

**PROPOSAL TO CREATE A
DEPARTMENT OF CELL AND SYSTEMS BIOLOGY
AND A
DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY
IN THE FACULTY OF ARTS & SCIENCE**

1 Nov 2005

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1. EXECUTIVE SUMMARY

Biological sciences teaching and research within the Faculty of Arts & Science is focused in the Departments of Botany and Zoology. Arising from the Stepping UP planning process, external reviews, and extensive consultation within the two units, we propose that the Departments of Botany and Zoology be disestablished and that the members of these two units be reorganized into two new departments: The Department of Cell and Systems Biology and the Department of Ecology and Evolutionary Biology.

These new departments would be able to more effectively focus Arts & Science efforts in biological sciences into the areas of cell and molecular biology, physiology and developmental biology on the one hand, and ecology and evolutionary biology on the other. Currently these activities are divided between the Departments of Botany and Zoology, and have been limited by this bifurcation of effort.

The corresponding graduate Departments of Botany and Zoology will also be disestablished and new graduate Departments of Cell and Systems Biology and Ecology and Evolutionary Biology will be created in the School of Graduate Studies.

Existing undergraduate teaching programs, which are already largely shared by these two departments would be initially unaffected, though opportunities to create courses and programs of study aligned along the foci of the new departments would be possible. The existing core and collaborative graduate programs would also be unaffected, though both departments would subsequently develop new programs in these areas. Overall, the reorganized departments will facilitate undergraduate and graduate education by focusing teaching resources in ecology and evolution on the one hand, and cell, molecular and systems biology on the other. The two departments would provide more focused graduate programs that are expected to be well-aligned with student interest and demand.

This reorganization would coincide with a commitment by the Faculty to modernize and renovate the existing facilities for the two departments, with immediate focus being on the renovations of the Ramsay Wright Zoological Laboratories. Shared infrastructure, such as the animal care facilities and the plant growth facilities, would be put under a new management structure that would be able to respond more effectively to the needs of the members of the two departments, as well as other departments that use these facilities. The reorganization would more effectively focus internal and external resources in the highest-priority research areas, and we expect that the new department structure will enhance inter-faculty initiatives, as this organization would align more readily with that of the Faculty of Medicine, the Centre for Environment and the Centre for Global Change Science.

This reorganization would not result in any changes in funding resources at a University level. Any increases in base funding to better support the two new activities and the capital funding for the proposed renovations would be allocated from existing operating and capital resources available now and in the future to the Faculty of Arts & Science. A proposal to create an interdisciplinary genomics centre would be put forward in the 2005 Academic Initiatives Fund competition.

2. INTRODUCTION

The Departments of Botany and Zoology were established in the Faculty of Arts & Science almost a century ago, and in that time have developed outstanding reputations for excellence in teaching and scholarship. They support the single largest set of undergraduate programs of study, with specialist and major programs in Botany and Zoology, and collaborative programs in human biology and life sciences (together with departments in the Faculty of Medicine). Together, they teach over 7000 undergraduate full-course-equivalents and supervise 200 graduate students. Their graduate programs are of outstanding quality, attracting some of our strongest science graduate students, based on the number of external scholarship holders.

The collective faculty consist of approximately 50 FTE, with 19.4 FTE in Botany and 33.0 FTE in Zoology (as of June 2004), who have developed outstanding reputations in their specific fields of research. Members of the two departments have made important contributions to topics ranging from biodiversity to speciation to genomics to physiology. Collectively, these faculty are responsible for attracting \$3.4M per annum in NSERC funding, and total annual research funding of \$8M. They have been recognized through a host of academic honours. For example since 1997 alone, seven faculty have been named Fellows of the Royal Society of Canada, made members of the Order of Canada, or received a Sloan Fellowship or a Premier's Research Excellence Award..

The organization of the biological sciences in Arts & Science along plant and animal kingdom boundaries is historic and does not necessarily reflect the development of biology as a discipline over the last several decades. The advent of cellular and molecular tools has led to a revolution in our understanding of how organisms function at the most fundamental level. At the same time, there has been increasing focus on organismal biology addressing the development of species, biodiversity and the principles that drive evolution. These fundamental shifts in biological research and teaching have resulted in discussions between botanists and zoologists at various times of reorganization or merger, the most recent being in 1996 and 1997. In the course of the Stepping UP planning process, both departments submitted academic plans that argued for increased resources to teach and do research in ecology, evolution, genomics and physiology. The Faculty's Planning Committee, struck by the parallel thrusts of these academic plans, noted that

“[each] Department's vision was remarkably similar to that of the [other department]. It suggested that the two departments explore alternate models of organization to ensure that the effort in the biological sciences is as strong as possible.”

Most recently, the Department of Zoology's external review recommended that a reorganization of the unit be undertaken, partly in response to these changes in biology as a discipline. As a result of these recommendations and subsequent consultation with the chairs of both departments, the Faculty began a year-long process of evaluation, consultation and planning. The result is this proposal to radically reorganize biological sciences within Arts & Science. Members of the two departments have developed academic vision statements for the new units, and these are attached as companion documents.

This proposal is organized as followed. In Section 3, we outline the planning and consultation process that has taken place. In Section 4, we outline the proposed organization. In Section 5, we outline the schedule of activities and milestones that must be met to complete this reorganization.

