



Microbiology and Immunology Final Assessment Report

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| Faculty / Affiliated University College | Schulich School of Medicine & Dentistry – Microbiology and Immunology |
| Degrees Offered | BSc |
| Modules Reviewed | HSP in Microbiology and Immunology (Microimm); HSP in Microimm and Pathology, SPZ in Microimm, Major in Microimm |
| External Consultants | Dr. Karen Mossman, Associate Vice President, Research and Professor, Pathology and Molecular Medicine, McMaster University Dr. Rene Harrison, Professor, Department of Biological Sciences, University of Toronto, Scarborough |
| Internal Reviewers | Dr. Susan Knabe, Associate Dean, Undergraduate, Faculty of Information and Media Studies |
| Date of Site Visit | March 28, 2018 |
| Evaluation | Good Quality with Report in Two Years |
| Approval Dates | SUPR-U: June 6, 2018 SCAPA: Senate: |

Executive Summary

The site visit took place on March 28, 2018 and consisted of a series of meetings in the department with administrative members of the University, Faculty, and Department, faculty members from Microbiology and Immunology, including members of the Undergraduate Education Committee, undergraduate students, graduate TAs, staff members who service the undergraduate program, and members of Western Libraries who support the department of Microbiology and Immunology. The reviewers also visited several teaching labs, as well as the state of the art laboratory currently under construction in the building.

The reviewers were enthusiastic about the strengths of the undergraduate program, identifying the numerous and thoughtful ways that suggestions from the previous curriculum review (2010) had informed the substantial curriculum revisioning undertaken by the department over the past seven years. The undergraduate chair was singled out by faculty, students, and the reviewers as having spearheaded this extensive and intensive process of pedagogical renewal, initiating innovative forms of assessment that reflect real world applications, while fostering a community of highly engaged and motivated teachers and learners. The sharp increase in the growth of enrolments in module numbers is due, at least in part, to the care and attention that has been shown to the undergraduate curriculum. As a result of this process, the program is in the enviable position of having very few substantive changes necessary for improvement in terms of curriculum development. Students and faculty express a high degree of satisfaction with the program, with the reviewers concluding that the program delivers on or exceeds the institutions degree level outcomes, especially in the areas of experiential and lifelong learning, as well as transferable skills, including different modes of communication, and the awareness of limitations of knowledge. They note that “it was clear that excellent training beyond rote knowledge was coming out of these programs” and that these modules “excel at experiential learning.

At the same time, however, the reviewers expressed considerable concern for the sustainability of the program, baldly concluding that “this is an excellent program that is currently running on fumes” and warning that in the face of the dual threat of a decreasing faculty complement and increasing student body “the program will fail to maintain its excellence and will be unable to meet the expectations of the students and the University.” In particular, the reviewers singled out the hire of an additional educator, and identified additional lab staff support for the laboratory technician who has primary, if not sole responsibility for coordinating and managing the teaching laboratories to deal, noting the vulnerability of a teaching program whose labs are dependent on a single staff member to run effectively.

The program's response to many of the suggestions/recommendations has been rapid and exemplary; several of the items identified below have been taken in hand in the two months that have elapsed between the review and report.

Significant Strengths of the Program

1. Undergraduate curriculum foregrounds innovative assessments which move away from MCQ dependant exams. These innovations include the fourth year research project and seminar course, required writing across the curriculum for diverse audiences, and a third year elective video assignment, all of which enable students to develop and reflect on real world applications of their knowledge. The program offers students multiple opportunities to build on both discipline specific knowledge and transferable skills in a systematic, progressive way.
2. Highly engaged and motivated faculty members, including clinical faculty, who supervise HSP student projects in their research labs.
3. Teaching assignments designed to harness faculty expertise in order to maximize student exposure to experts in designated topics. Innovative and effective use of clinical faculty members enhance student learning, especially in Y4 Immunology course. At the same time, faculty members who teach in the required courses, , come together to ensure coverage and progression, and avoid redundancies and overlaps.
4. Strong student interest in the program (178 students involved in modules at the time of the IQAP brief) and excellent levels of student engagement with the program.
5. Numerous opportunities for students to engage in experiential learning through laboratory courses, fourth year research projects, internships, and instructor led research initiatives in Uganda.
6. Class sizes allow face to face delivery of lecture and lab content. Where technology has been introduced, in one third year lab course, there has been consider effort to do this in a thoughtful way, ensuring that the delivery method enhances learning.
7. The Undergraduate Chair's commitment to undergraduate curriculum development and the undergraduate microimm program: “the role that the Undergraduate Chair has played in the success of this program cannot be underscored, and was the single most unified theme that emerged from the review.”

Suggestions for Improvement & Enhancement

1. Add an additional non-tenure track faculty educator. Alternately, redistribute existing teaching resources to help ensure the Undergraduate Chair's workload remains manageable going forward.
2. Recognize and plan to address departmental dependence on key staff members, such as the Laboratory Technician and the Teaching and Research Coordinator, whose knowledge and expertise is vital to the ongoing delivery of quality undergraduate programing. This includes the need for immediate cross-training to provide coverage and continuity, and succession planning as at least one of these individuals is approaching retirement.
3. Recognize and plan to address the attrition of teaching faculty as a result of the loss of at least three senior faculty members to retirement. This includes recognizing the lack of faculty expertise in the area of industrial and/or food microbiology, bacteriology, and in fungal pathogenesis and parasitology, as well as the relatively heavy concentration of new faculty in the area of virology. The reviewers strongly recommend additional tenure track or senior hires be made to bolster the program.

4. Consider two further issues related to faculty attrition: the first is that the retirement of a whole cohort of senior faculty means that junior faculty members are starting their teaching careers without as robust a number of mentors and teaching role models; the second is that the decrease in research oriented faculty members reduces the opportunities for students seeking to complete the required fourth year research project and seminar course.
5. Explore how best to remedy poor participation in online Student Questionnaires on Courses and Teaching (SQCT) and, failing that, develop alternative means of capturing similar information in order to offer instructors opportunities to continually improve their teaching.
6. Remove the Specialization in Microimm as this module is undersubscribed (only 1 student enrolled at the time of the IQAP brief).
7. Consider moving Microimm 3500 to a required course for Microimm modules.
8. Identify and pursue opportunities, including the proposed Bioinformatics course to be offered jointly with Pathology, to bolster students' knowledge of biostatistics.
9. Ensure succession planning for fourth year Immunology course as the current instructor's retirement is imminent.

Recommendations Required for Program Sustainability

| Recommendation | Responsibility |
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| Provide immediate relief and support to reduce the workload of the current faculty Educator and Undergraduate Chair through the hiring of an additional faculty educator and/or redistribution of teaching workload | Chair, Undergrad Chair, Undergrad Education Committee, Vice Dean, Dean Chair, Appointments Committee, Vice Dean, Dean |
| Provide ongoing support for extant teaching laboratory personnel 1. identify opportunities for cross-training to ensure coverage in the event of illness or absence 2. hire or redeploy lab support staff to deal with program reliance on single staff members | Undergraduate Chair, Chair, Assistant Dean, Vice Dean Undergraduate Chair, Chair Undergraduate Chair, Chair, Vice Dean, Dean |
| Increase tenure track faculty complement with particular attention to the areas identified (senior immunologist, clinical bacteriologist) | Chair, Vice Dean, Dean |
| Address ongoing curriculum concerns (see 6-9 above) | Undergrad Chair, Undergrad Education Committee |