

Response to Department of Chemistry Review Committee Report

Submitted by R.B. Lennox, July 7, 2013

The following is the Department of Chemistry's formal response to the Cyclical Review Committee's report received June 12, 2013. This response is directed to the recommendations presented by the Review Committee (RC) and not explicitly the narrative commentary that precedes each set of recommendations.

1. RC: The Department should renew its Hiring Plan. Clear priorities for hires should be stated recognizing that such a plan should not interfere with opportunistic hires as long as the areas fall within the Hiring Plan. The priorities should indicate how the weaknesses identified in the Self-Study Report are addressed.

The Department will review its Hiring Plan in Fall 2013. The Department will remain alert to opportunistic hirings – recognizing that an opportunistic hiring usually involves getting early credit for a potential retirement. The Department will review the issue of faculty activity in theoretical chemistry in the context of hiring priorities discussions.

2. RC: The Department should be allowed to fill the vacant positions resulting from two recent departures, after updating the Hiring Plan.

The Department supports this recommendation, noting that the requests-to-hire for 2013-14 had to be submitted June 27, 2013 to the Faculty of Science. Note that one of the positions (the joint Chemistry-AOS slot vacated by Bourqui) was filled before the Review Committee site visit.

3. RC: Given the Department's primary goal, a second strategy (in addition to hiring a high profile researcher) for increasing the standing of a unit amongst its comparators is to enable *current* researchers to raise their own research profiles. A primary driver is to provide a faculty member with time to focus on research. There are a variety of means to achieve this, including streamlining course offerings, increasing the number of faculty lecturers and academic associates, increasing TA support, etc. A careful approach will not compromise the department's desire to maintain a healthy undergraduate to tenure-stream faculty ratio.

The RC comments identify the challenge of balancing the teaching and research responsibilities in a research intensive department such as Chemistry. Important approaches suggested, such as increasing the number of faculty lecturers, academic associates, and TA support, are strongly supported by the Department. Each however is tightly linked to budget, virtually all of which is controlled centrally and not departmentally at McGill.

4. RC: There appears to be no clear action items directed at increasing the number and quality of the graduate students, particularly at the PhD level. Clear plans, and funding to support those plans, need to be developed and identified.

Plans to increase the number and quality of graduate students: The Department will review the recruitment and admissions processes in the Fall 2013. Departmental discussions regarding targeted

(in terms of specific research themes) graduate student admissions, as described in the Self Study Report, will continue in the coming year as will new approaches to graduate student recruitment.

(i) Number of graduate students: The Department's recruitment and admissions policy is linked to laboratory capacity and research funding/resources. Since the renovations, research funding is now the principal limiting factor in terms of graduate student numbers. We will continue to undertake an annual survey to determine graduate student funding capacity, noting that there are very few research groups who have sustained funding in excess of their present cohort of students.

(ii) Quality of graduate students: The average admissions GPA of graduate students has been steadily rising over recent years. The Department will review (Fall 2013) the means to attract more scholarship-level students. We note that additional methods of attracting scholarship students will be explored, as traditional methods such as financial inducements ("top-ups") no longer seem to provide a competitive advantage in recruitment.

5. RC: Future review of the undergraduate programs should take into consideration student concerns about the weighting of lab courses and the concentration of Physical Chemistry courses in the curriculum.

Both of these issues will be reviewed by the Curriculum Committee in the Fall 2013.

6. RC: Given the Department's commitment to improving the quality of undergraduate advising, it should put procedures in place that facilitate student access to the advising resources. Ideally, administrative support should be provided.

The Department submitted a request April 4, 2013 for shared administrative support for the Chief Advisor/Director of Undergraduate Studies, as well as for the Graduate Program Administrator. Notwithstanding current budgetary pressures this position remains a Departmental priority.

7. RC: The effective use of existing Faculty Lecturers and the possibility of hiring additional ones should figure in the Department's plans to continue to improve the quality of undergraduate instruction and to alleviate the burden of the heavy service-teaching load. Such lecturers could also help research-active faculty deal with the administrative aspects of courses, such as organizing TAs, resolving lab-time conflicts and overseeing exam/homework content, even if faculty still design the course content and deliver lectures. Such a position may be best called a Course Manager to make continued faculty involvement clear.

The two Faculty Lecturers are working at capacity, and each is active in both course and laboratory teaching. The Department strongly supports the recommendation of hiring additional Faculty Lecturers, while maintaining the present number of tenure-track faculty. The Department also strongly supports the idea of a specific position of Course Manager and will explore this concept with the Faculty of Science.

