Biochemistry
Final Assessment Report & Implementation Plan
May 2026

Faculty / Affiliated University College	Schulich School of Medicine & Dentistry	
Degrees Offered	MSc, PhD	
Approved Fields	Macromolecular Structure and Dynamics; Genome Dynamics, Epigenetics, and Gene Expression; Signal Transduction and Intracellular Communication; Human Genetics and Clinical Biochemistry; Proteomics; and Bioinformatics	
Date of Last Review	2017-2018	
External Reviewers	Dr. Timothy Hughes Professor, Department of Molecular Genetics, University of Toronto	Dr. Lisa Craig Professor, Department of Molecular Biology and Biochemistry Simon Fraser University
Internal Reviewers	Lars Rehmann, Associate Dean, Faculty of Engineering	Anthony Cruz, PhD Student & Member of SUPR-G
Date of Site Visit	January 14 and 15, 2026	
Date Review Report Received	January 23, 2026	
Date Program/Faculty Response Received	Program Response: March 24, 2026 Faculty Response: April 10, 2026	
Evaluation	Good Quality	
Approval Dates	SUPR-G: June 15, 2026 ACA: September 8, 2026 Senate (for information): September 18, 2026	
Year of Next Review	2033-2034	
Progress Report	June 2029	

Overview of Western's Cyclical Review Assessment Reporting Process

In accordance with Western's Institutional Quality Assurance Process (IQAP), the Final Assessment Report (FAR) provides a summary of the cyclical review, internal responses, and assessment and evaluation of the Graduate Biochemistry Program, delivered by the Schulich School of Medicine & Dentistry.

This FAR considers the following documents:
- the program's self-study brief;
- the external reviewers' report;
- the response from the Program; and
- the response from the Dean, Schulich School of Medicine & Dentistry.

This FAR identifies the strengths of the program and opportunities for program enhancement and improvement, and details the recommendations of the external reviewers – noting those recommendations to be prioritized for implementation.

The Implementation Plan details the recommendations from the FAR that have been selected for implementation, identifies who is responsible for approving and acting on the recommendations, specifies any action or follow-up that is required, and defines the timeline for completion.

The FAR (including Implementation Plan) is sent for approval through the Subcommittee on Program Review - Graduate (SUPR-G) and the Senate Committee on Academic Curriculum and Awards (ACA), then for information to Senate and to the Ontario Universities' Council on Quality Assurance. Subsequently, it is publicly accessible on Western's IQAP website. The FAR is the only document from the cyclical review process that is made public; all other documents are confidential to the Graduate Biochemistry Program, the Schulich School of Medicine & Dentistry, the School of Graduate & Postdoctoral Studies (SGPS), and SUPR-G.

Executive Summary

The Department of Biochemistry at Western University has a distinguished legacy of scientific leadership and graduate training. Established in 1924, the department began its graduate program in 1947 awarding its first Master of Science (MSc) and Doctor of Philosophy (PhD) degrees in 1948 and 1949, respectively. Currently, the MSc and the PhD are offered in the following fields of study: Macromolecular Structure and Dynamics; Genome Dynamics, Epigenetics, and Gene Expression; Signal Transduction and Intracellular Communication; Human Genetics and Clinical Biochemistry; Proteomics; and Bioinformatics. Total enrolment was at 46 students in the MSc program and 52 in the PhD program in 2023-2024.

With a strong emphasis on hands-on research, mentorship, and collaborative scholarship, the program prepares graduates for competitive careers in academia, the biotechnology and pharmaceutical industries, health-related research institutes, and various professional disciplines such as medicine, law, and education. Core objectives of the program include training students to conduct innovative and ethical research, contribute to scholarly and public dialogue, and address complex scientific and societal challenges.

The self-study was informed by a student focus group, an analysis of LinkedIn profiles associated with program alumni, and a dedicated faculty survey. The external reviewers shared a positive assessment of the graduate Biochemistry Program. They offer eight recommendations with considerations for further enhancement.