3. PLANNING, REVIEW AND CONSULTATION PROCESS

3.1 Overall Planning Context

The process that led to this proposal arose out of the Stepping UP planning process that began in a formal sense in September 2003 within the Faculty of Arts & Science. The members of the Departments of Botany and Zoology, along with the other 30 departments and graduate centres within the Faculty, engaged in a consultative process that led to the development of draft “vision” statements in January 2004, and full department self-studies, plans and proposals in April 2004.

A broadly-based Faculty Planning Committee reviewed the vision statements in February 2004, providing feedback to each unit and developing draft Faculty priorities, and then reviewed the department self-studies and plans in May 2004. The document “Stepping UP in Arts & Science” identified the final priorities of the Faculty and summarized the recommendations of the Planning Committee. The Faculty has been engaged in implementing the initiatives identified in this planning document since July 2004.

During this same period, the Faculty underwent an external review commissioned by the provost. The 27 Jan 2004 report of the review committee noted that:

“Departmental structures must evolve, if they are to remain current. It was impossible for the Committee to provide a detailed set of recommendations on departments, given the time and information available to it. However, one example that was noticed is the division of Biology into departments of Botany and Zoology, designations that are now unusual compared to many other universities, and a division that many would feel to be inappropriate for the future.”

The Faculty Planning Committee recognized that although the two departments that formed the core of biological science teaching and research were individually quite strong, there were also possible opportunities to further strengthen them through an academic reorganization of their efforts, given the similar priorities in ecology, evolution, cell biology, genomics and physiology within the two units. The Faculty’s plan, finalized on 30 Jun 2004, noted that there had been some discussion of such reorganization, but concluded that:

“These discussions are not yet mature. They involve deep issues regarding the overall future of these disciplines and the specific organizational challenges faced by each unit. Arts and Science will continue these dialogues, and will develop robust plans that will strengthen the teaching and research within these broadly-based disciplines.”

3.2 Consultation and Review

Following further consultation with the heads of the two units, the dean of the Faculty struck a “Biological Sciences Ad Hoc Working Group” in September 2004 to give a structure and focus to the discussion. The mandate of this working group was:

1. To summarize the academic priorities for the biological sciences in Arts and Science (as most recently identified through Stepping UP).
2. To identify the strengths and weaknesses of the current departmental structures, considering the academic plans of the two units and cognate disciplines.

3. To make recommendations (either organizational or otherwise) that would strengthen biological sciences overall, identifying specific outcomes and measures of progress toward academic goals.

The full terms of reference for the Working Group are found in Appendix A. The Ad Hoc Working Group consulted broadly within the two departments, and early on recognized that the case for reorganization was a compelling one, though there was by no means a universally-held view on what structural changes would be most appropriate. Following discussions of this group, in which several models developed by groups of faculty in both departments were presented and debated, the dean of the Faculty reported to both units at the end of October 2004 the results of this consultation in a memo, reproduced in Appendix B.

In that memo, he concluded that there was considerable interest in pursuing a reorganization of the two departments, and recommended that a more formal “Biological Sciences Planning Committee” be created that would have representation from all relevant groups, undergraduate and graduate students, teaching staff from all three campuses, and technical and administrative staff. He also noted that two possible courses of action had emerged that he believed still had significant support. Quoting from the report, the two possibilities were:

1. The creation of two or three independent Arts and Science departmental units, with one model having the new departments aligned along cellular & molecular (or cellular & developmental) biology / ecology, evolution & integrative biology division, and a second model having a stand-alone plant & microbial sciences department in addition to these two.
2. The “status quo plus” plan, which would consider the existing Botany/Zoology organization, but with possible changes to graduate program structure and/or enhanced support for genomics perhaps through an interdisciplinary centre.

He also rejected one possible model, the so-called “big biology department.” In his view, this would only internalize the issues that limit the current organization and would create a department that would be difficult to administer effectively.

The response to this recommendation was generally positive, and the Biological Sciences Planning Committee was formed and met in December 2004. At the same time, discussions regarding reorganization continued in both departments. Various possible new organizational models were developed at a grass-roots level in both departments, with discussions taking place informally with the Office of the Dean and within the Biological Sciences Planning Committee.

At approximately the same time, the Department of Zoology underwent an external review as part of the normal procedures when a chair search was imminent (the chair of Zoology was scheduled to step down in December 2004). The external review committee made numerous recommendations, but the one relevant to the issue of reorganization was stated as follows:

“From the point of view of the Department of Zoology, most members of the review committee are of the strong opinion that creating two realigned departments from the present Zoology and Botany Departments is the best way forward. The benefits to be gained by such an approach are as follows;

- We believe that the level of discord that exists in Zoology is too great to be effectively addressed by anything but a radical reorganization. Thus the “status quo plus” approach would not solve the central problem but merely address some peripheral issues.
- Each emergent department would benefit from new colleagues with whom substantial synergies exist. CMD [Cell, Molecular and Developmental Biology] would gain a strong cell and developmental group working on the model system *Arabidopsis* from the Botany Department, and ECO/EVO [Ecology and Evolution] would gain some outstanding plant ecologists from Botany, whose situation there may otherwise become precarious.
- Each emergent department would be able to tailor its graduate program to suit its own needs, and to bargain with the central administration for its own quota of graduate student admissions slots.
- CMD in particular would gain in critical mass, and by gaining the *Arabidopsis* group could fill an important niche in the University’s life science research community, outside of a medical environment with a focus on developmental biology of non-mammalian model organisms.
- Each emergent department will be scientifically and philosophically more cohesive, and many of the present challenges that complicate administration should be reduced or eliminated.”

