedication to its students, both undergraduate and graduate.”
 - ▶ Positive working relationships with cognate units and hospital research institutes
 - ▶ The department has leveraged its vibrant, engaged student body in unique outreach initiatives such as its undergraduate research day, IMMpress Magazine, numerous talks at Toronto high schools
- Organizational and financial structure
 - ▶ Positive organizational changes since the previous review, including the appointment of an Associate Chair for research and postdoctoral studies
 - ▶ The successful recruitment of teaching faculty has been key in supporting the rapid growth of the undergraduate major in Immunology, and the collaborative work

- between the Associate Chairs for Undergraduate and Graduate Studies and the manager of the MSc in Applied Immunology is exemplary
- Long-range planning and overall assessment
 - ▶ The department appears “healthy at the core, which positions it well for meeting its future goals.”
 - ▶ The robust undergraduate major has resulted in a strong revenue stream. Its stellar and impactful teaching stream faculty have “effectively used their positions to set a pattern that positions the teaching stream as a strong element in the department”
 - International comparators
 - ▶ “The University of Toronto is one of the leading Departments of Immunology in the world. It is one of the few Departments in North America focused on fundamental Immunology and spanning its broad scope in molecular/cell biology, physiology and many areas of medical science.”
 - ▶ Its programs measure up well to international comparators and reviewers praise its research and education outputs as “excellent and unique”
 - ▶ “Its stewardship for future growth is such that it can be anticipated that its prowess and leadership will hold for the foreseeable future. Many of its practices are those that international competitors could benefit from learning.”

The reviewers identified the following **areas of concern**:

- Relationships
 - ▶ Postdoctoral fellows report a sense of isolation and few opportunities to connect with peers beyond their own supervisors, particularly those housed in institutes
 - ▶ Cohesion has suffered to some extent during the pandemic, and is still being rebuilt
 - ▶ Reviewers observed challenges relating to groups being dispersed into many locations, with many members of the department being employees at various hospitals
- Organizational and financial structure
 - ▶ “The quality of research space, lack of suitability for biosafety level 2+ work and repeated damage due to flooding are known problematic issues adversely affecting Immunology researchers based in the MSB, and have not been fully addressed by past renovations.”
 - ▶ There is a significant need for core research facilities support. Long term maintenance of core facilities based solely on researcher user fees is not a feasible model
 - ▶ “The rapid growth in the undergraduate major in Immunology program has put substantial pressure on the Department’s teaching resources”
 - ▶ Appears to have been limited progress on plans since the last review to coordinate with the Advancement Office in generating new sources of review, though reviewers acknowledge this is likely due to the pandemic
- Long-range planning and overall assessment
 - ▶ “The department does not yet fully leverage its basic immunology prowess to take advantage of moving into translational immunology that can tap into Toronto’s incredible patient population. There is unfulfilled potential in meeting the

- department's future objective to progressively move into clinically relevant immunology by increasing engagement with clinical institutes.”
- ▶ “Most core facilities are 100% charge-back facilities and this strains the grants of laboratories, especially during a time when automatic budget cuts are instituted in CIHR grants. Some equipment that has been placed in laboratories is reaching beyond lifespan and requires replacement. Space is lacking for growth in central locations. Some facilities have infrastructure issues, including roof leaks that have destroyed infrastructure.”

The reviewers made the following **recommendations**:

- Relationships
 - ▶ Create a dedicated “postdoctoral fellow information/resources” section on the department website that would provide relevant information and have a contact form for postdocs to self-identify and join listservs, take part in department events
 - ▶ Consider integrating postdoc presentations into the student seminar series to promote their inclusion within the department
 - ▶ “Build upon the postdoctoral fellow leadership and professional development activities to include postdocs located in institutes.”
 - ▶ Foster stronger relationships between leadership at various research institutes to facilitate alignment of future recruitment and maximize opportunities to build infrastructure
 - ▶ Explore creative tweaks to incentivize and encourage in-person activities to restore the department's exceptionally high levels of engagement
 - ▶ “Build upon existing links [in] therapeutics in development with industry and continue to foster and celebrate entrepreneurship within the Department.”
- Organizational and financial structure
 - ▶ Reviewers recommend that the future chair of Immunology address the issue of space
 - ▶ Develop a sustainable funding model to support core facilities in a cost-effective way
 - ▶ Ensure laboratory spaces in the core are “sufficient for the size of the research programs and well maintained to retain and recruit faculty”
 - ▶ Continue to evaluate the current faculty complement in light of rapid growth in undergraduate programming; additional teaching faculty may be needed to cope with teaching load going forward
 - ▶ Reinvigorate targeted fundraising goals with the assistance of the Advancement Office to help support key priorities within the department
- Long-range planning and overall assessment
 - ▶ The Immunology major appears to be at capacity at the Faculty of Arts & Science; reviewers stress the importance of the department's strategic management of the upcoming period “in a way that best serves the students, while preserving this revenue stream for the department”
 - ▶ Reviewers observe that strategic University investment will be critical to address infrastructure concerns and encourage investments that “creatively consider

