UTQAP Cyclical Review: Final Assessment Report and Implementation Plan

1. Review Summary

Programs Reviewed:	Molecular Genetics & Microbiology, BSc: Specialist, Major (FAS) Molecular Genetics & Microbiology – Genetics Stream, BSc: Specialist (FAS) Molecular Genetics & Microbiology – Microbiology Stream, BSc: Specialist (FAS) Molecular Genetics, MSc Genetic Counselling, MSc Medical Genomics, MHSc Molecular Genetics, PhD
Unit Reviewed:	Department of Molecular Genetics
Commissioning Officer:	Dean, Temerty Faculty of Medicine
Reviewers (Name, Affiliation):	 Professor Michel Bouvier – Département de Biochimie et de Médecine Moléculaire, Université de Montréal Professor David Litchfield – Schulich School of Medicine & Dentistry, Western University Professor Michael Snyder – Department of Genetics, Stanford University
Date of Review Visit:	February 8-9, 2021
Date Reported to AP&P:	October 26, 2021

Previous UTQAP Review

Date: October 19 – 20, 2015

Summary of Findings and Recommendations

1. Undergraduate Programs

The reviewers observed the following **strengths**:

- Impressive number and breadth of undergraduate courses, including praiseworthy new online course in genetics
- Undergraduates have very high opinion of their education, and are highly appreciative of interactions with professors and research opportunities

2. Graduate Programs

The reviewers observed the following strengths:

- Uniquely strong master's degree program in Genetic Counseling that attracts brilliant students
- Large, strong Ph.D. program with excellent camaraderie despite being spread across different labs

The reviewers made the following recommendations:

Improving time-to-completion for Ph.D. students

3. Faculty/Research

The reviewers observed the following strengths:

- Terrific center of research with an extraordinarily high international reputation and impressive international awards
- Faculty are very involved in education, with strong programs in undergraduate teaching and training of Ph.D. students

4. Administration

The reviewers observed the following **strengths**:

- Extremely strong department that is a gem of Canadian science and education
- High morale and cohesiveness among individual department members and staff

The reviewers made the following **recommendations**:

- Adjusting Department's limited role in education of MD students, given importance of molecular genetics in understanding human health and disease
- Engaging in consideration of faculty renewal to maintain currency in areas of strength and support programmatic directions
- Providing refreshed and consolidated laboratory spaces to retain top faculty, accommodate any additions to the complement, and keep apace with facilities at institutes

 Examining the sustainability of the unit's current financial model, the fundraising efforts to support the Department, and the funding structure for international graduate students

Current Review: Documentation and Consultation

Documentation Provided to Reviewers

Confirmation/Agreement Letter; Terms of Reference; Self-Study Report; Faculty CVs; Schedule; Previous Review Report (2013-14), the Joint Decanal and Chair's Responses, and FAR-IP; Dean's Report 2020; Temerty Faculty of Medicine's Strategic Plan (2018-2023); University of Toronto Towards 2030; University of Toronto Quality Assurance Process; Access to all course descriptions

Consultation Process

The reviewers met directly with the following individuals/groups via Zoom:

Temerty Faculty of Medicine

- Dean, Temerty Faculty of Medicine and Vice Provost, Relations with Health Care Institutions
- 2. Vice Dean, Strategy & Operations
- 3. Vice Dean, Clinical & Faculty Affairs
- 4. Chair
- 5. Vice Chair
- 6. Associate Chairs
- 7. Senior Advisors to the Chair
- 8. Program Coordinators
- 9. Faculty
- 10. Graduate Students
- 11. Postdoctoral Fellows
- 12. Lab Technicians
- 13. Research Associates
- 14. Administrative Staff
- 15. Executive Director, Office of Advancement

Faculty of Arts & Science

- 16. Vice Dean, Academic Planning
- 17. Associate Dean, Unit-Level Reviews
- 18. Associate Dean, Teaching & Learning
- 19. Undergraduate Students

University of Toronto

- 20. Dean, Faculty of Applied Science & Engineering
- 21. Cognate Chairs and Directors

