

## FINAL ASSESSMENT REPORT

### Institutional Quality Assurance Program (IQAP) Review

#### Biology Graduate Programs

**Date of Review: March 1 and 2, 2018**

*In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the graduate programs delivered by Biology. This report identifies the significant strengths of the program, 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 and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.*

#### **Executive Summary of the Review**

In accordance with the Institutional Quality Assurance Process (IQAP), the Biology program submitted a self-study in January 2018 to the Vice-Provost and Dean of Graduate Studies to initiate the cyclical program review of its graduate programs. The approved self-study presented program descriptions, learning outcomes, and analyses of data provided by the Office of Institutional Research and Analysis. Appendices to the self-study contained all course outlines associated with the program and the CVs for each full-time member in the department.

Two arm's length external reviewers and one internal reviewer were endorsed by the Dean, Faculty of Science, and selected by the Vice-Provost and Dean of Graduate Studies. The review team reviewed the self-study documentation and then conducted a site visit to McMaster University on March 1<sup>st</sup> and 2<sup>nd</sup>, 2018. The visit included interviews with the Provost and Vice-President (Academic); Vice-Provost and Dean of Graduate Studies, Associate Dean, Grad Studies and Research, Chair of the department and meetings with groups of current students, faculty and support staff.

The Chair of the department and the Dean of the Faculty of Science submitted responses to the Reviewers' Report (April 2018 and June 2018 respectively). Specific recommendations were discussed and clarifications and corrections were presented. Follow-up actions and timelines were included.

## Strengths

- Quality of faculty: Faculty are productive, research-active, dedicated and supportive of graduate student research.
- Quality of students: Graduate students are energetic, demonstrating remarkable initiative regarding community engagement and opportunities for internships. Students are productive with impressive publication and time-to-completion rates.
- Commitment to community engagement: We understand that student and faculty engagement with the community outside the university is very strong. Notably, there is a high level of positive and creative interaction of Biology faculty and graduate students with local schools.
- Dedicated staff: Administrative and academic staff are dedicated to the success of the Department and appear to go over and above their responsibilities to ensure the health of the graduate program.

## Areas for Enhancement or Improvement

- Resources (infrastructure, faculty and staff): The need for upgrades and renovation to the physical infrastructure supporting this program was a dominant concern for our review. The current building deleteriously affects research productivity and animal care. Infrastructure renewal should incorporate effective communal space to improve community and cohesiveness. Strategic Faculty and Staff renewal should also be a major goal of the Department.
- Strategic plan: Graduate Program enhancement would be greatly facilitated with a strategic plan setting out clear vision and goals. Such a plan could invigorate and integrate the program and improve the structure of graduate curriculum.
- Communication: In our meetings with all stakeholders, we became aware that the flow of information from Deans to Chair to faculty to students was problematic. There appears to be structural communication gaps both within the Department and between the Department and the Administration. These gaps likely negatively affect faculty engagement at a Departmental level impacting cohesiveness in the Program. Students indicated communication issues regarding graduate course offerings and Teaching Assistant Assignments. It will be important to bridge these different communication gaps to pull the Department together and to move forward with strategic and forward-thinking goals.
- Cohesiveness: A consistent theme during our site visit was a perceived lack of cohesiveness in the Graduate Program and among research groups. We observed that faculty engagement in graduate program initiatives was inconsistent and graduate students commented on a general lack of integration and cross-talk amongst research groups. We are confident that with thoughtful strategic planning, improved communication and resource renewal, the program will be invigorated with a better sense of community.