The reviewers themselves were not unanimous in this view, with one member taking a minority view holding out hope for the existing organization. It should be noted that an external review of the Department of Botany a year earlier had been silent on the wisdom a reorganization, although this question was not part of its formal mandate.

It is important to note that although the Zoology external review committee recommended reorganization, this discussion had been already underway at a grass roots level within both Botany and Zoology. Regardless of the various external factors, it became increasingly clear in early 2005 that a case for reorganization in both departments had been developed.

3.3 Departmental Decision-Making and Visions

Following the establishment of Biological Sciences Planning Committee and the results of the Zoology external review, faculty in both departments discussed possible next steps in early 2005 in the context of Departmental meetings held to respond to the Planning Committee’s recommendations, the Ad Hoc Working Group results contained in the 27 October 2004 memo from the dean and the Zoology external report.

By early March, the chair of the Department of Zoology reported that “there was a very strong consensus to move forward with restructuring,” although significant issues regarding the specific foci of the two departments remain to be resolved. At the same time, the chair of the Department of Botany reported that the Botany faculty supported the development of detailed plans for reorganization if Zoology was committed to that process. It was understood at that time that the natural next steps were to develop academic visions and more detailed plans for the two new units that would be the basis for a formal decision to reorganize the two units.

In response to these developments, the dean agreed to begin a process of more detailed planning for the two new departments in a memo of 9 Mar 2005 (enclosed in Appendix C). The Faculty sought nominations for two coordinators that would assist in developing “vision statements” for the two new units. Subsequently, the dean appointed Professor Locke Rowe as coordinator for the “Ecology and Evolutionary Biology” and Professor John Coleman as coordinator the “Cell, Developmental and Molecular Biology.” The two coordinators worked over the summer 2005 to complete draft vision statements, in consultation with department members. These vision statements are appended to this plan.

The draft vision statements were presented to the Biological Sciences Planning Committee in September 2005 for its review and recommendations for next steps. At the same time, they were distributed formally to all members of both Departments. After further consultation and proposal development, revised vision statements and this proposal was endorsed by the Biological Sciences Planning Committee on 18 October 2005. Separate secret ballots to disestablish the existing Arts & Science departments and form the new departments were held by the members of the Arts & Science Departments of Botany and Zoology on 21 October 2005, resulting in strong endorsement of this initiative. Separate secret ballots to disestablish the graduate departments and form the new graduate departments were also held by the members of the existing graduate units, which also resulted in strong endorsement of this initiative.

3.4 Consultation with Other Faculties

Although the Departments of Botany and Zoology have been primarily engaged in the development of the visions for the two units, the Faculty of Medicine and the Faculty of Forestry has been informed of these developments and the Dean of the Faculty of Arts & Science has solicited input from both deans. Discussions will continue to take place between the three faculties to identify opportunities to strengthen inter-faculty collaboration. There are already a number of joint activities underway between members of these units and other Faculties (especially involving undergraduate and graduate education), and these reorganization plans will not affect the commitment of all Faculties to these joint programs.

4. THE PROPOSED NEW DEPARTMENTS

The two new departments would be known as the Department of Ecology and Evolutionary Biology (EEB) and the Department of Cell and Systems Biology (CSB). The two departments would consist of approximately 22.0 FTE and 35.0 FTE teaching staff, based on the existing complement resources allocated to the Departments of Botany and Zoology. They would formally come into existence 1 July 2006.

The specific academic goals of the new departments are contained in the accompanying documents to this proposal. The undergraduate and graduate programs currently the responsibility of Botany and Zoology would continue unaffected, although programmatic changes would be envisioned starting in fall 2006. Teaching staff with base-budget appointments in Botany and Zoology will individually elect the new department in which they will hold their appointment. Chairs will be appointed for these new units as soon as the teaching staff complement in each department has been defined. Recruitment of staff would continue into the open salary lines that are currently available and under search.

The undergraduate Human Biology program will not be affected by this change, as both new departments would continue to resource the existing first and second year courses that constitute the core courses for this curriculum, in collaboration with the other departments in Arts & Science and the Faculty of Medicine. The existing specialist/major/minor programs in Botany, Zoology and Developmental Biology would also continue to be supported, though programs of study with the designators “EEB” and “CSB” would be subsequently developed. As these new programs are developed, there will continue to be consultation with the UTM Department of Biology and the UTSC Department of Life Science (both of whom have been representation on the Biological Sciences Planning Committee). The Faculty anticipates that undergraduate students from all three campuses will benefit for the new courses and programs that will be developed.

The School of Graduate Studies will form two new graduate Departments with these same names, with initially the administration of the existing graduate programs being a coordinated or shared responsibility of the two new graduate units. SGS is developing the detailed administrative structure to simultaneously create the new programs and manage the existing ones. The existing core and collaborative graduate programs would continue, though the creation of new graduate programs aligned with the disciplinary definitions of the EEB and CSB departments would be developed. Graduate students would be the responsibility of the graduate unit that their supervisor is in, though consultation over this assignment between supervisors and students would occur in those cases where the supervisor has cross-appointments in both graduate units. Biologists at UTM and UTSC would elect to join one of the two new graduate units, and the students who they supervise would be registered within the appropriate graduate unit, though they would remain within their existing graduate programs.