Strengths and Innovative Features Identified by the Program

- Students train alongside internationally recognized researchers.
    - Biochemistry students benefit from cross-institutional co-supervision opportunities through Western's affiliated research institutes, including the Robarts Research Institute, Lawson Health Research Institute, and the London Regional Cancer Program.
- BioCORE is the department's state-of-the-art research and training facility offering: Individual and group training sessions in mass spectrometry, proteomics, and enzyme kinetics.
- Strong interdisciplinary reach through the Collaborative Specialization in Machine Learning in Health and Biomedical Sciences (launched in 2022).
- The department hosts multiple high-profile speaker events each year including: The Menten Lecture Series, The Harold B. Stewart Memorial Lecture, and The Graduate Research Retreat.
- The Biochemistry Graduate Student Association (BGSA) helps organize career panels, alumni Q&A events, and themed seminar days, often engaging alumni in biotech, science policy, and medical fields.
- Both MSc and PhD students are well published by the time of graduation.
- Strategic faculty renewal had enabled seven new faculty members in high-growth areas (AI-based genome science, metabolomics, computational biology, translational medicine) to join the department.
- Departmental feedback collected through focus groups and surveys consistently reports high satisfaction with advisory committee mentorship, clarity of milestones, and the relevance of skill-building components to career readiness.

Concerns and Areas of Improvement Identified and Discussed by the Program

- Establish more opportunities for experiential or applied learning (such as industry placements, entrepreneurship training, or inter-institutional research collaborations).
- Need for greater exposure to industry, regulatory, and science communication career paths.
- Efforts are underway to implement more systematic alumni career tracking, leveraging LinkedIn, email surveys, and program-maintained contact databases.
    - Alumni mentoring programs to provide students with direct exposure to career pathways and professional networking opportunities.
- The Biochemistry Graduate Student Association (BGSA), in collaboration with program leadership, is expanding its role in organizing professional development events, including alumni speaker panels, non-academic career workshops, and peer mentorship matching.
- Equity, diversity, and inclusion (EDI) principles are being more deliberately integrated into student advising, mentorship training, and committee formation, in alignment with Schulich and Western-wide commitments.

Review Process

As part of the external review, the review committee, comprising two external reviewers, one internal reviewer and a graduate student reviewer, were provided with Volume I and II of the self-study brief in advance of the scheduled review and then met in-person over two days with the:

- Vice-Provost, Graduate & Postdoctoral Studies
- Vice-Provost, Academic Planning, Policy & Faculty
- Director, Office of Academic Quality and Enhancement
- Administrative Coordinator, School of Graduate and Postdoctoral Studies
- Members of the Western Libraries Team
- Associate Dean Graduate & Postdoctoral Studies, Schulich School of Medicine & Dentistry
- Department Chair
- Graduate Chair
- Program Faculty Members
- Graduate Program Staff
- Graduate Students

Following the site visit, the external reviewers submitted a comprehensive report of their findings which was sent to the Program and Dean for review and response. Formative documents, including Volumes I and II of the Self-Study, the External Report, and the Program and Decanal responses form the basis of this FAR. The FAR is collated and

submitted to the SGPS and to SUPR-G by the Internal Reviewer with the support of the Office of Academic Quality and Enhancement.

Summative Assessment – External Reviewers' Report

Strengths of the Program:

- Internationally distinguished faculty with over 75% of the program's 43 contributing faculty ranked in the global top 2% in their discipline.
- World-class BioCORE research facilities that house mass spectrometry, protein crystallography, NMR, and nanopore sequencing instrumentation staffed by four highly qualified specialists.
- Exceptional student research output with 86% of PhD students publishing first-author papers and all PhD students publishing at least one paper and more than 50% of MSc students publishing one or more papers.
- Competitive time-to-completion and low withdrawal rates.
- Establishment of an EDID committee appears to have resulted in meaningful change that is appreciated by students, staff and faculty members.