## Summary of the Reviewers' Recommendations with the Department's and Dean's Responses

Recommendation	Proposed Follow-Up	Responsibility for Leading Follow-Up	Timeline for Addressing Recommendation
----------------	--------------------	--------------------------------------	----------------------------------------

<p><i>1. Consider whether direct entry from BSc should be more readily used for exceptional students, including those with outstanding GPAs and undergraduate research experience</i></p>	<p>a) We will modify our 'Guide to Graduate Studies' and highlight the direct entry option to prospective students. a) This will be communicated directly to <u>outstanding</u> applicants and their proposed supervisors.</p> <p>We note that have taken this route in the past to recruit and retain excellent students. For example, we have just provided this option to an exceptional applicant for the September 2018 entry.</p>	<p>a) The revision of the Guide is the responsibility of the Biology Graduate Studies Committee (BGSC) and the Administrative Assistant  b) The Chair of the BGSC will consult with the proposed supervisor(s) and will inform and advise the applicants on this option.</p>	<p>a) Revision of the Guide will be discussed at the next BGSC meeting. Changes to practices and policies in the graduate program will be submitted for discussion with the faculty in the near future.  b) This will be implemented by the BGSC Chair as soon as the new practice has been presented and discussed with the BGSC and Biology faculty.</p>
<p><i>2. The Department may wish to reconsider its approach to international applicants who already hold Masters-level degrees and critically evaluate whether they first need to enroll in the MSc program.</i></p>	<p>We note that we have directly admitted international MSc graduates into our PhD program before on a case-by-case basis. The BGSC will further examine various options and identify applicants holding a MSc degree who may fulfill the criteria for enrollment to the PhD program.</p> <p>Prior training in a research-intensive MSc program will be considered as a pre-requisite.</p>	<p>Since the BGSC act as the Admission Committee in Biology, it will lead the discussion, determine the guidelines/criteria and oversee the admission to the PhD program of candidates already holding an international MSc degree.</p>	<p>This will be discussed in the near future by the BGSC.</p>
<p><i>3. The Department engage in curricular planning and mapping for graduate courses.</i></p>	<p>Curricular planning of graduate courses is already a feature of our "Core Graduate</p>	<p>Members of the BGSC will lead the review for their respective area of specialization and</p>	<p>The review process will be initiated in May/early June and</p>

<p><i>This will include establishing clear and forward-thinking goals and learning outcomes. Courses should be decided upon and advertised on a 2-year cycle, allowing students and faculty instructors to properly plan.</i></p>	<p><i>Courses". In particular, it involves meetings of faculty belonging to the same area of specialization, determination of the content of the core courses for each area and approval of an adequate schedule.</i></p> <p><i>As new courses have also been introduced, we will return to a more rigorous planning of our graduate courses and re-visit the content of our core graduate courses, the faculty designated to teach these courses and their schedule.</i></p>	<p>provide the list of core courses, instructors and schedule for the next two (or more) years.</p>	<p>discussed at the June departmental meeting.</p>
<p><i>We recommend that a Scientific Communication course (e.g. Biology 712) be offered every year and be mandatory for all incoming graduate students (MSc and PhD). Our suggestion is that this course be in addition to the 2 courses already required for the MSc and would be an additional requirement for the Ph.D.</i></p>	<p>Some colleagues are concerned by the impact of increasing the course load on completion time. We recognize the value of this course and the interest expressed by a large fraction of our graduate student population. The BGSC will discuss the recommendation and look at alternative models to implement it and perhaps integrate attendance at departmental seminars (see recommendation 5) in the content of this course. This will be done in consultation with the course instructor, Dr. Jacobs.</p>	<p>This discussion and implementation of changes proposed in this recommendation will be done by BGSC in consultation with the course instructor, Dr. Jacobs.</p>	<p>The discussion will begin in May/June but may extend to the summer months as this is a significant modification of our graduate course curriculum and the membership of the BGSC will be updated in July 2018.</p>