Industry

22. Research Institute Leaders

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**:

- Objectives
 - Program requirements and learning outcomes are appropriate and align with undergraduate degree-level expectations
- Admissions requirements
 - No concerns identified regarding admission requirements
- Curriculum and program delivery
 - Curriculum is appropriate and reflects current state of discipline
 - ► Research-intensive nature of training environments are notable, particularly in BSc specialist programs; opportunities to conduct undergraduate research projects promotes high level of critical thinking
- Innovation
 - In Major programs, students can construct own inter-disciplinary curriculum of study
- Assessment of learning
 - Assessment of learning consistent with defined learning outcomes and degree-level expectations, and comparable to related programs at other institutions
- Student engagement, experience and program support services
 - ► High student satisfaction; they value research experiences and recognize transferable skills acquired through these experiences
 - ► Students appreciate interdisciplinarity of Major programs, and perceive this as benefiting achievement of career development goals
 - ► Students appreciative of ongoing faculty efforts to ensure that curriculum keeps pace with disciplinary advances
- Quality indicators undergraduate students
 - ► Students successful within programs, and at finding suitable positions and/or further training opportunities
 - Quality of students judged to be very high by faculty participants

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

- Curriculum and program delivery
 - Students identify some content overlap between courses
- Student engagement, experience and program support services
 - ► Students in Major programs feel unable to take advantage of same research experiences as Specialist students

The reviewers made the following **recommendations**:

- Curriculum and program delivery
 - ► Review course curriculum to minimize redundancy; overlap could likely be minimized with more frequent consultation between instructors

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 administered by the Department of Molecular Genetics are thriving
- Objectives
 - Program requirements and learning outcomes are appropriate and align with graduate degree-level expectations
- Admissions requirements
 - Reviewers identified no concerns regarding admission requirements for any of the programs
 - ► Enrolment in all programs remains very strong, with a dramatic increase in researchbased MSc and PhD Molecular Genetics program enrolment
- Curriculum and program delivery
 - ► Curriculum is appropriate and reflects current state of discipline
 - ► Research-intensive nature of training environments noted as major strength, particularly in MSc and PhD programs in Molecular Genetics
- Accessibility and diversity
 - Graduate Students Association has created EDI committee
- Student engagement, experience and program support services
 - ► Students express high level of pride and satisfaction regarding quality of training and mentorship, and feel that programs are attentive to student concerns
- Quality indicators graduate students
 - ► Students successful within programs, and at finding suitable positions and/or further training opportunities
 - ► Based on academic performance and accomplishments, students are of very high quality

Quality of students judged to be very high by faculty participants

The reviewers identified the following areas of concern:

- Curriculum and program delivery
 - Concerns raised around scheduling courses and research rotations in relation to optimizing student progression
 - ► Students express desire for courses aligned better with student interests (rather than faculty interests); in this regard, microbiology was highlighted as a theme that was under-represented in course offerings
- Student engagement, experience and program support services
 - Faculty participation in student supervision/mentorship inconsistent, with some members overburdened, and potential deficiencies in quality of some student/supervisor relationships
 - Students report that IDP (independent development plan) process is primarily student driven, with insufficient faculty participation
 - ► Students express interest in expansion of career development opportunities, particularly related to non-academic careers
- Quality indicators graduate students
 - ► Time to completion for thesis-based graduate programs remains high (though reviewers note this issue has undoubtedly been impacted by the pandemic)
- Student funding
 - Student stipends cited as a concern by faculty and students, with implications for EDI, and compounded by high cost of living in Toronto

The reviewers made the following recommendations:

- Curriculum and program delivery
 - ► Review course curriculum to align with student needs/interests
 - Students in MHSc in Medical Genomics suggest that practicum training might be extended
- Student engagement, experience and program support services
 - Reviewers emphasize importance of monitoring student progression and ensuring that supports are available to address student concerns and/or needs
 - ► Enhance career development programs (including IDP) for graduate students
- Student funding
 - Address student stipends to remove barriers and promote EDI

