Queen's University
Executive Summary of the Review of the Undergraduate Programs in Life Sciences and Biochemistry

In accordance with Queen's University Quality Assurance Processes (QUQAP), the life sciences and biochemistry undergraduate programs submitted a self-study in January 2014 to the Faculty of Health Sciences, the Faculty of Arts and Science and the Office of the Provost and Vice-Principal (Academic) to initiate the cyclical program review of the undergraduate programs in life sciences and biochemistry. The approved self-study presented program descriptions, learning outcomes, library report and analyses of data provided by the Office of Institutional Planning. Appendices to the self-study contained CVs for each full-time member in the departments which teach in the life sciences and biochemistry programs.

Five arm's-length reviewers (Dr. John Baenziger, Professor and Graduate Program Director, University of Ottawa; Dr. William Baldridge, Professor and Head, Dalhousie University; Dr. Ross MacGillivray, Professor, University of British Columbia; Dr. Karen Mearow, Professor and Associate Dean, Memorial University of Newfoundland; and, Dr. Tom Hollenstein, Department of Psychology, Queen's University) examined the materials and conducted a site visit on March 11 & 12, 2014. The site-visit included interviews with the Deputy Provost, Dean and Associate Deans of Arts and Science, Executive Vice-Dean and Associate Dean Faculty of Health Sciences and meetings with undergraduate students, librarians, cognate heads, staff and faculty.

In their report (April 11, 2014), the review team provided feedback that describes how the life sciences and biochemistry programs meet the QUQAP evaluation criteria and are consistent with the university's mission and academic priorities. The review team noted that overall they were very impressed with both the academic quality of students and faculty/staff and the content of the delivered materials. They went on to say that both the life sciences and biochemistry undergraduate plans are excellent programs that aim to provide in-depth training for students in their respective fields. This training allows graduates of the programs to pursue a variety of careers in research or to attend professional schools.

The review team did report on a number of challenges including the need for: curriculum changes including modes of delivery; increased involvement of students in future curriculum issues; improved academic advising to ensure students make well-informed choices; a succession plan for faculty; a strategic plan; and, increased availability of experiential learning opportunities.

Based on all of the above documentation, a *Final Assessment Report* and an *Implementation Plan* were prepared by the Vice-Provost (Teaching and Learning) and approved by the Provost (October 8, 2014).

The undergraduate degree plans in life sciences and biochemistry have been approved to continue and are scheduled for their next review in eight years (2021-2022)

Prepared by the Vice-Provost (Teaching and Learning)
October 3, 2014

Final Assessment Report & Implementation Plan for the Cyclical Program Review of the Undergraduate Degree Plans in Life Sciences and Biochemistry

In accordance with Queen's University Quality Assurance Processes (QUQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the undergraduate programs in life sciences and biochemistry. This report identifies the significant strengths of the programs, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report includes an implementation plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations; who will be responsible for acting on those recommendations; and, timelines for acting on and monitoring the implementation of those recommendations.

Summary of the Cyclical Program Review of the Undergraduate Programs in Life Sciences and Biochemistry

The life sciences and biochemistry programs submitted a self-study to the Faculty of Arts and Sciences, the Faculty of Health Sciences, and the Office of the Provost and Vice-Principal (Academic) in January, 2014. The self-study presented the program descriptions and learning outcomes, an analytical assessment of the academic programs, and program data including the data collected by the Office of Institutional Research and Planning. Appended to the self-study were a number of documents including CVs for faculty involved in the delivery of the two undergraduate programs and the library report.

Four arm's-length reviewers (Dr. John Baenziger, Professor and Graduate Program Director, University of Ottawa; Dr. William Baldridge, Professor and Head, Dalhousie University; Dr. Ross MacGillivray, Professor, University of British Columbia; and, Dr. Karen Mearow, Professor and Associate Dean, Memorial University of Newfoundland) and one arm's-length internal reviewer (Dr. Tom Hollenstein, Department of Psychology, Queen's University) were selected by the Vice-Provost (Teaching and Learning) in consultation with the Deans of Arts and Science and Health Sciences from nominations submitted by the Associate Dean, Life Sciences and Biochemistry. The review team evaluated the self-study documentation and then conducted a site visit at Queen's on March 11 & 12, 2014. The site-visit included interviews with the deputy provost, dean and associate deans of arts and science, executive vice-dean and associate dean faculty of health sciences, and meetings with undergraduate students, librarians, cognate heads, staff and faculty.

In their report (April 11, 2014), the review team provided feedback that describes how the life sciences and biochemistry programs meet the QUQAP evaluation criteria and are consistent with the university's mission and academic priorities. The review team noted that overall they were very impressed with both the academic quality of students and faculty/staff and the

content of the delivered materials. They went on to say that both the life sciences and biochemistry undergraduate plans are excellent programs that aim to provide in-depth training for students in their respective fields. This training allows graduates of the programs to pursue a variety of careers in research or to attend professional schools.

The review team did report on a number of challenges including the need for: curriculum changes including modes of delivery; increased involvement of students in future curriculum issues; improved academic advising to ensure students make well-informed choices; a succession plan for faculty; a strategic plan; and, increased availability of experiential learning opportunities.

On behalf of the Deans of Arts and Science and Health Sciences, the Associate Dean Life Sciences and Biochemistry submitted a response to the Office of the Provost to the review team report (May 12, 2014). Specific recommendations were discussed, and clarifications and corrections presented.