<p>5. <i>As either a component of a capstone graduate course or on their own, weekly Departmental seminars be attended by all graduate students.</i></p> <p><i>We suggest that research group focused seminars be held on rotation and held no more than 1x/week (e.g. PHYSIOL, EEB, MCB)</i></p>	<p>As discussed above (recommendation 4), the BGSC will discuss recommendation 5 and look at alternative models to implement it. In particular, we'll look at integrating the attendance at departmental seminars in the content of Biology 712.</p> <p>Better scheduling and the coordination of research group focused seminars in the Department is a good idea that will be discussed in the near future.</p>	<p>The proposal to integrate the departmental seminar series in a course such as Biology 712 will be discussed by members of the BGSC and Dr. Jacobs.</p> <p>The schedule and coordination of departmental and research group focused seminars will be discussed by the Seminar Committee in Biology, in consultation with the different groups.</p>	<p>As the composition of the BGSC will be updated in July 2018 and several faculty members are about to go in the field, the discussion will be initiated in May or June but will likely continue in the summer and fall 2018.</p>
<p>6. <i>Ensure MOSAIC, as an administrative tool, is meeting needs and expectations of Graduate student applicants as well as resulting in timely conversions.</i></p>	<p>The implementation of MOSAIC has caused many headaches and is taken seriously by all administrative branches at McMaster University. We will continue to work with the School of Graduate Studies (SGS) to address any problems related to MOSAIC</p>	<p>This is an ongoing process.</p>	<p>Problems arising will be addressed by the Chair of the Biology Graduate Students Committee, the Administrative Assistant for Graduate Studies in Biology and SGS.</p>
<p>7. <i>The supervisory committee must be composed of the Supervisor and two other members, one of whom could be from another Graduate Unit.</i></p>	<p>The supervisory committee of PhD students is already composed of three members. We can certainly follow the same practice for MSc students.</p> <p>If possible, we will promote the inclusion of faculty members belonging to different units; this is consistent</p>	<p>Changes in the rules and practices of the graduate program are the responsibility of the BGSC.</p>	<p>The recommendation can be discussed at the next meeting of the BGSC and the change submitted for approval to the Biology faculty at the June departmental meeting.</p>

	<p>with the current practices in Biology. Our approach in this regard is to name faculty members who can contribute significantly to the guidance and evaluation of the graduate student's progress and research program. We will continue to use this guiding principle and therefore decide on a case-by-case basis.</p>		
<p><i>8. The Department should carefully evaluate the recommended timelines for both the PhD and MSc programs, with a view to having meetings and provided feedback earlier and more often in the programs. Students should be provided clear pathways and guidelines to proceed through their programs.</i></p>	<p>We agree with the comments of the Reviewers. There are several aspects to consider in this recommendation. First, we will put in place a mechanism to review the research program of new students within six months of their entry in the graduate program. This may require a presentation to the supervisory committee or, at the very least, the submission for approval of a short two page document describing the research program/directions to members of the supervisory committee.</p> <p>Second, we will form a working group within the BGSC to review the timelines of MSc and PhD programs and make</p>	<p>Changes in the rules and practices of the graduate program are the responsibility of the BGSC.</p>	<p>The discussion on the composition of the supervisory committee will take place at the next meeting of the BGSC and changes will be communicated to the Biology faculty at the June departmental meeting.</p> <p>The working group will be assembled in September, once the new composition of the 2018-2019 BGSC committee is determined in July 2018.</p>

	<p>recommendations to the BGSC and Biology faculty. In particular, the working group will be charged with reviewing the procedures of Transfer from MSc to the PhD and PhD comprehensive examination.</p>		
<p><i>9. The Department should ensure its program requirements and assessments are consistent with School of Graduate Studies policies. The Department should carefully evaluate the mechanisms it uses for assessments with respect to Section 4.2 of the Graduate Calendar, which gives wide latitude to graduate programs to develop tools that meets their needs.</i></p>	<p>We will comply with these rules/policies of the SGS and update our “Guide to Graduate Studies in Biology” accordingly. In particular, we will review and modify the potential outcomes in assessment to be consistent with the practices of SGS.</p>	<p>Changes in the rules and practices of the graduate programs are the responsibility of the BGSC.</p>	<p>The recommendation can be discussed at the next meeting of the BGSC and modifications to the “Guide to Graduate Studies” will be made in collaboration with the Administrative Assistant in the near future.</p>
<p><i>10. We recommend transparent and timely communication between the Graduate Studies Committee and graduate students regarding TA allocation and assignment.</i></p>	<p>Most in-program graduate students are generally assigned to courses where they have previously worked at teaching assistants. Therefore, the problem generally concerns new graduate students entering the program. As the number of teaching assistants is determined by undergraduate enrolments, we are dependent on the data provided by the</p>	<p>The BGSC Chair will discuss this with the current TA assigner on how best to communicate the TA allocation.</p>	<p>This will happen in June 2018.</p>