optimizing use and state-of-the-art features of chargeback core facilities and overall infrastructure”

2 Administrative Response & Implementation Plan

1



TEMERTY FACULTY OF MEDICINE
UNIVERSITY OF TORONTO

Temerty
Medicine

Patricia Houston, MD MEd FRCPC
Interim Dean and Vice Dean, Medical Education
Interim Vice Provost, Relations with Health Care Institutions

March 6, 2024

Professor Susan McCahan
Vice-Provost, Academic Programs
Division of the Vice-President & Provost
University of Toronto

Dear Susan,

[DEPARTMENT, UNDERGRADUATE & GRADUATE PROGRAMS](#)
[Joint Decanal Cover Letter | Faculty of Arts & Science and Temerty Faculty of Medicine](#)

On behalf of the Temerty Faculty of Medicine at the University of Toronto, we would first like to thank the reviewers—Dr. Deborah Burshtyn, Dr. Aaron Marshall, and Dr. Gwendalyn Randolph—for their very comprehensive review of the Department of Immunology on March 8-9, 2023. We would also like to thank Dr. Zúñiga-Pflücker, who served as the Chair of Immunology at that time, the administrative staff, and all those who contributed to the preparation of the outstanding self-study report. We also wish to thank Dr. Gommerman, Chair of Immunology, the many staff, trainees, and faculty members who met with the external reviewers and provided thoughtful feedback. The reviewers noted *“The University of Toronto is one of the leading Departments of Immunology in the World. It is one of the few Departments in North America focused on fundamental Immunology and spanning its broad scope in molecular/cell biology, physiology and many areas of medical science. Outputs in terms of research and education are excellent and unique...Many of its practices are those that international competitors could benefit from learning.”*

The thorough report provided by the reviewers is an invaluable guide for program enhancements and future strategic directions of the Department of Immunology. The reviewers identified a number of areas for enhancement including reviewing undergraduate curricular and research offerings, expanding administrative support for programs, implementing time-to-completion measures, ensuring faculty participation in student seminars, engaging postdoctoral fellows, ensuring research capacity in key areas, increasing commitments to EDIIA, strengthening relationships with research institutes and expanding laboratory infrastructure. Each of the recommendations has been addressed in the Programs' Responses column in the accompanying table, and in Dr. Gommerman's Chair's cover letter. We are in full agreement with the responses of Dr. Gommerman and the programs, and have provided additional comments addressing each of the recommendations in the Deans' Responses column of the table.

Overall, the Department of Immunology has made excellent progress under the leadership of Drs. Zúñiga-Pflücker and Gommerman and, as noted by the reviewers it *“has enormous strength in terms of the breadth and quality of the faculty, postdoctoral fellows and students. The vast majority of the faculty are internationally known and leaders in their areas of research. A major strength of the department is the sense of community despite the location of the researchers in so many pods with the campus and hospital-based institutes and the involvement of many adjunct appointees. The institutes provide a critical link to clinical research and development of therapies.”* We congratulate both the past and current Chair on their outstanding leadership. We look forward to continuing to work with Dr. Gommerman and members of the Department of Immunology to ensure the continued success and growth of the Department to attain its strategic and operational aspirations.

The next review of the Department of Immunology is scheduled in 2027-28. In 2025 we will follow up with the Chair on the implementation of the external reviewers' recommendations and, later that year, provide you with an interim report on the status of the implementation plan.