Prospective Areas of Improvement for the Program to Consider

- Courses appear to be selected according to faculty expertise rather than to cover all aspects of current biochemistry, with notable absences in foundational areas such as cell biology, nucleic acids, basic protein biochemistry, statistics and no coverage of cryo-EM (associated with recommendation #1).
- Barriers to cross-listing and undergraduate course access such as lengthy approval, no credit received and sense that such courses are not encouraged (associated with recommendation #1).
- Focus on non-local student recruitment to foster greater diversity of perspective and experience and augment global reputation – given that many students come from Western (associated with recommendation #4).
- Development of a strategic plan for faculty renewal is required to maintain broad expertise in the offerings of the program and to work toward a better gender balance across core faculty members (associated with recommendation #6).
- Under-resourced administrative and systems support given the size of the Department and the large number of graduate students (associated with recommendation #7).
- Students and faculty noted that research stipends are inadequate for students living independently or supporting families, making the program less attractive to applicants from outside London and to international students (associated with recommendation #8).

Summary of the Reviewers' Recommendations and Program/Faculty Responses

The following are the reviewers' recommendations in the order listed by the external reviewers.

Reviewers' Recommendation	Program/Faculty Response
Recommendation #1: The program should review its course curriculum and course policies, considering what the program leads and faculty think all students should know, what the students have asked for and can be reasonably provided, and ensuring that the curriculum is up-to-date. • Communicate to both faculty and students clear policies on graduate students taking undergraduate courses to fill foundational knowledge gaps. • Clearly state what the prerequisite competencies are required for any given course. • Consider adding cryoEM to Protein Structure Determination courses, given that it was a topic of much discussion at the in-person visit.	**Program: Actions:** The Graduate Committee will undertake a structured curriculum review that is informed by reviewer feedback, student input, supervisor input and current program needs. This review will: 1) identify the foundational knowledge level expected at entry to the MSc and PhD programs; 2) clarify what background knowledge students are expected to acquire independently; 3) define a streamlined approval process for graduate students who need selected senior undergraduate or graduate courses to address foundational gaps; and 4) identify opportunities to refresh existing graduate courses. The program will develop a curated list of approved undergraduate and graduate courses across Biochemistry, Schulich and relevant campus units that may be used to address foundational knowledge gaps. The program will also revise course descriptions/outlines to state prerequisite competencies and expected self-learning more explicitly. The Graduate Committee will explore offering more accessible entry points in selected topic areas, including introductory or beginner-friendly training in bioinformatics and technique-focused offerings that leverage departmental and core-facility expertise where feasible. The Committee will also ask the instructors of the Protein Structure Determination courses to evaluate how cryo-EM content can be incorporated at an appropriate theoretical level within the current curriculum. **Faculty:** Decanal team supports program response.

Recommendation #2: The program should strengthen communication of procedures, policies, expectations, and opportunities to both students and faculty. Better communication using various means (email, through courses, faculty meetings, committee meetings, supervisor: student meetings) and with regularity (e.g. annually) can help resolve ongoing misunderstandings in relation to responsibilities and expectations.	**Program:** The program will strengthen communication by consolidating key procedures, expectations, and timelines into a revised graduate handbook and annual guidance package for students and faculty. This will include expectations regarding committee meetings, qualifying exam preparation, degree progression, student responsibility for scheduling and follow-up, and the role and limits of supervisors, committees, and research cores. The Department will host a Graduate Spring Retreat, with all faculty members and graduate students invited, to review themes arising from the IQAP process and create dedicated time for focused discussion on program development, student experience, communication practices, and strategic priorities moving forward. The Graduate Chair and Graduate Program Administrator/Coordinator will introduce an annual communication cycle that includes orientation messaging to incoming students, an annual reminder to all students and supervisors, and clearer guidance at key milestones. Advisory committee forms will be reviewed and harmonized so that expectations regarding meeting frequency, progress, and committee responsibilities are stated more consistently. The program will implement research-based graduate student progress tracking, milestone documentation, supervisory committee review, and Graduate Chair evaluation, with the goal of having it operational by the start of the Fall 2026 term. BGSA will be invited to bring forward student questions or concerns regularly, including anonymous themes where appropriate. BioCORE-specific expectations for booking, training, user responsibilities, and staff support will be clarified and communicated to students and supervisors. **Faculty:** The decanal team supports the program response. For non-program-based options, we want to highlight that there are many resources available to students at Western. The decanal team recognizes that students now communicate differently and traditional methods such as email and handbooks may not be the best way to reach them. To address this issue, we will produce a short video to introduce students to financial, wellness, and conflict resolution resources and pathways available to them. We will include viewing of this video as a requirement within the existing “Introduction to Biomedical Research” milestone which all students in Schulich research thesis-based programs must complete within the first term of their program.

