Department of Molecular, Cellular and Developmental Biology

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Units Affected:
Department of Cell Biology and Anatomy, COM
Department of Molecular and Cellular Biology, COS
Cell Biology Graduate Program
Molecular Biology Graduate Program
Biochemistry and Molecular Biophysics Graduate Program
Proposed Reorganization: We propose to consolidate the current Departments of Cell Biology and Anatomy (COM) and Molecular and Cellular Biology (COS) into a single cross-college department, Molecular, Cellular and Developmental Biology. This reorganization will include an integration of graduate programs, reconfiguration of research space, and consolidation of support staff.

Rationale: This reorganization will create a single coherent nationally ranked department that strengthens both the College of Medicine and the College of Science and fosters cross-college cooperation and collaboration. As the boundaries between disciplines become increasingly blurred, it has become clear that scientific advancements can be most readily achieved through application of multiple perspectives, productive collaborations, and the implementation of multiple approaches. To facilitate the implementation of multidisciplinary approaches it is important to transcend the traditional academic divisions between colleges and departments. While traditionally CBA has had a greater emphasis on health-related basic science and MCB has had a greater focus on the use of model organisms to address basic biological questions, the faculty of the two departments have many common interests. Indeed, 7 CBA faculty have joint appointments in MCB, and 5 MCB faculty have joint appointments in CBA and we now have a joint seminar series and a joint research retreat. By creating a single department, the goal is to foster scientific excellence by strengthening the interactions and collaborations among the faculty while meeting the educational needs of both departments. Ultimately, the goal is to create a single, much stronger department that will breed excellence with a continuum of strengths from the most basic biology to the more clinically relevant applications.

We foresee major advancements in scientific excellence through consolidation of these two units. The two units are complementary in focus. The MCB group has a national reputation in studying cell biology using cell culture and invertebrate model systems, with particular emphasis on the enormously powerful yeast genetic system. The CBA group has a national reputation for the study of cancer biology and cardiovascular biology with an emphasis on vertebrate model systems, including mouse molecular genetics. Bringing the two groups together will facilitate rapid transition from discoveries made using invertebrate systems to application in the biomedically relevant mouse model.

Critical mass. Certain research areas in both units, though individually productive, are below the critical mass required to gain a national reputation. As an example, developmental biology is represented by two laboratories in the CBA group and two in the MCB group. Uniting the two groups would achieve critical mass and result in a significant leap in national profile for Developmental Biology at the University of Arizona.

Resource sharing. Both CBA and MCB are very well equipped with state-of-the-art analytical and imaging equipment. Fusion of the two units will concentrate the equipment, expertise and resources at a common location. The resulting concentration of equipment will equal the very best available nationally.

Collaborations. Faculty members of MCB are currently occupying laboratories in the Cancer Center and the Medical Research Building as well as Life Sciences. Relocation of the LSS group to the Medical Center will reunite close colleagues and facilitate the rapid exchange of ideas and expertise.

Energy. The fusion of the north and south units will result in an enormous jolt of scientific energy for both groups. Each group will feel effects equivalent to recruitment of multiple nationally ranked faculty members. Like all human pursuits, science is carried out at the personal level and the new interactions will result in a huge boost to the flow of information, the establishment of collaborations and the overall quality of the intellectual environment.

Enhancement of the educational mission: Consolidation of the two departments will provide an opportunity to share skills and expertise for the improvement of the educational experience for medical students, graduate students, and undergraduate students.

Medical students: Currently, CBA plays a major role in Medical School teaching. CBA faculty have taken a leadership role in the ArizonaMed curriculum as block directors as well as participating as
lecturers, CBI facilitators, and case, team learning and laboratory authors. This role will be enhanced in several ways: a broader base of faculty can be drawn upon to fulfill the Medical School teaching needs; MCB faculty expertise in student learning assessment can contribute to the development of assessment methods in the Medical School curriculum. Furthermore, existing ties between MCB and Biochemistry can facilitate coordination of Medical School teaching across disciplines.