Sincerely,



Melanie Woodin, PhD
Dean
Professor, Department of Cell & Systems Biology
Faculty of Arts & Science



Patricia Houston, MD, MEd, FRCPC
Interim Dean
Temerty Faculty of Medicine
Interim Vice Provost, Relations with Health Care
Institutions
Professor, Dept. of Anesthesiology & Pain Medicine

cc: Justin Nodwell – Vice Dean, Research & Health Science Education, Temerty Faculty of Medicine
Randy Boyagoda – Vice Dean, Undergraduate, Faculty of Arts & Science
Gillian Hamilton – Vice Dean, Academic Planning, Faculty of Arts & Science
Suzanne Wood – Interim Associate Dean, Unit-Level Reviews, Faculty of Arts & Science
Andrea Benoit – Academic Planning & Review Officer, Office of the Dean, Faculty of Arts & Science
Anastasia Meletopoulos – Academic Affairs Manager, Office of the Dean, Temerty Faculty of Medicine
Lachmi Singh – Director, Academic Programs, Planning & Quality Assurance, Office of the Vice Provost, Academic Programs
Jennifer Gommerman – Chair, Dept. of Immunology, Temerty Faculty of Medicine

2022-23 UTQAP Review of MED Department of Immunology - Review Recommendations

Request Prompt <i>verbatim from the request</i>	Rec. #	Recommendations from Review Report <i>verbatim from the review report</i>	Programs' Responses	Deans' Responses
<p>The reviewers made a number of recommendations and suggestions related to the undergraduate curriculum, including reviewing course content to identify areas of overlap and addressing concerns regarding a large leap in expectations between third- and fourth-year courses.</p>	1	<p>"... the potential of too much overlap in course content should be reviewed – specifically overlap between IMM250 and IMM340 and IMM350. On the other hand, there was some concern there was a large leap in expectations between third- and fourth-year courses when suddenly confronted with primary scientific literature in fourth year in a number of courses and that the Specialist students had a clear advantage in this respect with the tutorial portion in IMM341/351... Perhaps differentiation between the Major and Specialist versions for the 4th year courses might address both of the concerns noted above."</p>	<p>We will be holding a teaching retreat on April 17, 2024 that will include our Undergraduate and Graduate course Coordinators, Education Program Officer, Applied Immunology MSc & Research Programs Manager, the Associate Chairs in Graduate Education and Undergraduate Education, and the Chair. This day-long retreat will review the Specialist, Major and Minor undergraduate programs, examine course offerings for gaps and overlaps and assess continuity with our graduate education offerings.</p> <p>Following this exercise, we will make changes to curricula and program requirements as necessary. Our strategic planning exercise (see #8 below) will map out the undergraduate <u>classroom</u> teaching mission changes that will take place over the next 5 years. Some changes will be submitted for governance in the 2024-25 cycle for implementation in the 2025-26 academic year.</p>	<p>The Program notes that they will be undertaking a strategic planning exercise that will include proposals for changes in the undergraduate teaching mission of the Department. The A&S Dean's Office looks forward to working closely with the program leadership on any proposals for program change, at an early stage. The Vice-Dean, Academic Operations and Vice-Dean, Undergraduate would be pleased to meet with the program leadership to discuss the strategic planning exercise. The executive Life Sciences Planning meeting also provides an important forum for discussing course and program changes that may affect other programs in A&S. More generally, the A&S Dean's office looks forward to expanding its current unit-level planning process to include programs administered through Temerty Medicine departments, including Immunology, to ensure alignment with broader A&S academic planning.</p> <p>For support with any curriculum mapping exercises, the Department is encouraged to reach out to the Curriculum Development Specialist in the Office of the Vice-Provost, Innovations in Undergraduate Education.</p>
<p>Highlighting access to research experience as a significant concern, the reviewers observed that undergraduate enrolment growth may be outstripping the capacity to provide summer and senior project research opportunities, and recommended exploring ways to provide research</p>	2	<p>"The most significant concern is regarding access to research experience, as the growth in the Major program is likely outstripping the capacity to provide summer and senior project research opportunities. Students noted that since the laboratory course is a fourth-year course, students do not get exposure to immunology techniques until 4th year, which was seen as a barrier when approaching faculty for research positions. Given the value of experiential learning, and to address the</p>	<p>At the teaching retreat, we will brainstorm alternative mechanisms to deliver experiential learning to our undergraduate students. Our strategic planning exercise (see #8) will map out the undergraduate <u>experiential</u> teaching mission changes that will take place over the next 5 years.</p> <p>We have also engaged with international partners, including the Cleveland Clinic and Trieste University, to host undergraduates for summer experiences. Strategic initiatives such as EPIC provide additional opportunities for undergraduate research.</p>	<p>The Department's upcoming teaching retreat and strategic planning exercises will afford occasions to assess, explore, and expand the important experiential learning opportunities available to students.</p> <p>The A&S Office of Experiential Learning & Outreach Support is available for consultations and support on the development of experiential learning opportunities for undergraduate students.</p> <p>The Department may also wish to discuss the possibility of participating in the Arts & Science</p>