Recommendation #3: The program should increase its efforts to engage alumni for seminars, networking, and other career-related activities, including organization of career fairs, which may require sponsorship Beyond the existing institutional-level career and professional development workshops that are offered, Departments and Programs seem better suited to provide career-specific advice. Student-led events focused on professional development and career planning may be most effective, with Departmental support.	**Program:** Building on existing career panels and seminar activities, the program will seek to expand alumni participation in the regular seminar series and work with BGSA to organize at least one annual alumni or career event focused on career pathways in academia, industry, biotech, health research, policy and related sectors. The Graduate Chair and Graduate Program Administrator/Coordinator will work with Western and Schulich alumni relations and willing faculty supervisors to update alumni contact lists and identify graduates interested in participating in seminars, panel discussions, networking events, or mentoring opportunities. The program will also explore sponsorship or co-support for a small alumni or professional development event when appropriate. **Faculty:** The decanal team supports the program response. There are many supports for career development at Western, including careers fairs, and the Decanal team in the Schulich School of Medicine and Dentistry is currently engaged in reviewing and expanding opportunities at the University level with the Vice-Provost's office. We also recognize that students need additional career support at the Faculty and Department/Program level focused on the types of careers they are likely to encounter once they leave Western. Graduate Studies and Postdoctoral Affairs at Schulich offers a monthly webinar 'Beyond the Degree', to connect current students with alumni from the Basic Medical Science departments. The webinars are recorded and available through YouTube. The Decanal team is considering additional career opportunities and will consult with programs, students and student organizations at the graduate (and undergraduate) level.

Recommendation #4: The program should strongly consider bolstering recruitment outside of London. There appears to be a tradition of recruiting graduate students locally, often from those who have done undergraduate projects in the same laboratory. Diversity of experience among the incoming students is important to avoid insularity.	**Program:** The program will broaden recruitment beyond London by reviewing current recruitment practices and strengthening external-facing materials. This will include updating the graduate program website and faculty research pages, developing clearer descriptions of program strengths and research opportunities and using existing departmental social media channels more systematically to highlight trainee outcomes, facilities and available projects. The Graduate Chair and Department Chair will also review whether a modest recruitment budget can be re-established for targeted outreach beyond Western, including digital materials, participation in recruitment events and outreach to peer institutions across Ontario and Canada. The program will continue to encourage supervisors to recruit broadly. **Faculty**: The decanal team supports the program response. The Decanal office offers support for recruitment through participation in recruitment events both locally and across Ontario. We assist programs by working collaboratively with Schulich Communications to produce postcards for use at these events and will work with the program to provide updated recruitment material. SGPS also produces short videos showcasing current students for inclusion on the 'Explore our Programs' program-specific pages. There is an opportunity to update the MSc program video to include a current student who was recruited from beyond Western and concurrently develop a communication plan to further support recruitment.
Recommendation #5: The program name should be revisited. There may be benefit to changing/expanding the program name to modernize the program and reflect this diversity of disciplines, which would positively impact recruiting and careers for graduates.	**Program:** The program will discuss this recommendation at the Graduate Committee and Department level. The review will consider whether the current program name continues to serve effectively as an umbrella for the department's research breadth or whether an expanded or modernized name would better reflect current strengths in molecular biology, genomics, computational biology, proteomics and AI-enabled biomedical research. Any proposal to rename the program would require broad consultation with faculty, students, departmental leadership, Schulich and the SGPS, with careful consideration of recruitment value, clarity for applicants and administrative implications. At this stage, the program will evaluate the issue formally rather than presuming a change is required. **Faculty:** Decanal team supports program response.