	<p>Registrar's office, typically in July/August.</p> <p>TA assignment is the responsibility of the Departmental Administrator with the help of the undergraduate secretary and faculty members. With the approval of the membership of the BGSC (see recommendation 17), the inclusion of a BGSC member in the TA allocation process will make it more transparent.</p>		
<p><i>11. The Department should work with the Faculty to ensure current plans to improve the building space and infrastructure move forward in a timely manner.</i></p>	<p>We will continue to improve building space and infrastructure by working with the Faculty of Science and the University. The Life Sciences Building is being prioritized for a deep retrofit, but funding sources for this have not yet been identified.</p> <p>Dean M. MacDonald visited the Department in December 2017 and discussed her strategy to obtain funds for long-term improvements to the Life Sciences Building and infrastructure requirements in Biology. In particular, the addition of a new green house is now the</p>	<p>Chair of Biology and Dean of Science</p>	<p>Dr. Jacobs' term as Biology Chair is ending on June 30, 2018. The selection committee for the new Biology Chair is currently working to identify suitable candidates for this position.</p> <p>One of the key challenges of the next Chair will be to define the hiring priorities for faculty renewal.</p>



	<p>number one priority of the Faculty of Science.</p> <p>We will continue to discuss this important issue with Dean MacDonald.</p>		
<p><i>13. Staff workload must be examined carefully to get a true sense of the work that needs to be done and how best to efficiently maximize staff capacity without causing detriment to both the undergraduate and graduate student experience. With the inefficiencies noted with the University's ERP system, the committee feels that one staff person to administer the graduate program is probably now sufficient.</i></p>	<p>The staffing plan across the Science Department is being harmonized through a central initiative, which recommends that one person is sufficient to administer the graduate program for each department. However, the "one-fits-all" model does not take into account the size of a graduate program (i.e. number of graduate students).</p> <p>The Chair of Biology will seek to revisit this model after providing an hour-by-hour map of the current administrator's activity.</p> <p>The Department of biology recently went through a major restructuring of our staff complement that is still in the implementation stage.</p> <p>Work overload of our Administrative Assistant to Graduate Studies has been noted by graduate students and faculty members. It will be one of the priorities of the new</p>	<p>Biology Chair and Dean of the Faculty of Science.</p>	<p>The discussion of this recommendation will depend on the nomination of the new Biology Chair (expected July 2018).</p>

	<p>Biology Chair to review the recommendation of the Reviewers.</p> <p>The addition of a half-time assistant may alleviate many problems identified by the Reviewers.</p>		
<p><i>14. Student stipends should be examined regularly to ensure they remain competitive with peer institutions and programs which may be competing for graduate students.</i></p>	<p>We will examine the stipend situation for students on a yearly basis by comparing ours with peer institutions. We will try to maintain a competitive guaranteed minimum funding level, taking into account our main competitors in the GTA and Southern Ontario.</p>	<p>The Associate Chair and graduate secretary will gather the required information and will work with the departmental administrator to review the department's funding position and provide suggestions for the BGSC and department.</p>	<p>We will address this issue in the early fall of 2018. i.e. in time for the review of applications for the 2018-19 academic year.</p>
<p><i>15. Increase opportunities for scientific connections to be made between students in the program.</i></p>	<p>Biology offers several discipline-based seminar series that provide opportunities for students to hone their presentation skills and seek input for their projects. Better coordination of the departmental and research group-specific seminar series (see Recommendations 4 &amp; 5 above), will allow us to more effectively allocate additional resources for beverages and food as an incentive to enhance and promote the attendance to these seminars and provide the opportunities for students to interact</p>	<p>The Associate Chair will initiate a discussion with BGSS, members of BGSC, the Chair of Biology on how best to increase scientific connections among students in our program.</p>	<p>The BGSC will organize a meeting to specifically discuss this and other curricula matters in the second half of May 2018. Executive members and representatives of BGSS will be invited to discuss this and other related issues.</p>