Subsequent to receipt of the review team report and the internal response from the Associate Dean Life Sciences and Biochemistry, the Senate Cyclical Program Review Committee (SCPRC) dedicated its meeting of June 4, 2014 to this particular discussion.

The SCPRC would like to recognize the following strengths:

- High caliber students, many of whom graduate from their program with "Distinction";
- Innovative programs that are a unique blend of educational excellence and outstanding scientific research in the interdisciplinary field of biomedical sciences and in the field of biochemistry;
- Excellent quality of faculty and staff.

The SCPRC would like to identify the following opportunities for enhancement. The undergraduate degree plans in life sciences and biochemistry are encouraged to continue to:

- Explore alternative revenue streams by developing new programs and pursuing advancement opportunities;
- Track graduating students to help determine the exit competencies required for post-graduate employment;
- Investigate the feasibility of expanding enrolment.

Summary of the Reviewer's Recommendations with the Associate Dean's Responses

Program Delivery and Sustainability:

The review team noted that research projects were recognized as a major strength of the SSP programs, with the aims of enhancing critical thinking and providing students with hands-on research experience. The review team recommended that this aspect of the program needed to be protected if the programs were to continue to flourish. They suggested that if possible, the programs might consider allowing MAJ students, who show aptitude and interest, to undertake research projects.

The Associate Dean Life Sciences and Biochemistry responded that the 4th year research project is the capstone course for LISC and BCHM SSP students, and its preservation will be key to maintaining the excellence of these two undergraduate degree plans. He went on to say that the faculty of health sciences fully intended to maintain this experience for SSP students and that it agreed that access to the research project course would ideally be offered to students in the MAJ degree plans. However, the extent to which this would be feasible would be dependent on the availability of sufficient infrastructure and faculty resources. During the curriculum reform process, the faculty will consider ways by which new resources could be brought to bear on this issue as well as novel approaches to providing a less resource-intense capstone research experience for MAJ students.

The review team recommended that alternative sources of revenue should be considered that would allow enrichment of the LISC and BCHM programs independent of the university's budget allocation.

The Associate Dean of Life Sciences and Biochemistry responded that the faculty of health sciences agreed that the current fiscal challenges make it essential that alternate revenue streams be developed. The response went on to say that the dean of the health sciences is currently deeply engaged in driving revenue growth through the development of new programming across the faculty and aggressively pursuing advancement opportunities. This strategic initiative will be in place for the long term.

The review team recommended that succession planning must be addressed for replacement of retiring faculty particularly those with high teaching loads in the BCHM program.

The Associate Dean of Life Sciences and Biochemistry responded that the faculty of health sciences recognizes that new faculty recruitment is central to sustaining the high standard of education and research in LISC and BCHM, while at the same time maintaining an equitable distribution of teaching workload among the faculty. The faculty of health sciences will take all reasonable steps to ensure that faculty resources are maintained at a level sufficient to sustain excellence in both the LISC and BCHM degree plans. Furthermore, during the curriculum reform process the dean of health sciences' office will directly engage the teaching faculty to both ensure their full understanding of this commitment and to maintain transparency regarding the funding model through which the LISC and BCHM degree plans are supported.

Implementation Plan:

Recommendation	Proposed Follow-up	Responsibility for Leading Follow-up	Timeline for Addressing Recommendation
1. A complete curriculum review of both the LISC (Life Sciences) and BCH (Biochemistry) programs should be undertaken in consultation with the Centre for Teaching and Learning. The aim of the review should be to determine the optimal number of core courses in both the LISC and BCH programs and to ensure that degree requirements are linked closely with learning outcome expectations. The review should also focus on implementing new strategies in educational delivery of core courses, especially in light of planned expansion of LISC enrollment. Creation of a comprehensive and cohesive curriculum plan must be grounded in best practices in teaching and learning.	A curriculum mapping of all courses to DLEs, LOs and other indicators of achievement	Associate Dean Life Sciences and Biochemistry	Dean of Health Sciences' *Annual Report* to the Provost 2015
2. To increase the number of students self-identifying as visible minorities or Aboriginal, the Faculty of Health Sciences should explore the feasibility of creating alternative pathways to the LISC and BCH programs for designated groups.	Consult with Four Directions Aboriginal Centre, the Faculty of Engineering and Applied Science (Aboriginal Access to Engineering), the University Registrar and other Canadian universities to identify best	Associate Dean Life Sciences and Biochemistry	Dean of Health Sciences' *Annual Report* to the Provost 2015

	practices		
3. To increase student engagement and satisfaction, the LISC and BCH programs are encouraged to explore alternatives to traditional lecture-based courses, including active and collaborative learning opportunities, experiential learning and blended or online learning.	The Associate Dean Life Sciences and Biochemistry should engage with the Vice-Dean Education and the Centre for Teaching and Learning	Associate Dean Life Sciences and Biochemistry	Dean of Health Sciences' *Annual Report* to the Provost 2015

The Dean of Health Sciences in consultation with the Associate Dean Life Sciences and Biochemistry shall be responsible for monitoring the Implementation Plan. The details of progress made will be presented in the Dean's Annual Reports and filed in the Office of the Provost and Vice-Principal (Academic). Monitoring reports will be posted on the University web site.

Final Assessment Report & Implementation Plan

29-10-14
Approval Date

Vice-Provost (Teaching and Learning)

Signature

Dean, Faculty of Arts and Science

Signature

Executive Vice- **Dean, Faculty of Health Sciences**

Signature

Final status of undergraduate programs in Life Science and Biochemistry — **Approved to Continue**

Date of next program review — **2021/2022 Academic year**