8. RC: Communication with the undergraduate student body (Majors and Honors students) should be improved. Some arrangement should be made to consult with students about issues that are relevant to them (e.g. regular meeting of undergraduate representatives with Chair, reporting of undergraduate representative to regular meeting of the Department).

The undergraduate Chemistry students indeed have a direct link to the Chair and Director of Undergraduate Studies through their association (CUSS). Both formal and *ad hoc* meetings are the norm, with some year-to-year variability arising from changes in student leadership. These links will be re-invigorated in Fall 2013.

9. RC: The Department should continue to monitor the potential workload imbalances in graduate supervision and take remedial actions as necessary.

This recommendation appears to be based on a misunderstanding of how graduate student allocation/distribution occurs in the Department. Graduate students select supervisors on the basis of mutual research interests *and* a supervisor's ability to support the student's stipend and research costs. The former is linked to the research aspirations/interests of the graduate students and the latter is linked to a supervisor's success in obtaining peer-reviewed funding for their research program. The Department will continue to encourage those with funding limitations to seek peer-reviewed funding.

10. RC: The Department should engage with the graduate students and explore ways to address their concerns about various issues, including the arrangements for visiting speakers, current procurement practices and the availability of TA training courses for both native and non-native speakers.

The Chemistry Graduate Student Society will meet with the Director of Graduate Studies and Chair in the Fall 2013 to go over communications in general plus specific issues as they arise. While the visiting speaker issue is known to the Department (and dealt with in the recent past), the nature of the other issues cited is not known. The depth and breadth of these and related issues will be explored.

11. RC: The Committee recommends that communication with the graduate students, especially at the PhD level, be improved, with regard to program expectations and the monitoring of their progress from the beginning of their studies. Possible avenues for improving communication include an expanded/revamped web site (a suggestion from the student representatives), as well as more informal student-faculty lunches or meetings.

The Director of Graduate Studies presents the program expectations and issues related to progress monitoring to incoming students. The past practice of an annual discussion between all graduate students and the Director of Graduate Studies and Chair will be renewed. Improved text (web-based) and scheduled meetings will be put into place to sustain these ongoing communications efforts.

12. RC: The Committee also recommends that the Department improve communication with the graduate student organization to ensure that the rationale for certain decisions (e.g. the design of student work space and graduate examination guidelines) and the processes by which they were taken are explained and understood.

The meetings described will also discuss changes in infrastructure and academic issues.

13. RC: The department should explore way to attract more top-notch international students, for example by doing virtual tours of the new facilities, as well as by conducting skype interviews of potential candidates to assess both background knowledge and English communication skills.

The Department has an excellent record (past and present) in attracting top international students. The admissions criterion of “outstanding” applied to international students has been successful. An additional filtering of applicants for language skills will be explored by the Graduate Program Administrator; a Skype interview will be tested. The *quantity* of international students is however closely linked to differential fee funding - which is controlled centrally and not at the department level.

14. RC: The department should consider restricting access to its undergraduate (Majors and Honours) programs, based on courses taken by students and/or performance, in order to help with the problem of diversity in background preparation.

The Curriculum Committee will study this problem in depth, and propose solutions to the Department in Fall 2013.

15. RC: The Department should undertake an urgent review of the sustainability of the current model of graduate student funding in collaboration with the Faculty of Science and the Office of Graduate Studies. Given the additional cost of international graduate students, alternative ways of funding should be explored, including more faculty and university support (e.g. through the MIDA program), increased awareness of fellowships for international students, etc.

The Department will continue its ongoing discussion of graduate student funding with the Faculty of Science and GPSO, recognizing that funding programming is in the process of change. For example, program such as MIDAS are no longer in place.

16. RC: Given that the numbers and quality of the students in the program is quite high, it is not immediately evident why McGill lags in research productivity, as judged by the indicators mentioned above. The Department is aware of this problem (see page 23 of the Self-Study) and hints that a possible cause for the differential research productivity rests in the lack of available time due to large teaching loads. After multiple conversations with the different departmental groups it became evident that the younger faculty, while valuing the strong tradition of undergraduate teaching at McGill, would like to obtain some relief, since the time involvement in teaching is perceived to be too high. They would like to have additional TAs to help with course evaluation and management and perhaps decreased teaching loads in some cases. The strong teaching culture, while commendable, in its present form consumes too much time and energy and inhibits the research growth possibilities, especially for the younger members of the Department. The Committee found that the two lecturers hired in 2011 are doing an outstanding job, as judged by faculty and students, so it strongly recommends that the Department seriously consider expanding the number of lecturers, partly to relieve the teaching burden of the tenure/tenure track faculty but also to improve the quality of the teaching, since lecturers, if selected carefully, can do an outstanding job and help perpetuate and perhaps even improve, the McGill tradition in undergraduate teaching excellence.