	and learn interdisciplinary skills.		
<i>16. Work to boost faculty participation in activities that support the graduate student experience, such as volunteering to organize Graduate Research Day and other such activities.</i>	<p>We will put a greater emphasis on encouraging both students and faculty to attend departmental seminars and contribute to the several discipline-specific seminar series. The first four editions of the Biology Graduate Research Day (BGRD) were organized by faculty members. In 2018 the event was organized by the BGSS for the first time. Several faculty and staff members (including both the Associate Chair and the graduate secretary) contributed to the organization of this year's GRD. We will continue to encourage the BGSS to take a lead role in GRD and provide necessary financial and logistic support.</p> <p>We will look at mechanisms to increase faculty and student engagement. Establishing the GRD as a standing departmental duty/committee will be discussed.</p>	<p>GRD for at least the next year. The Graduate Chair, BGSC, and the graduate secretary will continue to work with BGSS to identify their needs with regard to GRD and other activities.</p> <p>The Associate Chair, members of BGSC, BGSS, and the Departmental Chair will discuss whether and how to make participating in GRD mandatory for all graduate students.</p>	The BGSC will organize a meeting to specifically discuss this and other curricula matters in the second half of May 2018.
<i>17. We recommend that the composition of the Biology Graduate Studies Committee be determined</i>	The current BGSC membership is proposed by the Chair in consultation with the Associate Chair and	The Associate Chair for graduate studies will work with the T and P Committee as well as the Chair of the	This will likely happen when the new Chair is confirmed in July 2018 or soon after. The current Associate

<p><i>democratically with fair and transparent voting procedures and that Terms of Reference be established for the Committee and for the position of Associate Chair, Graduate Studies.</i></p>	<p>after discussion with individual faculty members. A guiding principle in the nomination of BGSC members is a fair representation of all areas of specialization of the Department. This is necessary to ensure that appropriate expertise exists in the committee during the review of prospective student applications and in-program students performances for award nominations (again in BGSC serves as the Admission committee in Biology). Therefore we propose to continue with the current selection process but to submit the admission of new faculty members to the BGSC to vote by the Biology faculty. An email ballot may be used for this purpose. A majority of votes in favour of the candidates would confirm the nomination.</p> <p>The terms of references for both the Associate Chair and BGSC members will be drafted, discussed and published.</p>	<p>department and other relevant stakeholders to develop a clear set of procedures and the terms of references for the Associate Chair and members of the BGSC. They must be voted on by the department before adoption. The Faculty of Science is asking departments to put their regulations in writing and this approach could be incorporated at that time.</p>	<p>Chair's term finishes at the end of June 2018. Significantly, all areas of specialization of the Department are represented in the current membership of BGSC.</p>
<p><i>18. We suggest that the Department work to increase the visibility</i></p>	<p>The Associate Chair will increase his/her visibility to the</p>	<p>The Associate Chair will discuss with BGSS on how to increase the</p>	<p>The Associate Chair has already talked to the president of BGSS</p>