One overriding concern has arisen, especially from the younger faculty, that the reorganization not compromise the opportunity to do research in areas that fall near the boundaries of both new departments. Although it is expected that these boundaries will be largely “permeable” and allow for collaborative activity, several faculty have suggested that a more formal structure be created to foster such research and teaching. To that end, a proposal for a Centre for Comparative, Evolutionary and Functional Genomics has been developed, for submission to the Academic Initiatives Fund. The

further development of this proposal is encouraged as the detailed planning for the new departments proceeds.

The two new departments would reside in the Ramsay Wright Zoological Laboratories (RW) and the Earth Sciences Centre (ESC), occupying the space that currently is allocated to the Departments of Botany and Zoology. As part of this development, RW will have to be extensively renovated, with replacement of most of the building infrastructure and renovations of the research and teaching laboratories. A phased approach will be taken, given the lack of staging space to allow a complete single-phase overhaul of the building. This continues a process that was started in 2004, and will allow for a staged reallocation of space to the two new departments in RW and ESC. Given the locations of the animal care facilities and the plant growth facilities, we anticipate that CSB may come to largely occupy Ramsay Wright and that the majority of EEB may come to reside in the Earth Sciences Centre. The actual relocation of faculty offices and laboratories will arise out of further consultation, and a comprehensive plan for space utilization will be in place by July 2006.

The Faculty recognizes that significant financial resources will have to be made available to renovate Ramsay Wright and implement the desired rearrangements of offices and laboratories. These resource considerations are discussed in more detail in Section 5.

The Faculty also recognizes that the success of the teaching and research mission in both new departments depends critically on administrative and technical staff that are currently allocated to the Departments of Botany and Zoology. A comprehensive human resources reorganization of the two departments is currently under review, led by the existing department chairs. The administration has proposed to the United Steel Workers of America, the union representing the affected workers, that this be viewed as a single reorganization, as it would minimize the disruption that such a reorganization can create among the staff. We recognize that the success of the two new departments will depend in large measure on our ability to maintain a high level of morale among the staff, and have them engaged as much as possible in the process. Monthly meetings, starting in August 2005, have been held with the combined staff and senior administrators to ensure that everyone has had opportunity to contribute to the planning process. This reorganization is being driven by academic goals and not by a desire to reduce staffing levels. In fact, in the course of this comprehensive reorganization it may become clear that additional technical and administrative staff complement may be critical for the success of the EEB and CSB departments.

5. IMPLEMENTATION SCHEDULE AND MILESTONES

In consultation with the existing department chairs, coordinators and the dean of the School of Graduate Studies, a detailed schedule of milestones for implementation of this plan has been developed. This most recent version of this schedule is provided in Appendix E. We summarize the steps that must be taken to successfully implement this reorganization.

5.1 Governance

We will be seeking formal governance approval for this reorganization, as outlined in this proposal and the accompanying department vision statements. Actual resource allocations to the new units, as well as infrastructure development plans, will be made subsequent to formal approval of these plans by the Faculty Council of Arts & Science, the Council of the School of Graduate Studies, the Planning & Budget Committee and the Academic Priorities and Planning Committee, and the Academic Board and Governing Council of the University.

The current schedule calls for this process to be complete by 9 February 2006.

5.2 Formal Definition of Academic Complement

The faculty complement of the two departments will be determined by the choice of individual members. Every member appointed to a full-time salaried position in the existing Departments of Botany and Zoology will be requested to select which of the two units they elect to become members of. As the workload expectations in the two departments are comparable to those of the existing departments, this decision will be based on which department provides the most appropriate academic “home.”

Those faculty whose research interests are seen to cross the boundary of the two departments may request a joint appointment with a majority appointment in one unit. Status-only cross-appointments to the new graduate unit can also be requested. Such requests would not unreasonably be denied.

The current schedule calls for this process to be finalized by 21 December 2005. Members will be presented with a form for this election by early November 2005.

Open salary lines would be allocated to the appropriate department through consultation with the existing Department Chairs and Coordinators, based on the academic vision statements of the two departments, their complement implications and the existing complement resources available to each new department.

5.3 Undergraduate and Graduate Program Administration

The undergraduate and graduate programs in which students are currently enrolled, and that would be offered to incoming students in fall 2006 would not be changed as an immediate result of this reorganization. However, both new departments will likely wish to develop more specialized programs reflecting their new academic interests.

A working group, involving the existing program administrative staff and academic leaders, will prepare a plan for the administration of the existing programs under the new departmental structure. A draft plan will be presented for review to the Biological

Sciences Planning Committee by December 2005, and will require approval by the two new departments early in 2006.

5.4 Animal Care Facilities

The Animal Care Facility on the ground floor of Ramsay Wright must continue to maintain a diversity of different animals in support of the research and teaching missions of the two new departments, as well as the Department of Psychology. Although a large fraction of the faculty that depend on the facility will be based in CSB, there will be significant demand for the facility from members of EEB and from the Department of Psychology. In addition, the Faculty will continue for the present to have an animal care facility in 1 Spadina Crescent, and is constructing a smaller, specialized animal care facility in the Centre for Biological Timing and Cognition, located adjacent to Ramsay Wright.