The Faculty Lecturer model recently implemented in the Department (see item above), is one means to relieve some of the competition for time that research-active faculty experience. However, involving graduate students to a greater extent (either more responsibilities or more participants) in

the undergraduate teaching mission is an uncertain solution to this problem given that the teaching/research time competition problem applies to graduate students as well as faculty. A time-neutral redistribution of TA duties might however provide some much needed relief. Substitution of some current tasks with marking and course management tasks will thus be explored.

17. RC: The Committee also heard about some faculty members, perhaps only one or two, who are neither active in research nor particularly effective teachers, and are thus not contributing significantly to the departmental mission. The Committee encourages the Department and the University to do whatever is possible to ensure that these individuals meet their obligations to be productive contributors to the Department.

This issue is part of an ongoing discussion between the Chair and the Faculty of Science. These deficiencies are communicated to the parties involved via ongoing discussions as well as the annual merit exercise.

18. RC: The Committee recommends that the Department thoroughly review the array of introductory courses that it offers and explore the possibility of consolidating some of these into a smaller number of course offerings. The Department may also wish to consider alternative ways of providing service courses (e.g. online offerings) in order to minimize the burden on its teaching resources.

The Department periodically reviews its introductory course offerings and has concluded that workload issues originate from ever-increasing enrolment and not course multiplicity. In short, the *number* of introductory courses is not the problem- it is the total number of students who are in programs requiring introductory organic, analytical, physical (and of course freshman) chemistry that is problematic. Large enrollments, scheduling challenges, and full lecture rooms (lecture theatres of 200-600 seats) necessitate repeat offerings (e.g. CHEM 204 and CHEM302 are taught 2X per year; 212 and 222 3X per year). The Department will however review the scheduling of 500- and 600-level courses, exploring the possibility of alternate year offerings in some cases.

The Department is an active participant in McGill's first MOOC experiment, noting that MOOCs are not likely a viable option for most of the 200-level service courses offered by the Department.

19. RC: Since technical people constitute a large component of the support and are crucial to the functioning of the Department, regular meetings of non-academic staff and the Chair should be held. Such meeting would contribute to the transparency of departmental deliberations.

The Department will arrange for recurring meetings between the AO, Chair, and support staff.

20. RC: A competent replacement for the current Administrative Officer is needed and should be 'head-hunted' to maintain the high level of leadership required for a department that is so heavily dependent on a large number of technical support staff.

The Department is working with the Faculty of Science to identify a highly skilled replacement for Mr. Trempe when he retires.

21. RC: Although a departmental FST and faculty fund management may be the McGill norm, the burden of managing many large funds is something relatively new (within the past decade). For example, some contract funds require monthly reports. The committee recommends that Chemistry shift the burden of fund administration to the administrative staff to free more faculty time for research and grant applications. Such a shift would likely require additional staff or a reassessment of the workload of current staff.

The issue of fund administration is one governed principally by either tri-council rules or the terms of a contract. The Departmental FST oversees research grant finances and compliance issues, but ultimately the grant holder is responsible for their grants. The complexity of some contracts appear to be disproportionate to the accruable research benefits. The University (and its researchers) should carefully review the terms and conditions of contracts and outright refuse contracts that require unreasonable and unmanageable levels of administrative support, such as monthly reports to meet monthly budgetary targets. Alternatively, given that contracts garner significant indirect costs (usually 40%), the Department would welcome 'fund facilitators' being assigned and supported by the University. Such a facilitator would focus of grant administration within research groups but not oversight and compliance issues.

22. RC: Graduate and postdoctoral space within the 'fish bowls' could be modified to accommodate student's requests for dividers, bookcases, and file storage units.