<p>experience for students earlier in the program.</p>		<p>students desire to acquire practical skills, the department should consider adding a third-year laboratory course or converting the existing 4th year to a third-year course which would be aligned with many undergraduate immunology and microbiology programs”</p>		<p>Internship Program, which offers students the opportunity to complete 12-20 months of paid work experience, together with professional development training.</p> <p>In addition to continuing to find undergraduate research opportunities through initiatives like EPIC, the Department is building relationships with international partners to offer students experience abroad.</p>
<p>The reviewers observed that rapid growth in the Immunology Major has put substantial pressure on the Department’s teaching resources, and highlighted the need to ensure sufficient faculty and administrative support to maintain the quality of the program.</p>	3	<p>“The rapid growth of the major in Immunology program has stretched the Department teaching resources to the limit; recruitment of additional teaching faculty and administrative support may be needed to maintain the quality of the program.”</p>	<p>We are in the process of recruiting an educational assistant to support the Education Program Officer (Q2 2024).</p> <p>We are currently re-visiting teaching load assignments for all salaried MSB-based faculty as some teaching staff are teaching more than their workload policy agreement while others are teaching less. We will begin to make adjustments that will take effect in the 2024-25 academic year.</p> <p>We will ultimately recruit new research-stream faculty to the MSB location (2 FTE); however, we are pausing recruitment until our strategic plan is complete (see #8).</p>	<p>Additional support for the Education Program Officer will facilitate undergraduate-related operational processes and services for students.</p> <p>Re-evaluating faculty workload will make for a more equitable distribution of teaching responsibilities. The hire of two tenure-stream faculty will also help with teaching and student supervision.</p>
	4	<p>“The growth of the immunology major, however, seems to be at capacity at Arts & Sciences. It will be important to manage the next period in a way that best serves the students, while preserving this revenue stream.”</p>	<p>One of the topics for consideration at our education retreat (April 17, 2024) will be to restrict enrollment for our Major and Minor programs given that our revenues from teaching have been capped by A&S. This will be raised with the incoming Dean at Temerty Medicine for discussion with A&S toward making immunology accessible to all undergraduate students.</p>	<p>While there has been an increase in enrollment for the Major, there has been a very large increase in the Minor, which is currently an open enrollment program. This has resulted in correspondingly large increases in the second- and third- year courses. The Associate Dean of Undergraduate Education review the full slate of Immunology courses with the Associate Chair, Undergraduate and discussed with her and the Chair the impact this growth has had on Temerty Medicine in light of the Inter-Divisional Teaching framework. A mutual agreement was reached to reduce caps where possible, considering the needs of the program. Caps were reduced by a little over 600 for 2023-24 compared to the prior year.</p> <p>Temerty Medicine’s Associate Dean of Undergraduate Education will discuss with A&S the options available to</p>