As part of the reorganization, the Faculty will develop a unified management structure for animal care in the Faculty of Arts & Science that will ensure that it is able to address all the research and teaching needs of the Faculty. One possible model would be to have the Animal Care Facility be operated as a separate business unit within the Faculty of Arts & Science, with the Director of the Facility reporting to the dean (presumably through the vice-dean, graduate education and research) and advised by an Advisory Board comprising the relevant department chairs (or designates) and the University Veterinarian. Alternatively, the Director could report to the chair of one of the Departments.

A comprehensive reorganization plan would be developed and presented to the Biological Sciences Planning Committee by December 2005, with implementation taking place 1 July 2006.

5.5 Plant Growth Facilities

The Plant Growth Facilities, currently operated by the Department of Botany, would also become a shared facility supporting research and teaching in the two new departments. A similar model as proposed above for the Animal Care Facilities will be considered.

A comprehensive reorganization plan would be developed and presented to the Biological Sciences Planning Committee by January 2006, with implementation taking place 1 July 2006.

5.6 Administrative and Technical Staff Reorganization

The current complement of administrative and technical staff will have to be formally reorganized, consistent with our obligations under our collective agreements with various labour unions. We believe that it would be most effective for the Faculty, and provide the greatest opportunities for our staff if this were considered as a single reorganization. A formal request to proceed in this manner has been made to the United Steel Workers of America (USWA).

Both new departments will require administrative support structures (offices of the chair and graduate and undergraduate associate chairs, business officers and financial services) similar to those that currently exist for Botany and Zoology. Similarly, administrative support for undergraduate and graduate education will be required in both new departments comparable to what is currently available in the Departments of Botany and

Zoology. Technical support for the undergraduate laboratories, research services and the animal care and plant growth facilities will also have to be accommodated. The appropriate level of technical support for the highest priority research and teaching areas must be accommodated, and this may require redeployment of some technical staff, and the possible addition of technical staff complement.

A comprehensive administrative and technical staff reorganization plan will be developed over the fall, and presented to the Biological Sciences Planning Committee in December 2005. Presuming Committee approval, the staff reorganization would be implemented 1 May 2006.

5.7 Space Reorganization

The existing departments are housed separately in the Ramsay Wright Zoological Laboratories (RW) and the Earth Sciences Centre (ESC). The Department of Psychology also has research laboratories in RW and makes use of the Animal Care Facility. RW has extensive renovation requirements, some of which have already commenced as a result of the renewal of various cold rooms and environmental chambers, and the removal of obsolete refrigeration infrastructure. In addition, priority is being given to improvement the heating, ventilation and air conditioning (HVAC) systems given their existing limitations. Given the current situation, initially the two new departments will be split across these two buildings, and that over the period of 2006-2009 we would implement a comprehensive space reorganization plan that would maximize the use of the two buildings in support of the CSB and EEB research and teaching missions.

We anticipate that some researchers will wish to relocate their offices and/or laboratories to the buildings that will house the core activities of each department. As part of the planning process, we will have to take into account the constraints arising from the existing Animal Care Facility in RW, 1 Spadina Circle, the new animal care facilities in the Centre for Biological Timing and Cognition and the Plant Growth Facilities in ESC. Given the research priorities of the new departments, it might be preferable to house CSB largely in Ramsay Wright and EEB largely in the Earth Sciences Centre, but a detailed plan showing the costs and benefits of various options has yet to be developed.

We currently expect that the necessary space renovations and relocations would take place in two phases:

1. Phase I would focus on providing the appropriate space for departmental administration, the highest priority relocation of faculty offices, provision of appropriate graduate student space and any other laboratory and infrastructure improvements that can be done easily within the existing space inventory and without large-scale renovations. This would be funded from Faculty one-time-only funding resources.
2. Phase II requires significant infrastructure reinvestment, with an overall renovation of RW, probably in sections given the manner in which the building services are arranged. Funding for this phase would be from various Faculty resources, external granting agencies and the expected capital funding arising from Arts & Science graduate enrolment expansion.

A comprehensive plan for Phase I, to be implemented in 2006/07, will be completed by March 2006, with implementation to commence in July 2006. Planning for Phase II

would be done in parallel, with implementation to commence on July 2007 or thereafter, depending on funding and availability of other resources.

A very preliminary costing of these plans has been made by the Assistant Dean and Director, Infrastructure and IT, resulting in an estimate of between \$18M and \$21M. This would likely be funded through a combination of Faculty one-time-only (OTO) funds, borrowing and capital funding for graduate student enrolment expansion.

6. RESOURCE IMPLICATIONS

The base budget resources of the two existing departments will provide the source of base funding for the two new departments. Whereas the base salary with academic complement, administrative and technical staff would follow the decisions taken by the individual faculty and the overall human resources reorganization, the base budgets for operating support will be allocated based on the size of the two units, the undergraduate teaching responsibilities and the service units that must be supported by each new department. We expect that this reorganization will be not significantly change the overall base budgets allocated to the two units.

This organization will allow both departments to review the resources currently made available to support the research and teaching missions of the biological sciences, and make the appropriate allocations of resources to align these with the academic priorities of the two units. This process will take place over the period January to March 2006, and may result in a recommendation for additional base budget resources dedicated to specific initiatives within the two departments. Resources for these base budget expenditures will be allocated from the Faculty's new revenues stemming from international student tuition and/or graduate enrolment expansion, and will be made consistent with Faculty practice in support of the core teaching and research missions.