This recommendation might have arisen from a misunderstanding among some students regarding the design and intended use of the research office space in the new research laboratories. The design implemented was derived from a consideration of modern research practices, safety, and available space in the new laboratories. The design was successfully prototyped in two previous smaller scale renovations. The allocated space is intended to support the laboratory research efforts and is not intended to be personal office space. Neither of the funding sources (CFI, KIP) will pay for construction of office space (this is audited very closely) or office furnishings. In fact, the considerable furnishings in place were paid for with (scarce) Departmental funds. The Department will review the research office space and its furnishings in response to this recommendation and will address deficiencies where identified. There is however no practical solution to modifying the existing research office spaces. It is important to note that the 5 new student social spaces reported in the Self Study Report will be constructed once the sprinkler project is completed in Otto Maass.

23. The central lab coordination space in the teaching labs should be kept open to maintain the highest safety standards. Discrete communications and grade reviewing may be done elsewhere or with slight changes to screen direction.

This recommendation will be implemented at the individual laboratory-level.



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25. RC: The committee heard several complaints from individuals as well as from groups concerning the Technology Transfer (TT) Office. The perception is that the Office is not willing to share the risks involved in IP and translational ventures, but willing to appropriate the rewards. The Department feels that the TT process is left up to individuals who have to sacrifice their careers if they wish to pursue translational research and commercialization ventures. The Committee recommends an open discussion between the Department and the TT Office, and the development of clear procedures that reward faculty and provide them with means to pursue these ventures, including additional support for their research laboratories during these ventures so that their scholarly work can continue to be productive.

The Technology Transfer office within the VP-R office is currently undergoing review and reorganization. The perception is that the Office is not willing to share the risks involved in IP and translational ventures is not widely held in the Department, as it is also acknowledged that the TT office works within the constraints of a budget. Given that the Department has been one of the major contributors to the University's research translation successes, the Department is actively being consulted as these changes develop. The Department is also well represented on a newly formed (April 2013) Innovation Steering Committee which is examining the University's ability to facilitate innovation translation. Amongst other things this Committee will examine the academic implications for faculty members who undertake research translation ventures.

26. RC: Because of current tuition policies, international students may be too expensive for faculty to support, thereby inhibiting the recruitment of highly competitive international graduate students. The Committee recommends that funding policies be carefully reevaluated within the context of improving the research and scholarly work of the Department by attracting excellent international graduate students.

This recommendation implies that individual faculty members support the international differential fees from their research grants. In fact this support comes from the Department, which in turn receives them from the Faculty of Science. As per text above, the international student issue in the Department is not viewed to be about quality (which is high) but of the uncertainty of sustained differential fee support for those who are admitted and register. Efforts by the Faculty of Science to obtain secure, sustained funding are very encouraging in this regard.

27. RC: Current TA stipends are below the median when compared to other Canadian institutions, again creating a recruiting problem for the best students. The committee recommends that higher stipends be established to offset this discrepancy.

A review of graduate student stipends will be undertaken under the direction of the Graduate Studies Office. (It is assumed that this recommendation refers to the total stipend, research plus teaching, and not just the TA portion). The Department does not know what the median stipend in Chemistry is across Canada as the annual compilation by the association of Chemistry chairs (CCUCC) was discontinued several years ago. It is important to note that it is the after-tuition fee compensation that must be compared when one is discussing stipend levels across the country.

University-to-university practices vary greatly regarding net tuition fee costs carried by a graduate student and cited gross stipend levels are often misleading. It is known, however, that the current *net* stipend for a McGill Chemistry student is currently less than that at UBC, Toronto, and Alberta but is greater than that for U. Ottawa and McMaster, for example.

28. RC: The average TA-ship of 180 hours per term seems to place a heavy burden on graduate student's research time. The committee recommends that the possibility of full TA-ships with a lower number of hours (e.g. 90 or 100 hours per term) be considered, enabling graduate students get the needed teaching experience while allowing for sufficient time for their own.

The 180 hours represents two TA sessions per week, usually for a 13 week term, paid out at the hourly rates defined by the AGSEM collective agreement. This is the standard fulltime TA assignment as defined by the union. The Department cannot come to a separate compensation agreement with its graduate students. It also must abide by the terms of the priority pool conditions as set out by the collective agreement. A 90 hour per term (i.e. one TA session) assignment per graduate student is possible but will increase the funds required from a supervisor's research funds. Moreover, limiting a typical graduate student to one TA session per term will lead to staffing shortfalls in the undergraduate laboratories. The Department will discuss in Fall 2013 the implications of implementing a 90hr TA period in funding and teaching terms.