				limit enrollment in programs and courses while considering waitlists, student interests, and both faculties' priorities.
The reviewers noted tension between reducing PhD time-to-completion and increased pressure on students to produce research and publications. They recommended careful consideration of student well-being in engaging with and addressing challenges related to these dual objectives.	5	"first authored publications remain the currency for students to obtain postdoctoral fellowships and build their track record toward a career in research and therefore increased expectations for publications in terms of scope and depth will continue to be in tension with the desire for PhD students to finish in a timely fashion. On this front, careful consideration of the expectations for a thesis (number and scope of publications) and the well-being of students should be factors."	We are working with HR to craft a full-time Learning Strategist position, akin to what has been initiated in the Dept. of Molecular Genetics. This role would start in Q3 2024. All of our students will have regular "check-ups" with the Learning Strategist to trouble shoot problems with their project, lab, mentor, etc., meeting a minimum of once a year. Complementing other wellness measures already in place, this is an experimental approach that we hope will alleviate student stress, help deal with some of the roadblocks students face in a non-evaluation setting, and to flag issues early to reduce time to completion.	By creating an administrative role dedicated to helping students with common challenges that could cause unnecessary delays, the Department hopes to reduce students' time to completion. With the Learning Strategist's assistance, committee meetings will occur in a timely fashion and problems will be identified and addressed at an earlier stage.
The reviewers recommended exploring ways to provide additional support for postdoctoral fellows and promote their inclusion within the Department.	6	"Build upon the postdoctoral fellow leadership and professional development activities to include postdocs located in institutes."	We have 2 Associate Chairs of Postdoctoral Engagement. They are currently organizing post-doctoral events for Q1 and Q2 2024.	The Department has appointed two Associate Chairs to facilitate postdoctoral engagement, with events already underway.
The reviewers observed the need to increase departmental research capacity in a number of critical disciplinary areas; they supported the Department's current strategy of pursuing joint hires with other units, and recommended increased engagement with clinical institutes as well as additional points of integration with other cognate units.	7	"Pursue creation of a leadership structure to facilitate human immunology research."	The Chair is currently in discussions with candidates to serve as the inaugural Associate Chair, Translational Immunology. This position will be filled by Q3 2024. The Associate Chair, Translational Immunology will be from one of the hospital research institutes and will "matchmake" basic scientists with ongoing clinical trials. This key person will coordinate their activities with the Sanofi Pasteur Chair in Human Immunology.	An Associate Chair, Translation Immunology is being established by the Chair with the goal of increasing capacity in human immunology research. As the Associate Chair will come from one of the hospital research institutes, this appointment also serves as an opportunity to further strengthen the Department's relationship with research institutes.
	8	"An acknowledged priority area to be strengthened is computational biology/informatics, which is now an integral part of the immunology field, and particularly important for high dimensional analyses of human immunity. The present strategy to build expertise through joint recruitment with other Departments and Institutes is reasonable but	Our strategic planning exercise, which cannot commence until the new Dean of Medicine has completed the Temerty Faculty of Medicine strategic plan, will prioritize this as an important gap. Strategic Planning for new hires will begin (tentatively) in Q4 2024.	The incoming Dean, Dr. Lisa Robinson, will be prioritizing the creation of a new strategic plan for Temerty Medicine. (Her term begins July 1, 2024.) Once in place, the Department can then formulate its strategic plan, with computational biology/informatics as a key area in need of development.

		may continue to limit the Department in this critical area; development of additional strategies, perhaps in conjunction with a human Immunology framework, is recommended.”		Developing research capacity both computational biology/informatics and the immunology of infectious diseases (#9 below) may also afford new opportunities in the curriculum. The Department is encouraged to explore the possibilities for enhancing student learning in these areas.
	9	“Another area with potential opportunities for growth is Immunology of Infectious diseases, which could leverage future developments such as a new biosafety level 3 research space and fund-raising for an HIV Immunology endowed chair. In line with the previous program review, we agree that strategic integration of Immunology and relevant Medical Genetics/Biomedical Engineering researchers on the 7th floor of MSB to generate a core of complementary expertise in immunology, infectious disease and computational biology would generate substantial synergies, and could be facilitated in part by joint hiring.”	See #8 above regarding strategic planning. We have made progress on finding shared space with Biomedical Engineering to recruit into this important area. This is a long-term strategy that will require milestone-based planning to be included in our 5-year plan. However, there have been some immediate developments: first, the Department has submitted an LOI to the New Frontiers in Research Fund Transformation program on the topic of vaccine design. Results for the LOI will be revealed in Q3 2024. Second, along with Dr. Scott Gray-Owen (Dept. of Molecular Genetics) the Dept. Immunology Chair is the co-academic lead of the Canada Biomedical Research Fund hub HI3 and on the advisory board for EPIC. This provides early insight into opportunities for infectious disease research funding.	See #8 above. With regard to the field of infectious disease immunology, the Department has had success in working with the Institute of Biomedical Engineering to ensure space for new recruits. The Department is also working towards securing funding for infectious disease research.
	10	“Continue to ensure the faculty in the MSB are supported and replenished as the core continues to be instrumental in the success of the department by creating a central hub to gather to keep the community strong.”	See #8 regarding strategic planning.	See #8 above.
	11	“There is unfulfilled potential in meeting the department’s future objective to progressively move into clinically relevant immunology by increasing engagement with clinical institutes.”	See #7 regarding the implementation of an Associate Chair, Translational Immunology. This person will come from one of the research institutes and will likely form a committee that brings in other RIs. This committee will be operational by the 2025-26 academic year.	As noted in #7 above, the appointment of an Associate Chair, Translational Immunology, will facilitate engagement with research institutes.
The reviewers recommended that the Department continue to invest in EDI and Indigenization initiatives; they suggested articulating	12	“Continue to invest in EDI and Indigenization initiatives and support faculty, staff and students to consider EDI for all aspects of teaching and research events.”	We are revisiting the terms and leadership of the Immunology Wellness, Inclusion, Diversity, and Equity (WIDE) committee in Q3 2024 to ensure the continued development of existing initiatives and the identification of new opportunities for growth.	In addition to revisiting the terms and building upon the work of the WIDE committee, the Department encouraged to consider EDIIA in the context of its teaching retreat and as a core component of its new strategic plan.