Recommendation #6: Continue efforts to increase diversity among faculty members. The Department's establishment of an EDID committee appears to have resulted in meaningful change that is appreciated by students, staff and faculty members. Efforts to recruit more women and members of other underrepresented groups should continue to better reflect the diversity of the student body.	**Program:** The program supports this recommendation and will continue to work with the Department and Schulich to prioritize equity-informed faculty renewal. The Graduate Program will ensure that graduate-program needs and the importance of diverse mentorship are communicated during departmental planning and hiring discussions. The program will continue to partner with the Department's EDID Committee and support efforts to attract and retain women and members of other underrepresented groups, while also considering research-area renewal that supports the future directions of the graduate program. **Faculty:** The University and the Schulich School of Medicine & Dentistry have developed policies concerning EDID along with critical resources and training. Western and the Schulich School of Medicine & Dentistry have an Office of Equity, Diversity and Inclusion. The Schulich School of Medicine & Dentistry has appointed an Associate Dean of Equity, Diversity, Inclusion and Decolonization that can provide assistance (https://www.schulich.uwo.ca/edid/) and trained HR staff that can assist with EDID concerns, initiatives and/or hiring. With respect to new hires in the Schulich School of Medicine & Dentistry, there are plans to hire at least 30 additional new faculty by 2030. New faculty hires in the Basic Medical Sciences are prioritized by the Basic Science Chairs based on teaching and research needs of the Schulich School of Medicine and the research priorities of Western with a lens towards EDID. The Chairs along with the Dean's office will determine the best use of resources to ensure renewal and diversity. Schulich has made huge efforts to diversify faculty members in terms of gender and racial background.
Recommendation #7: Increase institutional funding to the Department to support core facilities, increased staffing, student recruitment. Continued University support for the four BioCore staff members will ensure high quality data collection and training. Increasing the	**Program:** The program strongly supports continued institutional investment in BioCORE, graduate-program administration and recruitment infrastructure. The Graduate Chair and Department Chair will continue to communicate to Schulich and Western that core-facility staff, administrative support and stable operating flexibility are essential to graduate training, timely progression and effective recruitment. At the program level, needs related to core-facility training, staffing pressures and recruitment support will be documented and advanced through annual planning, budget and review processes. The program will advocate that BioCORE reserves be treated as essential for equipment maintenance and repair planning, and that additional administrative support be considered where workload pressures risk affecting service quality and program delivery. **Faculty:** Decanal team supports program response.

number of administrative staff would provide much needed support for the Graduate Coordinator and Manager.	
Recommendation #8: Increase the value of the Western Graduate Research Scholarship. Increasing the value of the WGRS would allow higher minimum stipends, putting more money into student's pockets and making Western more competitive for recruiting graduate students.	**Program:** The program will continue to advocate for this through the Department, Schulich and SGPS. Improved institutional scholarship support would not only strengthen student affordability and reduce pressure on supervisor research funds but also improve competitiveness for recruiting outstanding students, especially those coming from outside Western. While the scholarship value is determined institutionally, the program will continue to monitor student funding pressures and communicate their impact on recruitment and student experience in its annual reporting and discussions with Faculty and SGPS leadership. **Faculty:** Student stipend support is an ongoing challenge. The decanal team understands the stipend concerns of students and notes that an increase in base funding for MSc and PhD students was recommended at the Schulich School of Medicine & Dentistry Graduate Affairs Committee Meeting (Nov. 27, 2025). WGRS funding will be reviewed for the upcoming budget cycle. With the latest announcement of an increase in tuition and WGU by the province, a respective increase of WGRS is anticipated.

Implementation Plan

The Implementation Plan provides a summary of the recommendations that require action and/or follow-up. In each case, the Graduate Program Chair, in consultation with the SGPS and the Dean of the Faculty are responsible for enacting and monitoring the actions noted in Implementation Plan.