Resources for the necessary renovations to the existing buildings will come from a combination of OTO funding from the Enrolment Growth Fund, additional capital funding from external granting agencies (such as CFI), graduate enrolment expansion, and possibly additional capital borrowing (in anticipation of this, the Provost has tentatively allocated to the Faculty \$6M of borrowing capacity to assist in the most urgent renovations in Ramsay Wright Zoological Laboratories). The carrying costs of any mortgage would be assumed by the Faculty of Arts & Science.

**APPENDIX A. TERMS OF REFERENCE FOR BIOLOGICAL SCIENCES
WORKING GROUP****Biological Sciences Ad Hoc Working Group**

23 September 2004

The Faculty of Arts and Science is committed to advance teaching and research in the biological sciences. The Departments of Botany and Zoology have developed strong research programs in ecology, evolution, physiology, and cell and molecular biology. They also sponsor numerous undergraduate and graduate programs in the biological sciences, and collaborate on delivering the Human Biology program, currently the largest undergraduate program in the Faculty.

The Stepping UP academic planning process provided an opportunity for the two departments to identify academic priorities for the next five years, with proposals for specific initiatives. However, the process did not allow for an assessment of the extent to which the current departmental structures and overall organization of biological sciences in Arts and Science address these academic goals. An Ad Hoc Working Group is being convened to assess the current organization of biological sciences in the Faculty, and make recommendations to the Faculty regarding future evolution of these two units. The specific charge of the Working Group is:

1. To summarize the academic priorities for the biological sciences in Arts and Science (as most recently identified through Stepping UP).
2. To identify the strengths and weaknesses of the current departmental structures, considering the academic plans of the two units and cognate disciplines.
3. To make recommendations (either organizational or otherwise) that would strengthen biological sciences overall, identifying specific outcomes and measures of progress toward academic goals.

The Ad Hoc Working Group, will consult broadly within the two departments and in any other relevant units either within or outside the Faculty. It will report to the departments and Faculty by December 2004.

Membership of the Biological Sciences Ad Hoc Working Group will be:

- Pekka Sinervo, Dean, Faculty of Arts and Science (Chair of the Working Group)
- Rowan Sage, Chair, Department of Botany
- Peter McCourt, Department of Botany
- Daphne Goring, Department of Botany
- David Guttman, Department of Botany
- Spencer Barrett, Department of Botany
- James Thomson, Chair, Zoology
- Marie-Jose Fortin, Department of Zoology

- Locke Rowe, Department of Zoology
- David Lovejoy, Department of Zoology
- Ulli Tepass, Department of Zoology

APPENDIX B. RESULTS OF AD HOC WORKING GROUP**MEMORANDUM**

Date: 29 October 2004

To: James Thomson, Chair, Department of Zoology
Rowan Sage, Chair, Department of Botany

From: Pekka K. Sinervo, F.R.S.C., Dean

Cc: Vice-Deans, Faculty of Arts and Science
John Kennedy, Chair, Department of Life Sciences, UTSC
Rob Baker, Chair, Department of Biology, UTM

Re: Consultation Regarding St. George Biological Sciences Organization

I would like to thank you and your colleagues for the two meetings we have had regarding possible future models for how biological sciences should be organized in Arts and Science. It is clear that there is significant interest in this issue, and I appreciate the thought that has already been put into this question by you and your colleagues.

I believe we share a common set of goals for any such changes in organization, whether it be at the departmental level or through the creation of new centres or institutes: that we should simultaneously improve our ability to do internationally-significant and ground-breaking research and teaching in the biological sciences. This can only if we increase our ability to attract the very best undergraduate and graduate students, as well as the best faculty over the course of the next ten years.

I also believe that there is general scepticism that the current Arts and Science units, namely the Departments of Botany and the Zoology, working in tandem with the Human Biology Program, are the most effective means of achieving these goals. Although the current undergraduate program is not "broken" by any measure, the sheer size of it forces us to consider how we would best educate our undergraduate life science students in both a lecture and laboratory setting. At the same time, we have concerns over our ability to attract the very best graduate students, not just in Canada but internationally. The implementation of guaranteed funding packages and the concomitant need to plan graduate enrolment has placed unusual stresses on both departments, and highlighted the need to pay increasing attention to our recruitment efforts across all the graduate subfields represented in the two departments. Finally, concerns over the effectiveness of our faculty recruitment and retention efforts have highlighted the need to look at how attractive our scientific foci are to potential colleagues, and how we make available to them the very best research and teaching infrastructure to pursue their academic goals.

Base on our discussions to date, I do not recommend pursuit of an organizational model that would see an "integrated" biology department. It would only succeed in internalizing the issues we are grappling with, and create too unwieldy a unit. However, there are a number of alternative models to choose from, arising from our discussions.

I recommend that we continue the process of evaluating departmental organization in the biological sciences, albeit in a somewhat more formal process by augmenting the existing “ad hoc planning committee” with representation from all three campuses, with representation from undergraduate and graduate students, and with representation from administrative and technical staff. In order for this to be most effective, I specifically recommend that we add to the ad hoc planning committee the following:

- An undergraduate and graduate student from Zoology or Botany (one student from each department).
- Representatives of the Biology Department Chair at UTM and the Life Sciences Chair at UTSC.
- A member of the technical and administrative staffs, one from each department.
- The Director of the Human Biology Program or his designate.