3. Faculty/Research

The reviewers observed the following **strengths**:

- Overall quality
 - ► Department boasts a very strong complement of expertise available to deliver its programming across the areas of study
- Research
 - Exceptional record of research performance; among the best in relation to national and international comparators
 - Strong enrolments speak to strength of vibrant research activities being maintained by faculty
 - Outstanding level of research activity, and faculty members generally very wellfunded and highly productive
 - ► Excellent research programs of several faculty routinely attract highly qualified postdoctoral fellows, who make indispensable contributions to research and training missions of department members

The reviewers identified the following areas of concern:

- Faculty
 - Concerns expressed that microbiology is not well represented in current faculty complement

4. Administration

The reviewers observed the following **strengths**:

- Relationships
 - ► Programs supported by rich intellectual environment and strong relationships with Hospitals/Research Institutes that host vibrant research programs
 - ► High morale and sense of connectedness among faculty, students and staff, despite fact that department members are distributed across numerous distinct sites
 - ► Chair lauded within and beyond the Department for efforts to maintain strong relationships with cognate units and Institute partners
 - ► Department well represented in broader inter-disciplinary research initiatives within Toronto research community
 - ► Notable leadership in international exchanges in Asia; excellent program for exchange of students and research collaboration has been established with Chinese institutions
- Organizational and financial structure
 - ► Department has recently modified leadership portfolio and established Associate Chair of Educational Programs and Partnerships, with a significant focus on EDI

- ▶ Department has effectively utilized resources that have been allocated to support its programs; it is evident that Faculty and Department have worked together over past 5 years to maintain financial stability
- ► Effective deployment of additional resources to enable recruitment of 2 tenurestream and 2 teaching-stream faculty
- Space considerations identified in last review have been addressed with relocation of 16 research labs to MaRS and 2 other labs in renovated space within Medical Sciences Building
- ► Department's research performance has been outstanding and programs have flourished under leadership of current Chair
- Long-range planning and overall assessment
 - ▶ Department continues to sustain outstanding research and training programs that are recognized nationally and internationally
 - ▶ Department and its programs are evolving to reflect recent dramatic changes within the discipline, and the expanding role of molecular genetics across many medical fields
 - ► Stakeholders take pride in programs and actively engage in ongoing processes of quality improvement
 - ▶ Department offers variety of programs that reflect Molecular Genetics' intersection with numerous fields, and expanding role across many Medical disciplines
 - ► All programs are consistent with U of T's mission and academic plans of the Department and Faculty
 - New MHSc program in Medical Genomics reflects one noteworthy outcome of investment in the Department
 - ► Department well positioned to continue to provide leadership in biomedical research and education both within and beyond the Temerty Faculty of Medicine
- International comparators
 - All programs conform to the norms of the discipline both nationally and internationally
 - "Based on overall research performance and impact and the quality of the training programs, the Department of Molecular Genetics is amongst the very best in Canada/North America and internationally"

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

- Relationships
 - ► Postdoctoral fellows report impression of "falling through the cracks", since they are neither treated as staff nor as students
- Organizational and financial structure
 - ► Given recent dramatic expansion of graduate program enrolment in recent years, resources (including program administration) seem inadequate
 - Reviewers note some issues relating to move of research labs to MaRS and distribution of graduate training at distinct sites:
 - Administrative offices now separated from majority of core faculty

- Gaps identified both by students and by faculty related to appointments and oversight of students at different sites
- ► Although significant improvements have been made since previous review, space concerns remain; lack of space perceived as impediment for new recruitments
- Research funding concerns raised in relation to sunsetting of CIHR Foundation program, as many investigators within the Department are supported by Foundation grants
- Long-range planning and overall assessment
 - Recent and potential retirements suggest "clear needs for recruitment"

The reviewers made the following **recommendations**:

