



Biochemistry Final Assessment Report

Faculty / Affiliated University College	Schulich School of Medicine & Dentistry
Degrees Offered	Bachelor of Medical Science
Modules Reviewed	Honours Specialization (HSP) in Biochemistry HSP in Biochemistry and Cancer Biology HSP in Biochemistry and Cell Biology HSP in Biochemistry and Pathology of Human Disease (with Pathology & Laboratory Medicine) HSP in Biochemistry of Infection and Immunity (with Microbiology and Immunology) HSP in Chemical Biology (with Chemistry) HSP in Computational Biochemistry HSP in Medical Biophysics and Biochemistry (with Medical Biophysics, which is the home Department) Specialization in Biochemistry Major in Biochemistry
External Consultants	Dr. David Rose, Professor, Department of Biology, University of Waterloo; Dr. Christopher Boddy, Director, Biochemistry Program, Department of Chemistry and Biomolecular Sciences, University of Ottawa
Internal Reviewers	Dr. Michael Bartlett, Professor and Associate Dean (Undergraduate Studies), Faculty of Engineering, Western University
Date of Site Visit	March 7, 2018
Evaluation	Good Quality with Report in Three Years
Approval Dates	SUPR-U: June 6, 2018 SCAPA: September 12, 2018 Senate: September 21, 2018

Executive Summary

The online site visit began at 8:30 am on 7th March with Dr. John Doerksen, Vice-Provost (Academic Programs), who described how the competitive admissions process yields high-quality undergraduate students in Western's Medical Science program. He noted that students in the Medical Sciences program spend the first two years in Science and then, if admitted to the Medical Sciences program, spend the final two years at the Schulich School of Medicine & Dentistry (SSMD). It was noted that a large number of retirements are coming, and with anticipated budget constraints, the number of students per faculty member (currently 21-22 at Western, which is less than the Ontario average of 26) might have to grow slightly.

Assistant Dean, Basic Medical Sciences Undergraduate Education, Dr. Candice Gibson subsequently also identified faculty renewal as the biggest challenge faced by Biochemistry. This potentially will limit enrollment in the fourth year research courses, which she identified as a strength of the undergraduate program. She expressed a slight concern about low enrollment in some of the Honors Specialization modules, and described planning for a new addition to the Medical Sciences Building anticipated in the next 5-10 years.

Members of the Undergraduate Curriculum Committee described how most courses in Biochemistry are team-taught: Course Coordinators are assigned to ensure that the course content taught by different individuals is complementary, to manage grade submissions, and to respond to academic appeals. We subsequently met with seven Coordinators for second, third, and fourth year courses, who confirmed the details of their roles as course coordinators.

We had lunch with seven undergraduate students who displayed intelligence and enthusiasm that markedly impressed the External Consultants. The External Consultants found Western's modular system complex but the students clearly indicated their comfort with the system. A number of the students are completing Accelerated Masters degrees with SSMD. They clearly indicated their strong satisfaction with their programs, agreeing that their Biochemistry Professors "tend to go above and beyond".

Various other meetings provided the Reviewers with relevant information described in the External Consultants' Report, which is summarized in the following sections of this assessment report. The Teaching and Learning Librarian expressed pride in the library collections available for Biochemistry students and the service provided by library staff. A group of Teaching Assistants described their general positive experiences but noted that T.A. workloads are inconsistent between courses and that T.A. duties in team-taught courses could be better coordinated. The Acting Chair, who is envisaged to continue in this role to July 2019, described the need for "a contingency plan moving forward with retirements."

The External Consultants made a total of 16 recommendations. The Department's response, co-authored by the Chair of the Undergraduate Studies Committee, and the Vice-Dean, Basic Medical Sciences, addresses all of them appropriately. In particular, they note that "developing and maintaining a strong, diverse faculty component... .. is the most pressing issue for our Department." They "are looking forward to the arrival of a new Chair, with whom we can renew and further develop the vision for our Department's future."

Significant Strengths of the Program

Specific strengths of the program identified by the External Consultants are as follows:

- The Biochemistry program "displays particular strength in experiential learning through 3rd and 4th year research project" with a "high emphasis on laboratory research experience in faculty research labs".
- The program "has done a thorough job of aligning teaching and evaluation to Western Degree Outcomes".
- The program "is nicely positioned to address current and emerging areas in Biochemistry". "Joint programs with other units (Chemistry, Biology, Physics, etc.) are particular strengths to exploit multidisciplinary expertise and minimize duplication."
- "The faculty members that met with the Consultants, the Program Committee and Course Coordinators, were enthusiastic, dedicated and proud of their program".
- The students that met with the Consultants "were of extremely high quality. We were impressed with their enthusiasm for the program and with their eloquence and intelligence."
- The Consultants were "impressed with the dedication and enthusiasm" of the Teaching Assistants they met.
- The program "has done a thorough analysis of its assessment approaches and implemented measures to increase the opportunities for written evaluations, essays and presentations where possible."
- The involvement of Western Libraries staff who have "been involved intimately in a course instructing students in reference searching and management... .. was a clear strength."

Suggestions for Improvement & Enhancement

The External Consultants have identified the following specific opportunities that, if implemented, would improve this program:

1. Enhance the sense of community among undergraduates, specifically by:
 - a. providing “networking opportunities between senior students and the Department, perhaps through the Biochemistry Club, as students are accepted into their program”;
 - b. providing “more depth in second year to the nature and coverage of the various HSP options, inviting contributions from the Biochemistry Club and senior students in the various HSPs”; and,
 - c. increasing “cohort-building opportunities, especially within the HSPs, by collaboration between the Department and the Biochemistry Club”.

The Department’s response indicates that they have asked members of the incoming Executive of the Western Biochemistry Club for suggestions in these areas and a program where upper-year students mentor their younger peers is being considered.

2. Enhance the curriculum by:
 - a. continuing to “review the various options (especially HSPs) with a view to combining or terminating some, especially where the uptake is low.”;
 - b. paying “more attention to smoothing the transition in team-taught courses.”; and,
 - c. “continuing the internal funding for experiential learning opportunities” for students.

The Department “will consider withdrawing some of our less popular HSP options”. “Issues surrounding consistency of instruction and assessment will be discussed with Course Coordinators” to “encourage instructors in the same course to come to agreement about the operation of that course”. The Department “agrees wholeheartedly” with the recommendation to continue the internal funding of experiential learning opportunities and notes the issue “could be raised by the new incoming Chair of the Department with the Dean.”

3. Enhance the coordination of Teaching Assistants, specifically by:
 - a. “assigning T.A.s for highly technical courses to thesis-based students”; and,
 - b. developing “a two-way communication mechanism between T.A.s and instructors on expectations of workload for each T.A. assignment.

The Department’s response is that the T.A. assignment issue is challenging to resolve but “the Graduate Studies Committee can discuss options and incentives to ensure Ph.D. students fill positions in the 3380G laboratory course.” Also, “starting in Fall 2018, we will mandate for each course a meeting between all instructors and T.A.s to review the T.A. contract” and so resolve the communication issues.

4. Enhance diversity by, in faculty recruitment, making efforts to “attract top female candidates with the intent of increasing the female: male ratio”.

The Department “definitely agrees”, responding that “formation of a Department task force to address gender equity issues is in progress.”

Recommendations Required for Program Sustainability

Recommendation	Responsibility
Engage the Department fully in faculty renewal planning, with a specific view towards maintaining the viability of the program	Chair
Allocate a dedicated budget for laboratory equipment maintenance and renewal	Dean, Assistant Dean BMSUE