This expanded “biological sciences planning committee” would be charged with developing two specific scenarios for the biological sciences in Arts and Science:

1. The creation of two or three independent Arts and Science departmental units, with one model having the new departments aligned along cellular & molecular (or cellular & developmental) biology / ecology, evolution & integrative biology division, and a second model having a stand-alone plant & microbial sciences department in addition to these two.
2. The “status quo plus” plan, which would consider the existing Botany/Zoology organization, but with possible changes to graduate program structure and/or enhanced support for genomics perhaps through an interdisciplinary centre.

Each scenario should be assessed on the basis of what impact it would have on research, undergraduate teaching and our graduate programs. The infrastructure needed to support each scenario should also be identified.

The committee would report back to both departments by preparing a proposal to both units with a unified plan of action. I would ask the two Department Chairs to co-chair this augmented committee, and I will make myself available to meet with it as appropriate. I would hope that the committee’s report could be made available by no later than February 2005.

APPENDIX C. NEXT STEPS IN REORGANIZATION

9 March 2005

Rowan Sage, Chair, Department of Botany

Rob Baker, Chair, Department of Zoology

Dear Rowan and Rob-

RE: Next steps in Biological Sciences Organization Discussions

Thank you for sharing with me the decision by your two departments to engage in a process that would see a major reorganization of the biological sciences in Arts and Sciences into two realigned units.

I would make the following points:

1. The goal of further discussion and planning between the two departments should be the development of the strongest possible vision and academic plan for the biological sciences in Arts and Science, taking into account the insights obtained from discussions in the fall and the most recent external reviews.
2. I recognize that the pursuit of a vision along different departmental boundaries will likely require realignment of existing resources as well as new resources, both capital for the appropriate research and teaching facilities, as well as academic staffing resources. The Academic Initiatives Fund may be the appropriate vehicle to pursue such resources, though other sources of funding may also be appropriate. I'm committed to finding such resources provided we can develop the strongest possible vision and plan.
3. I had noted in a memo in the fall that after examining various models (for example, one large biology department, two or three smaller units with more focused mandates), I had strongly recommended that the departments focus on a model that involves two reasonably well-sized and well-resourced units. Models involving a third unit don't appear to strengthen the academic mission, risk balkanization, and require scarce additional resources.
4. It is important to keep in mind what is NOT driving discussion around reorganization. First, the undergraduate life sciences program is not in need of dramatic restructuring and should not be "broken" in any reorganization. I am sure we have opportunities to innovate and improve here, but that is not the focus of the reorganization. Second, the Departments of Botany and Zoology have historically had very collegial and constructive relations. We should make every effort to maintain that high level of collegiality in any reorganization.

We had also discussed the issue of process and timelines if both departments wish to engage in detailed consideration of reorganization. I recommend that the broadly-based Biology Planning Committee struck last fall be employed to develop a high-level plan for a two department reorganization. This plan, developed through collegial consultation, should ideally identify the following:

- A draft vision and academic plan for the two new departments that would arise from a reorganization.

- A draft outline for how the two departments would arise from the existing academic, administrative and technical staff and facilities associated with Botany and Zoology.
- A timeline and milestones that would allow us to achieve that goal should be drafted. For planning purposes, we should work toward the goal of implementing any reorganization by May or July of 2006.

The Biology Planning Committee should work to the development of this draft academic plan by the first week in May 2005. This would allow us to then take the next steps to identify two groups of people who would form the core of the two new departments and who would develop detailed proposals addressing the academic and logistical issues. These proposals should ideally be prepared for fall 2005, so that we could take the first steps into formal approval within the Faculty and then the University by late 2005.

I trust that this helps lay out the outline of the process. Presuming that a reorganization is desirable, we will need to further refine the process and milestones over the next few weeks.

APPENDIX D. APPOINTMENT OF COORDINATORS**MEMORANDUM**

Date: 6 April 2005
To: Members of the Departments of Botany and Zoology
From: Pekka K. Sinervo, F.R.S.C., Dean
Re: Request for Recommendations for Coordinators

The Departments of Botany and Zoology have been having discussions regarding possible reorganization of the two units into two rather different departments, organized approximately along the lines of Ecology and Evolution on the one hand, and Cell, Development and Molecular Biology on the other. These discussions have been coordinated by the two department chairs, and assisted by a Planning Committee that was established to assist in developing a plan for this reorganization.

Given the promising discussions to date, it has been recognized that we now need to identify two coordinators who would take a leadership role in developing proposals for the academic vision of the two units, and assist in developing an implementation plan for the creation of the two new departments. Specifically, I propose that these two coordinators be responsible for:

- The development of an academic vision and plan, based on collegial consultation and coordination between the faculty members who would form the two new departments. The two coordinators would consult with the Biological Sciences Planning Committee in the development of these plans.
- Working with the existing department chairs and staff to develop a proposal for the academic organization of the two departments and the specific infrastructure that each department would need, including shared infrastructure.
- Leading the consultation process on these proposals, with the goal of submitting a final proposal for approval through Faculty and University governance by 1 October 2005.

I am requesting your advice and input in this next step. In particular, I would appreciate receiving from you any nominations of candidates for the positions of coordinators. Given the responsibilities, I would expect that the coordinators would be clear academic leaders in their disciplines, with the ability to provide the necessary leadership to ensure that the planning process is successful for all concerned.

Your comments would be most valuable if received before 15 April 2005.