- Relationships
 - ► Establish program for postdoctoral fellows to enhance inclusion and career development
 - Consider adding representatives from Institutes (such as SickKids or Lunenfeld-Tanenbaum) to Departmental Executive Committee to further strengthen ties, and potentially facilitate recruitment and space considerations
 - ▶ Biomedical Engineering has expressed interest in stronger ties with core Department
 - ► "Although the exchanges [with Chinese institutions] have been complicated by the pandemic and the current political situation, the program is perceived positively and there was a feeling that it should continue because it could represent a signature program for the University"
- Organizational and financial structure
 - Considering scale and complexity of unit and its programs, ensure adequate administrative support is provided, especially for the graduate program
 - Reviewers propose that "contingency funding to mitigate the impact of short-term funding instability will be a sound long-term investment"
 - Space concerns need to be addressed
- Long-range planning and overall assessment
 - ► Consider expanding MSc in Genetic Counselling to meet anticipated demand in the field, and provide opportunity for new revenue generation
 - Microbiology and computational biology highlighted as possible areas to prioritize in faculty complement planning, and coordination between core and affiliated centres will be important

2. Administrative Response & Implementation Plan 10





Patricia Houston, MD MEd FRCPC Acting Dean and Vice Dean, Medical Education

September 17, 2021

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

Dear Susan,

DEPARTMENT & GRADUATE PROGRAMS Joint Decanal Response | 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, Professors Michel Bouvier, David Litchfield, and Michael Snyder, for a fulsome and rigorous review of the Department of Molecular Genetics on February 8-9, 2021. On behalf of Temerty Medicine, we would also like to thank Professor Tim Hughes, Interim Chair, former Chair, Professor Leah Cowen, the administrative staff, the departmental Executive Committee, and all those who contributed to the preparation of the outstanding self-study report. We also wish to thank the numerous administrative staff, trainees, and faculty members who met with the external reviewers and provided invaluable input.

The reviewers reflected that "The Department of Molecular Genetics was lauded as a 'gem of Canadian science and education' when it underwent an external review in 2015. Based on our assessment of the materials that were provided to us for review, our consultations through the course of the 2-day review and the reputation of the Department and its members, we concur with that assessment." Temerty Medicine greatly appreciates the insightful and comprehensive report provided by the reviewers. It serves as an invaluable guide for future strategic directions and program enhancements of the Department of Molecular Genetics. We are in full agreement with Professor Hughes' response of the Interim Chair. After consultation with him, we have developed the following response and implementation plan.

1. Reviewers' Comment: There are clear needs for recruitment as several retirements have occurred in recent years with more predicted in the foreseeable future....Faculty recruitment is warranted.

Decanal Response: Coordination with affiliated centres/institutes is already standard practice. Specifically focused coordination between the Department and the leadership of affiliated centres will ensure that faculty recruitment priorities are mutually guided and reflect educational and research priorities. In the immediate term (6 months) the Department will contact leadership in affiliated nodes to discuss recruitment priorities and where expertise in specific areas requires expansion or renewal.

2. Reviewers' Comment: The lack of space is perceived as an impediment for new recruitments....Space considerations need to be addressed.

Decanal Response: The Department is presently reviewing optimization of space and office usage in MaRS 15/16. In the immediate (6 months) and medium (1-2 years) terms the Department will be coordinating with the Donnelly Centre for space for computational biology recruitment. Additional consideration of space rental and review of current space allocation in MSB may also facilitate faculty recruitment.

3. Reviewers' Comment: Ensure adequate administrative support is provided (especially for the graduate program).

Decanal Response: Given the scale and complexity of the Department, as well as the significant expansion of programs in recent years, the administrative team responsible for the graduate and undergraduate research programs is quite small and has not grown proportionally. In the medium (1-2 years) the Department's plan to augment the administrative team with a PhD-level coordinator who will oversee activities related to graduate life, curriculum, student recruitment, and address time to completion of studies will be very helpful.

4. Reviewers' Comment: Address student stipends (to remove barriers/promote EDI).

Decanal Response: Stipend considerations should be addressed within the Harmonized Student Agreement of the Temerty Faculty of Medicine. The Department is reviewing the graduate student stipend and the findings will create a platform for discussion among the relevant stakeholders, including students, faculty supervisors, the Vice Dean, Research & Health Science Education, and cognate Departments in the Temerty Faculty of Medicine in the immediate term (6 months).