departmental goals in relation to the diversity of the graduate student body as well as invited guest speakers.	13	“Students noted that there was not sufficient diversity in the invited speakers and this is an area that can be readily addressed so that diverse students see themselves in successful scientists.”	We have begun to address this by ensuring that one of the two seminar coordinators is female, and the Chair has had preliminary discussions with the two coordinators about diversity in the 2024-2025 speaker roster (solicitation for speaker suggestions happens in the spring). We are also opting for more local scientists in our speaker series with whom students can build relationships.	The Department is actively seeking a broader diversity of local speakers to better reflect its student body.
	14	“The graduate chair and admissions committee are experimenting with new ways to level the playing field for applicants to the graduate programs by introducing a standardized set of questions to replace the typical statement of research interests and an interview step. As these changes are new, they will need to be monitored to ensure they are meeting the goal particularly regarding evaluation of applications from students with diverse backgrounds and differently abled.”	We have included a member of the WIDE committee on our admissions committee to help ensure that the changes being made are achieving the Department’s goals to be inclusive of students from underrepresented groups and the differently abled.	By replacing the standard research statement and interview with a series of questions, the Department is providing space for applicants with different lived experiences to demonstrate their passion for immunology. The hope is to identify strong candidates who may have been missed as a result of the limitations of the previous process. The WIDE committee now has representation on the admission committee to help ensure a diverse student population. The Department will continue to monitor the effectiveness of this new approach and will make modifications as needed.
The reviewers recommended strengthening relationships with research institutes to “facilitate alignment of future recruitment and to maximize opportunities to build infrastructure.”	15	“Build stronger relationships with leadership in the various research institutes to facilitate alignment of future recruitment and to maximize opportunities to build infrastructure.”	The Chair is a member of the Search Committee for the Schroeder Arthritis Centre at University Health Network. The search conducted in Q4 2023 did not result in a hire and will soon be relaunched. To further build upon our relationships with research institutes, we will include key research institute members in our strategic planning exercise once we are given the go-ahead to begin (see #8).	See #7 above. The Chair is participating in a UHN recruitment effort and will endeavor to serve on research institute search committees where possible. Research institute members will be included in the Department’s upcoming strategic planning process to build relationships and identify opportunities for collaboration going forward.
The reviewers highlighted a number of concerns regarding laboratory space as well as core research facilities and equipment. They noted that additional space will be needed to accommodate growth in new and existing research programs, and recommended that a	16	“Ensure laboratory spaces in the core are sufficient for the size of the research programs and well maintained to retain and recruit faculty.”	The Chair is in discussions with Temerty Medicine’s Chief Administrative Officer to start rectifying this situation (Q1-Q2 2024); however, this will be a long-term issue that will not be resolved quickly. The Chair has initiated monthly faculty meetings with those in MSB to come up with creative space and equipment solutions in the meantime. She also has a monthly calendar slot with the Director of Facilities Management & Space Planning.	Temerty Medicine is committed to investing in our research facilities and equipment to ensure the long-term success of our research mission. In the short-term we have invested in additional dedicated staff resources to support the operational and facility related needs of our researchers to help address issues and timewasters that are impacting researchers’ productivity. We have hired a data analytics expert to prepare an inventory of our research lab space (wet and dry) to understand how the space is being used