APPENDIX E. MILESTONES AND SCHEDULE**Timeline for Biological Sciences Reorganization**

Revised: 18 October 2005

DATE	MILESTONE
Sep 04	Stepping UP Planning Process identified next steps for Botany and Zoology discussion regarding possible reorganization (Sinervo).
Sep 04	Biological Sciences Ad Hoc Working Group struck to develop overall strategy (Sinervo)
Mar 05	Discussion within Botany and Zoology result in agreement to pursue a two-department model, based on roughly Ecology and Evolution and Cell and Molecular Biology (Sage and Baker).
May 05	Coordinators (Rowe and Coleman) appointed to develop “vision” statements and plans for the two new departments (Rowe and Coleman).
Jun 05	Initial discussion regarding HR reorganization occurs. Consultation with relevant unions to begin (McCann).
6 Sep 05	Vision and plan statements presented to Biological Sciences Planning Committee for discussion and recommendation for next steps. Statements include draft submission to University governance for approval of academic reorganization (Rowe, Coleman and Sinervo).
17 Oct 05	Division IV Executive submission.
18 Oct 05	Approval of draft plan and academic visions by Biological Sciences Planning Committee.
21 Oct 05	St. George Departments of Botany and Zoology meet separately to discuss plans. A formal vote to proceed with disestablishing existing departments and the creation of new departments should be taken that week (Sage and Baker).
21 Oct 05	Graduate Departments of Botany and Zoology meet separately to discuss reorganization plans at graduate level. A formal vote to proceed with disestablishing existing graduate departments and the creation of new graduate departments should be taken that week (Sage, Baker and Pfeiffer).
8 Nov 05	Submission of reorganization proposal to Faculty Council and provost. Timed to meet Provost’s office 10 Nov deadline for 21 Nov meeting of Planning and Budget Committee (Sinervo).
8 Nov 05	Submission of Graduate Departments reorganization to SGS agenda deadline for Nov meeting of SGS Council (Pfeiffer)
21 Nov 05	Faculty Council to consider and approve proposal to reorganize (chair of Faculty Council).
22 Nov 05	SGS Council meeting (Pfeiffer).

- 6 Dec 05 Planning and Budget and AP&P to consider reorganizations of departments and graduate departments and (Zaky) and recommend for consideration to Academic Board (Zaky).
- 8 Dec 05 Academic Board to consider proposal to reorganize and recommend to Governing Council for approval. Also to consider proposal for name changes of units and recommend to Executive Committee for approval (Provost).
- 1 Dec 05 Executive Committee to consider and approve proposal for the name changes of units. (Provost)
- Dec 05 Implementation plans for HR and space reorganization prepared and presented to Biological Sciences Planning Committee for review and approval (McCann, Contreras and Sinervo).
- Dec 05 Reorganization plan for the Animal Care Facilities developed and presented to the Biological Sciences Planning Committee (Gertler).
- Dec 05 Discussion on interim/permanent chairs of the two new departments to commence (Sinervo). Announce chairs by 1 Feb 06 or earlier.
- 21 Dec 05 Formal definition of academic complement finalized (preferably by early November).
- Jan 05 Reorganization plan for the Plant Growth Facilities developed and presented to the Biological Sciences Planning Committee (Gertler).
- 9 Feb 06 Governing Council to consider and approve proposal to reorganize.
- Mar 06 Planning for Phase I space reorganizations for new departments complete. Implementation to begin (Contreras). Planning for Phase II continues.
- May 06 HR reorganization to commence. HRIS and FIS restructuring to be completed (McCann and Siboni).
- Jul 06 Implementation of Phase I space reorganization in Ramsey Wright Zoological Laboratories and Earth Sciences Centre to begin (Contreras).
- Sep 06 Search for permanent chairs of the two departments to commence, if not already in place (Sinervo).
- Dec 06 Completion of chair searches if interim chairs in place (Sinervo).
- Jul 07 Implementation of Phase II of space reorganization begins.

**APPENDIX F. MEMBERSHIP OF THE BIOLOGICAL SCIENCES PLANNING
COMMITTEE**

Pekka Sinervo, Dean, Faculty of Arts and Science (Chair)

Rob Baker, Chair, Department of Zoology

Spencer Barrett, Professor, Department of Botany

Marie Branker, Administrative Officer, Department of Zoology

Malcolm Campbell, Professor, Department of Botany (Co-Coordinator for CSB)

John Coleman, Professor, Department of Botany

Meric Gertler, Vice-Dean, Graduate Education and Research, Faculty of Arts and Science

Daphne Goring, Professor, Department of Botany (Co-Coordinator for CSB)

David Guttman, Professor, Department of Botany

Don Jackson, Professor, Department of Zoology

Herbert Kronzucker, Professor, Department of Life Sciences, UTSC

David Lovejoy, Professor, Department of Zoology

Peter McCourt, Professor, Department of Botany

Grace Rawnsley, Undergraduate Student

Locke Rowe, Professor, Department of Zoology (Coordinator for EEB)

Rowan Sage, Chair, Department of Botany

Memoree Schafer, Administrative Officer, Department of Botany

Sapna Sharma, Graduate Student, Department of Zoology

Berry Smith, Professor, Department of Zoology (Co-Coordinator for CSB)

Marla Sokolowski, Professor, Department of Biology, UTM

John Stavrinides, Graduate Student, Department of Botany

Ulli Tepass, Professor, Department of Zoology