5. Reviewers' Comment: Remain attentive to student times to completion (which will be facilitated by improved tracking of student progression).

Decanal Response: The Department has already implemented several modifications to address the long times to student completion of graduate studies. These modifications include targeted focus during student committee meetings, revision of the didactic portion of the curriculum, increased administrative oversight, and enhanced access to faculty mentors. Further modifications in the immediate term (6 months) will include clarification of departmental expectations for student projects and faculty supervision, compression of the student seminar series, and earlier discussion of graduation and career plans during student program advisory committee meetings. In the medium term (1-2 years), the proposed addition of a PhD-level coordinator as discussed in the response to Comment 3 will facilitate administrative oversight and tracking of student milestones.

6. Reviewers' Comment: Review course curriculum to minimize redundancy and align with student needs/interests.

Decanal Response: To minimize potential overlap and redundancy, in the immediate term (6 months) the Department will expand its Undergraduate Curriculum Committee from two to six members who span disciplines, faculty stream, and teaching stage. In the immediate (6 months) to long (3-5 years) term the committee will work collaboratively with course coordinators and other programs Departments to minimize redundancy. Concurrently, regular review of curricular maps and syllabi will be implemented. To facilitate this, we support the Department reaching out to the Curriculum Development Specialist, based in the Office of the Vice-Provost, Innovations in Undergraduate Education, to assist with this curricular review and curriculum mapping.

7. Reviewers' Comment: Enhance career development programs (including IDP) for graduate students.

Decanal Response: To enhance career development programming, the Department will refresh an Associate Chair position to focus on 'Communications, Careers, and Alumni Relations' in the immediate term (6 months). As noted in the response to Comment 3, the Department will explore recruitment of an administrative staff member who will work with this faculty coordinator to strengthen career development programming. To complement these initiatives, in the medium (1-2 years) to long (3-5 years) terms the Department will reinstate monthly career development workshops, and will use the alumni database to enhance networking and placement.

8. Reviewers' Comment: Establish a program for postdoctoral fellows to enhance inclusion and career development.

Decanal Response: Addressing the unique concerns of postdoctoral fellows across the Temerty Faculty of Medicine, including the need for enhanced inclusion, mentorship, and opportunities for career development and leadership training, has been identified as a priority need. Accordingly, the Vice Dean, Research & Health Science Education is developing a program specifically for postdoctoral fellows across the Temerty Faculty of Medicine that will focus on mentorship, social connection, career

development, and leadership training. In addition, the Department will create an Individual Development plan in the medium term (1-2 years) that postdoctoral fellows and their supervisors will complete annually.

9. Reviewers' Comment: Consider expansion of the MSc in Genetic Counseling to meet demand within the field.

Decanal Response: Enrolment in the program was recently expanded from four to six students per year. Any further expansion of the program would require very careful consideration of potential impact on student training and experience, accreditation requirements, and budgetary and resource implications for affiliated hospitals, particularly The Hospital for Sick Children, the main partner.

10. Reviewers' Comment: Engagement of Institutes with Executive committee (which may facilitate recruitment and space considerations).

Decanal Response: Leaders of affiliated institutes—namely, The Hospital for Sick Children, Ontario Institute for Cancer Research, and the Donnelly Centre—are appointed to the Department, facilitating collaborations between the Department and affiliated centres. As noted in the responses to Comments 1 and 2 above, enhanced collaboration between the Department and partner institutes will facilitate faculty recruitment and appointment.

11. Reviewers' Comment: Concerns were raised in relation to the sunsetting of the CIHR Foundation program since many investigators within the Department of Molecular Genetics are supported by Foundation grants.

The Department will provide biannual financial projections to faculty with research funds managed by the Department and will continue to encourage faculty engagement in the Temerty Medicine pre-review and bridge funding mechanisms in the immediate term (6 months).