sustainable funding model be developed to support maintenance of these facilities and spaces.				<p>and to assess the quality of the lab space our PIs occupy. This will allow us to maximize the use of the space and to prioritize where to invest funds.</p> <p>Over the medium to long-term, Temerty Medicine is developing a plan to implement a funding model to ensure that appropriate resources are invested annually to upgrade our facilities and equipment, to build out key infrastructure such as shared high computing and storage clusters, and to recruit and retain top talent.</p>
	17	“Support for core research facilities based in MSB was identified as a significant need. Long term maintenance of core facilities based solely on researcher user fees is not a feasible model, and a strategy to sustain key facilities needs to be developed.”	We have submitted a Canada Foundation for Innovation (CFI) – Innovation Fund application to Temerty Medicine that contains infrastructure for core facilities, and we have one CFI Biosciences Research Infrastructure Fund application under review (result in Q3 2024).	The Department is applying for infrastructure funding to support its core research facilities.
	18	“Develop a sustainable funding model to support core facilities which will ensure faculty are well positioned to continue to have access to state-of-the art techniques in a cost-effective way.”	<p>This will require buy-in from the Vice Dean, Research & Health Science Education, and the incoming Dean for the Temerty Faculty of Medicine. It is important to note an inequitable lack of subsidy for research facilities for our MSB-based faculty as compared to those at the research institutes.</p> <p>Some other models to consider are support from Central UofT since there are core facility users beyond Temerty Medicine. Another idea is to come up with a match program whereby funds brought into the Division of Comparative Medicine by CFI grants could be matched by Temerty Medicine.</p>	<p>Funding model decisions will need to be made by the incoming Dean in consultation with the Vice Dean, Research & Health Science Education.</p> <p>The Department should investigate seeking contributions from those outside of Temerty Medicine seeking to use its facilities.</p>
Other recommendations not prioritized in the Request for Administrative Response	19	“Develop and pursue targeted fund-raising goals (working with Advancement) to help achieve key priorities.”	The Chair has met twice with Advancement to strategize fundraising priorities. These include stipendiary support for our graduate students in the form of studentships, and support for burgeoning collaborations between Immunology and Biomedical Engineering to generate next generation vaccines. We have also identified our 40 th anniversary event (Q2, 2024) as a fundraising opportunity.	Working with Temerty Medicine’s Advancement team, the Department has developed goals and priorities. The Department’s 40 th anniversary will provide an excellent fundraising opportunity.

	20	“Currently there are a few opportunities for mobility to spend the last practicum term abroad. An area for improvement is to create more opportunities for [MSc in Applied Immunology] students to link to work in industry for their final project or alternately not suggest that linking to industry is a goal of the program.”	Our Associate Chair International Partnerships has engaged with international partners, including the Cleveland Clinic, Trieste University, and Helmholtz-Zentrum für Infektionsforschung, to host MSc students. As of Q1 2024, MSc students have not signed up, but we continue to offer these opportunities.	The Department might consider holding an information session with students to discuss international practicums and what might encourage participation (i.e., earlier information sessions, changes to application process, etc.).
	21	“It would be helpful to assess a larger cohort to illustrate where graduates end up following postdoctoral fellowships.”	By hiring an assistant for the Education Program Officer, she will be able to devote more attention to the Alumni Engagement aspect of her portfolio beginning in Q4 2024 (after the reunion).	Hiring an additional staff to support the Education Program Officer will allow for the collecting of more information regarding alumni career paths.
	22	“One area that requires attention is faculty engagement in the student seminar series...Given the relatively large size of the faculty complement and the logistics for faculty members who are not in the MSB to attend, the program could consider developing a rotation of committed attendance to ensure sufficient levels of participation.”	We are experimenting with a different time and format to be implemented 2024-2025 academic year. Specifically, we are looking to shift the student seminar series to occur <i>after</i> the invited speaker series with a nutritional break in the middle to potentially lure more attendees. We are also including a <i>proviso</i> to renewed appointment that department faculty must participate in 25% of Monday seminar offerings.	To ensure adequate faculty engagement, appointments now include a requirement that faculty participate in the student seminar series. The Department is experimenting to find the optimal conditions for faculty and student involvement.
	23	“Build upon existing links therapeutics in development with industry and continue to foster and celebrate entrepreneurship within the Department.”	See #7 regarding the implementation of an Associate Chair, Translational Immunology. With the help of a clinician-scientist committee, this leader will play a role in “match-making” basic scientists with clinician scientists running investigator-led trials. Many of these trials are supported by industry.	See #7 above.