Recommendation	Proposed Action and Follow-up	Responsibility	Timeline
Recommendation #1: The program should review its course curriculum and course policies, considering what the program leads and faculty think all students should know, what the students have asked for and can be reasonably provided, and ensuring that the curriculum is up-to-date.	• Undertake a structured curriculum review that is informed by reviewer feedback, student input, supervisor input and current program needs. • Develop a curated list of approved undergraduate and graduate courses across Biochemistry, Schulich and relevant campus units. • Revise course descriptions/outlines to state prerequisite competencies and expected self-learning more explicitly. • Explore offering more accessible entry points in selected topic areas, including introductory or beginner-friendly training in bioinformatics and technique-focused offerings that leverage departmental and core-facility expertise where feasible. • Evaluate how cryo-EM content can be incorporated at an appropriate theoretical level within the current curriculum or future course revisions.	Graduate Chair; Graduate Committee; course instructors; Graduate Program Administrator/ Coordinator; BioCORE Facility Manager	By December 2026
Recommendation #2: The program should strengthen communication of procedures, policies, expectations, and opportunities to both students and faculty.	• Strengthen communication by consolidating key procedures, expectations, and timelines into a revised graduate handbook and annual guidance package for students and faculty. • Host a Graduate Spring Retreat with all faculty members and graduate students invited, to review themes arising from the IQAP process and create dedicated time for focused discussion on program development, student experience, communication practices, and strategic priorities. • Introduce an annual communication cycle that includes orientation messaging to incoming students, an annual reminder to all students and supervisors, and clearer guidance at key milestones.	Graduate Chair; Graduate Program Administrator/ Coordinator; Graduate Committee; BGSA representatives; BioCORE Facility Manager;	By September 2027

	• Implement for research-based graduate student progress tracking, milestone documentation, supervisory committee review, and Graduate Chair evaluation. • Work with BGSA and BioCORE leadership to improve two-way communication. • Produce a short video to introduce students to financial, wellness, and conflict resolution resources and pathways available to them. We will include viewing of this video as a requirement within the existing "Introduction to Biomedical Research" milestone.	supervisors and advisory committees	
Recommendation #3: The program should increase its efforts to engage alumni for seminars, networking, and other career-related activities, including organization of career fairs, which may require sponsorship	• Expand alumni participation in the regular seminar series and work with BGSA to organize at least one annual alumni or career event focused on career pathways. • Work with Western and Schulich alumni relations and willing faculty supervisors to update alumni contact lists and identify graduates interested in participating in seminars, panel discussions, networking events, or mentoring opportunities. • Explore sponsorship or co-support for a small alumni or professional development event when appropriate.	Graduate Chair; Graduate Program Administrator/ Coordinator; BGSA; seminar organizers; Department Chair	By September 2027
Recommendation 4: The program should strongly consider bolstering recruitment outside of London.	• Broaden recruitment beyond London by reviewing current recruitment practices and strengthening external-facing materials. E.g., update the graduate program website and faculty research pages, developing clearer descriptions of program strengths and research opportunities. • Investigate whether a modest recruitment budget can be re-established for targeted outreach beyond Western, including digital materials, participation in recruitment events and outreach to peer institutions.	Graduate Chair; Department Chair; Graduate Program Administrator/ Coordinator	By December 2026

Recommendation 5: The program name should be revisited.	• Consider whether the current program name continues to serve effectively as an umbrella for the department's research breadth or whether an expanded or modernized name would better reflect strengths in molecular biology, genomics, computational biology, proteomics and AI-enabled biomedical research.	Graduate Chair; Graduate Committee; Department Chair	By July 2027
Recommendation 6: Continue efforts to increase diversity among faculty members.	• Prioritize equity-informed faculty renewal. Ensure that graduate-program needs and the importance of diverse mentorship are communicated during departmental planning and hiring discussions. • Support efforts to attract and retain women and members of other underrepresented groups, while also considering research-area renewal that supports the future directions of the graduate program.	Department Chair; Faculty hiring committees; EDID Committee; Graduate Chair	Ongoing with check in as part of the June 2029 progress report.
Recommendation 7: Increase institutional funding to the Department to support core facilities, increased staffing, student recruitment.	• Needs related to core-facility training, staffing pressures and recruitment support will be documented and advanced through annual planning, budget and review processes. • Advocate that BioCORE must be treated as essential for equipment maintenance and repair planning.	Department Chair; Graduate Chair; BioCORE Facility Manager;	Ongoing with check in as part of the June 2029 progress report.
Recommendation 8: Increase the value of the Western Graduate Research Scholarship.	• Monitor student funding pressures and communicate their impact on recruitment and student experience in its annual reporting and discussions with Faculty and SGPS leadership. • Review WGRS funding at the upcoming budget cycle.	SGPS leadership for scholarship policy and funding; Department Chair	Ongoing with check in as part of the June 2029 progress report.