The next UTQAP review of the Department of Molecular Genetics is scheduled in 2026-27. In 2024 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

MWood

Biology

Faculty of Arts & Science

Patricia Houston, MD, MEd, FRCPC
Acting Dean and Vice Dean, Medical Education
Professor, Department of Anesthesiology & Pain

Temerty Faculty of Medicine

Medicine

cc: Lisa Robinson – Vice Dean, Strategy & Operations, Temerty Faculty of Medicine Justin Nodwell – Vice Dean, Research & Health Science Education, Temerty Faculty of Medicine Randy Boyagoda – Vice Dean, Undergraduate, Faculty of Arts & Science Gillian Hamilton – Acting Vice Dean, Academic Planning, Faculty of Arts & Science Andrea Benoit – Academic Review Officer, Office of the Dean, Faculty of Arts & Science Anastasia Meletopoulos – Academic Affairs Manager, Office of the Dean, Temerty Faculty of Medicine Daniella Mallinick – Director, Academic Programs, Planning & Quality Assurance, Office of the Vice Provost, Academic Programs

Tim Hughes - Interim Chair, Dept. of Molecular Genetics, Temerty Faculty of Medicine

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

The spokesperson for the reading group reported that the summary provided an accurate reflection of the review. The group agreed the administrative responses addressed the key recommendations clearly.

In response to questions from the reading group regarding plans for faculty recruitment and curriculum review, Professor Lisa Robinson, Vice-Dean, Strategy & Operations, Faculty of Medicine, commented that:

- There were two unfilled tenure stream vacancies as a result of retirements, and that the majority of campus-based faculty were relatively senior.
- There was a growing interest in building capacity in the areas of microbiology and computational biology; plans for expansion or renewal were also coordinated with the affiliated centres and institutes.
- The Department's Undergraduate Curriculum Committee would be conducting a full review of the undergraduate curriculum.
 - In response to a question from the reading group on the reviewers' recommendation to expand the MSc in Genetic Counselling to meet demand within the field, Professor Timothy Hughes, Interim Chair, Department of Molecular Genetics, commented that:
- Due to the clinical work required at the Hospital for Sick Children and the limited availability of clinical cases, it would not be feasible to increase student enrolment.

No follow-up report was requested.

4. Institutional Executive Summary

The reviewers praised the department as amongst the very best in the world, noting that it is evolving to reflect recent, significant changes in the discipline; they commended the thriving graduate programs and the research-intensive nature of the department's training environments, noting the availability of student research experiences as a major feature of the programs; they commented on the outstanding record of faculty research performance, the rich intellectual environment and strong relationships with area hospitals and research institutes; and finally they highlighted the high morale and cohesion among faculty, students and staff, and the indispensable contributions to faculty research and training made by postdoctoral fellows. The reviewers recommended that the following issues be addressed: minimizing overlapping undergraduate course content through enhanced consultation between instructors; improving course and research rotation scheduling to optimize student progression; further expanding career development opportunities; consider expanding the Genetic Counselling M.Sc. program to meet anticipated demand in the field; enhancing communication with and support for post-doctoral fellows; identifying strategies to address short-term research funding instability that may result from the discontinuation of the CIHR Foundation grant program; prioritizing coordination between core faculty and affiliated centres

to assist with determining complement planning priorities; ensuring sufficient administrative resources to support the Department's graduate programs and students; finding ways to address space concerns in the short term; and addressing concerns around graduate student stipends, with implications for equity, diversity and inclusion. The Dean's Administrative Response describes the Faculty, unit and programs' responses to the reviewers' recommendations, including an implementation plan for any changes necessary as a result.

5. Monitoring and Date of Next Review

In 2024 the Dean will follow up with the Chair on the implementation of the external reviewers' recommendations and, will provide an interim report to the Vice-Provost, Academic Programs by December 2024 on the status of the implementation plans.

The next UTQAP review of the Dept. of Molecular Genetics will be commissioned in 2026-27.

6. Distribution

On January 15, 2022, 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 the Chair of the Department.