3 Committee on Academic Policy & Programs (AP&P) Findings

The spokesperson for the reading group reported that the review summary accurately described the full review and reported that the Dean's administrative response had adequately addressed issues identified by the review. The Reading Group noted the upcoming teacher's retreat in April to discuss the Undergraduate and Graduate programs and assess the reviewers' suggestions which would form the basis of their new strategic plan. The group also noted that there was a new incoming Dean, Dr. Lisa Robinson on July 1, 2024, who would spearhead the strategic plan and an Associate Chair of Translation Immunology that was being established to increase research in human immunology, an area that the reviewers identified as important for growth. The Reading Group noted that overall, they found the reviewer concerns relatively minor, but sought additional clarification regarding next steps and timelines to address several issues, including the MSc funding, and considerations of adding or converting a third-year laboratory course which would be aligned with many undergraduate immunology and microbiology programs.

Justin Nodwell, Vice Dean, Research & Health Science Education, Temerty Faculty of Medicine responded that the master's program in immunology was distinct from other programs in medicine. Immunology was part of the harmonized base funding agreement; however, the master's program was not included in that agreement as it was not a thesis-based program, and students did not conduct lab work. The program was akin to a professional master's program aimed at students from a variety of disciplines seeking to gain additional knowledge of immunology. The students in the immunology master's program did receive some financial support and the faculty were working on improving the current levels of support.

Jennifer Gommerman, Chair, Department of Immunology added that they did have a third-year lab course called IMM 385 which allowed undergraduate students to obtain hands-on lab experience, both at the Medical Sciences Building and within the hospital research institutes. Students received credit and this would lead to summer research opportunities. The demand for student placement positions outpaced availability and they established international partnerships with different institutions such as the Cleveland Clinic, and institutes in Europe and Australia. Professor Gommerman concluded by highlighting the upcoming retreat to discuss the concrete steps to address the recommendations and that they followed the governance calendar for implementation regarding the undergraduate programmatic changes.

No follow-up report was requested.

4 Institutional Executive Summary

The reviewers praised the Department of Immunology as a world leader in the field, noting that it is "one of the few Departments in North America focused on fundamental Immunology and spanning its broad scope in molecular/cell biology, physiology and many areas of medical science." They applauded the Department's "enormous strength in terms of the breadth and

quality of the faculty, postdoctoral fellows and students.” They commended the Department’s dedication to both undergraduate and graduate students, and observed that the quality of the teaching, training and supervision are extremely high. They praised the Department’s faculty, noting that most are “internationally known and leaders in their areas of research”, and noted that the undergraduate and graduate programs “both greatly benefit from and help drive faculty research programs.” They highlighted that faculty, students, and staff expressed an “overwhelmingly positive assessment of the Department as a place to work, research and learn,” and noted the sense of community in the Department as a major strength. Finally, they highlighted the recent creation of a Departmental EDI committee, noting that progress is being made toward a more inclusive environment.

The reviewers recommended that the following issues be addressed: reviewing undergraduate course content to identify areas of overlap and addressing concerns regarding a large leap in expectations between third- and fourth-year; exploring ways to provide research experience for undergraduate students earlier in the program; ensuring sufficient faculty and administrative support to maintain the quality of the program; considering student well-being in engaging with and addressing challenges related to these dual objectives; exploring ways to provide additional support for postdoctoral fellows and promote their inclusion; increasing engagement with clinical institutes as well as additional points of integration with other cognate units; continue investing in EDI and Indigenization initiatives; strengthening relationships with research institutes to “facilitate alignment of future recruitment and to maximize opportunities to build infrastructure”; developing a sustainable funding model to support maintenance of facilities and spaces.

The Dean’s Administrative Response describes the division and unit’s responses to the reviewers’ recommendations, including an implementation plan for any changes necessary as a result.

5 Monitoring and Date of Next Review

In 2025 the Dean will follow up with the Chair of the Department of Immunology on the implementation of the external reviewers’ recommendations and will provide an interim report to the Vice-Provost, Academic Programs no later than December 2025 on the status of the implementation plans.

The next UTQAP review of the Department of Immunology will be commissioned in 2027-28.

6 Distribution

On June 30th 2024, the Final Assessment Report and Implementation Plan was posted to the Vice-Provost, Academic Programs website and the link provided by email to the Dean of the Temerty Faculty of Medicine, the Secretaries of AP&P, Academic Board and Governing Council,

and the Ontario Universities Council on Quality Assurance. The Dean provided the link to unit/program leadership.