<p><i>of the Associate Chair, Graduate Education towards the student body, and especially to new incoming students. The Associate Chair should be well known to all students in the program, and every effort should be made to build a strong rapport between this individual and all students in the program.</i></p>	<p>students. In Biology, at the beginning of each academic year in September, the Associate Chair welcomes all new students and informs the new students of key issues of their graduate program. The Associate Chair also organizes Scholarship application seminars for both new and returning graduate students. In addition, all letters of offer to new students, MSc to PhD transfer notices, PhD comprehensive exams, as well as thesis defences all need to be approved by the Associate Chair. On a weekly basis, the Associate Chair also shares relevant opportunities from other sources to the entire graduate student distribution email list. One potential avenue of further exposure is to participate in social events organized by BGSS.</p> <p>Regular, pre-scheduled meetings with the BGSS will be discussed with the graduate students.</p>	<p>visibility of BGSC and the Associate Chair.</p>	<p>about various issues brought up during the IQAP review. A meeting will be scheduled between the Associate Chair and members of BGSS to discuss the strategy to improve his/her visibility.</p>
<p><i>19. We recommend that the Biology Graduate Studies Committee publish minutes of their meetings and present</i></p>	<p>Minutes from the BGSC will be shared with the BGSS and the Biology faculty.</p>	<p>The Associate Chair will ensure that updates of meetings from the BGSC and departmental meetings are passed on to the</p>	<p>The March 2018 updates from BGSC were sent to BGSS. Minutes from the next BGSC meetings will be</p>

<p><i>these to the Department.</i></p>	<p>The timely publication of the minutes will likely require the addition of a part-time/half-time staff member as discussed in Recommendation 13.</p> <p>Currently, the Associate Chair has been sharing information regarding graduate studies with members of the department at departmental meetings or via email. The BGSS is represented at the Departmental level.</p>	<p>BGSS representatives on those committees as soon as they become available or/and at pre-scheduled meetings, if necessary.</p>	<p>sent to BGSS as soon as they become available.</p>
<p><i>20. The Biology Department, through the Associate Chair or the Graduate Studies Committee work closely with allied academic and non-academic units to construct a clearly articulated package of services available to graduate students.</i></p>	<p>The current Associate Chair has been interacting with other associate chairs of graduate studies in the Faculty of Science through our monthly meetings. In these activities, we share our experiences and concerns to propose faculty-wide initiatives enhancing the student experiences.</p> <p>Tim Nolan, the Director of Student Accessibility Services (SAS), was invited to present the SAS at the April 16, 2018 departmental meetings.</p> <p>The Guide to Graduate Studies in Biology is also updated on a regular basis. Special attention to student</p>	<p>The Associate Chair and the Administrative Assistant to Graduate Studies will be responsible for follow-up, including updating and posting the information, with inputs from members of BGSC when necessary.</p> <p>We will continue to work with the SAS to improve student services.</p>	<p>From now on, all information provided by the SGS, Faculty of Science and other administrative units will be forwarded immediately to students and copied to all supervisors.</p> <p>Our newly revised Guide to Graduate Studies has just been submitted. SGS is proofreading the Guide for consistency. There will be periodic updates to reflect the most up-to-date information from the Biology Department, the Faculty of Science, the SAS, McMaster University and other stakeholders, including the community.</p>

	<p>services will be devoted in the next edition.</p> <p>Since January 2017, the current Associate Chair has relayed all relevant information (scholarships, writing and presentation trainings, health consultations, community events, awards opportunities etc) provided by the SGS, Faculty of Science, MacPherson, and MITACS etc to members of BGSS by email. To improve this process, we will copy the same information to all supervisors and ask them to encourage their students to consider taking advantages of these services.</p> <p>Once the new Chair is confirmed, we will also discuss additional secretarial help for graduate studies so as to enhance such services (Recommendation 13).</p>		
--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--

**Dean's Response**

This Faculty level (Dean's response) has been prepared by the Dean of Science (Dr. Maureen MacDonald), with input from the Associate Dean of Science (Graduate) Dr. Bhagwati Gupta. On behalf of the Faculty of Science, the Dean thanked the reviewers for their careful and thorough assessment of the Graduate Programs in Biology. They were pleased with the recognition of the strengths of the programs, particularly the determination that the program learning outcomes are clear and that research environment is of high-quality. There were however several areas of concern cited and appropriate

recommendations made. It is clear that many of these concerns and recommendations can be addressed with improvements in both the policies and practices related to communication at all levels. The Faculty of Science will work to support the Department of Biology in attending to the concerns expressed and in following the implementation plan outlined in the accompanying Program response. Additional comments from the level of the Faculty of Science on significant points related to governance and resources are provided below.

The Dean agreed with the reviewers that a concerted effort must be made to improve the flow of communication within the Department of Biology and between the Department and other units on campus, including the School of Graduate Studies and the Offices of the Dean and Associate Dean (Graduate) of Science. The Program level response has highlighted some of the crucial points of contact for the flow of information, and the Faculty of Science will support the implementation and formalization of the processes identified. Several other graduate programs in the Faculty of Science have implemented systems of coordinated research seminars linked to incentives for increased attendance, strategic and balanced graduate curriculum planning, and implementation and enhanced scientific communication opportunities. The Faculty of Science will ensure that these “best practices” are shared with the Department of Biology including terms of reference for Associate Chair (Graduate) and Graduate Curriculum and Policy Committees.

It is worth noting that since the time of the site visit and submission of the reviewer’s reports, activities have begun to address some of the concerns and recommendations.

The committee expressed concerns with respect to the administrative processes dependent on the existing ERP (MOSAIC). The graduate MOSAIC module has undergone extensive review led by both the School of Graduate Studies and University Technology Systems. A task force is currently working to address the shortcomings of the current systems with a deadline of Sept 2018 for improvements. Representatives from the Faculty of Science are on the review and implementation teams and considerable improvements are forecasted.

With respect to the resources available to the Graduate Programs in Biology, the Dean agreed that the state of both the Life Sciences Building and the Greenhouse are unacceptable. As indicated in the reviewers’ report, the Faculty of Science has made these resource issues their number one priority in the last year. They have now secured funding for a new greenhouse addition to the Life Sciences Building, and the process of design is underway. Concerning the requested deep retrofit to address the deferred maintenance in the Life Sciences Building, they have not yet received notification on our submission for provincial funding for this project but will continue to advocate for these improvements in the upcoming year. The Office of the Dean of Science has been working on a very frequent basis with the Chair of the Biology Department over the last year to address the staffing, resource and TA concerns in the unit; however, concerns remain on both sides of the discussion. They look forward to working with the incoming leadership in the hopes that a cohesive and detailed strategic plan for the Department will be developed and presented to allow the Dean of Science to support the unit in achieving its goals moving



forward. Regarding Faculty renewal, the report of a hiring freeze in the Department for ten years is inaccurate as there have been three hires in Biology in the last seven years. Despite the Faculty of Science enduring a hiring freeze for four years, the Department of Biology was one of a small number of units that received a new appointment. The Dean will provide the incoming Department Chair and Acting Chair support and guidance on their future faculty appointments requests. However, new faculty appointments will likely be constrained in units that do not have companion retirements and a clear, well-articulated and integrated plan for renewal.

The Faculty of Science is committed to supporting the Department of Biology as it moves forward with the implementation plan associated with this IQAP review. We appreciate the opportunity for self-reflection and will work to retain the many strengths of the program while enhancing communication and implementing new processes that will lead to program enhancement.

#### **Quality Assurance Committee Recommendation**

**McMaster's Quality Assurance Committee (QAC) reviewed the above documentation and the committee recommends that the program should follow a modified course of action with a progress report and a modified internal cyclical review to be conducted no later than 4 years after the start of the last review. At the time of the internal review, the committee will be looking at progress that has been made in response to the recommendations and specifically, how the recommendations have been implemented with the appointment of the new Chair.**