**Graduate students:** As described below, there has already been progress in the integration of the CBA and MCB graduate programs, providing students with a stronger more diverse graduate program. The consolidated MCDB graduate program will continue its collaboration with Biochemistry through the BMCB graduate program, with the long term goal of a fully integrated program. In addition, we plan to develop closer ties with the Genetics and Genomics and Cancer Biology GIDPs. The resulting program will be able to recruit more highly qualified students, provide more opportunities for those students to pursue interdisciplinary research, and ultimately place those students in more prestigious positions after graduation.

**Undergraduate students:** Currently, there are approximately 600 MCB undergraduate majors and MCB faculty participate in providing ~4500 student credit hours of teaching to undergraduates. In addition MCB is the home to the large introductory biology course, MCB181 that serves approximately 1700 students per year. This large teaching obligation is embraced by MCB faculty, but cannot be met without participation of additional faculty. MCB is also home to the nationally recognized UBRP undergraduate research program and MCB faculty routinely mentor many undergraduates in the laboratories. Although some CBA faculty recruit undergraduates to their laboratories, consolidation of the two units is likely to promote increased participation of undergraduates in research in the COM, broadening their educational experience.

**Progress:** The process of consolidation of the two departments was initiated well over a year ago as a result of a proposal set forth by the Dean of the College of Medicine (Keith Joiner) and the Dean of the College of Science (Joaquin Ruiz) and endorsed by the Interim Provost (Gene Sander). The deans expressed a commitment to work together to facilitate cooperation and collaboration between the two colleges. Dr. Kate Dixon was asked to serve as Head of the two departments and guide the reorganization. At that time the faculty and graduate students of the two units were engaged in discussions about the feasibility and desirability of this reorganization and they expressed a desire to move forward. A step-wise approach was adopted to allow time for the two units to “try out” the consolidation and to identify “opportunities and challenges” before seeking ABOR approval of an official reorganization proposal. This joint effort has made significant progress in several arenas.

**Faculty recruitment:** By pooling resources, working together and partnering with other campus units, the joint department was successful in recruiting five outstanding faculty members: four assistant professors and an internationally recognized senior investigator. The new faculty recruits were particularly interested in the opportunities afforded by the larger cross-college unit.

**Graduate education:** The heads of the graduate programs worked together to foster integration of the existing programs and in particular carried out a joint graduate recruiting effort last year. This resulted in the recruitment of 13 highly qualified students. Many of the students expressed enthusiasm about the breadth and depth of the combined program. A recent joint graduate student retreat was highly successful.

**Consolidation of staff responsibilities:** The joint department has already made strides in restructuring support activities. A single business administrator oversees the business activities of the two departments and supervises staff. This consolidation has already realized salary savings and additional savings may be realized, despite the challenges of working within the two different college financial structures.

During the past two months the faculty and graduate students of the two departments have been engaged in discussions of the advantages and challenges of this reorganization plan. Recently, a poll was taken of “primary faculty” (TE faculty plus research track faculty who are PIs on grants or carry a heavy teaching
load). In CBA 18 out of 22 faculty who responded to the poll favored the reorganization; in MCB 10 out of 14 faculty who responded favored the reorganization, 3 abstained.

- The single most critical issue coming out of these discussions is that the physical separation of the two units is an impediment to the formation of a cohesive unit. Therefore, the relocation of MCB faculty to north campus MRB and LSN space is an essential feature of this proposal.
- Another important issue is the need to implement an administrative structure that guarantees that both units have an equal voice in faculty recruitment and that the educational missions of the two units are vigorously supported.
- Finally, it is critical that the cross-college department be supported both conceptually and financially by the two colleges and becomes a part of the reorganization “vision” at the college and university levels.

**Proposed structure:** The success of this cross-college department depends on close cooperation of the deans of the two colleges; it also depends on the identification of a “lead” dean. The COS Dean, Joaquin Ruiz, was identified as “lead dean” in the original configuration of this joint department. Given that the current COM Dean, Steve Goldschmid, is an interim dean, it is important for the COS Dean to remain “lead dean.” In the future, rotation of “lead dean” could be considered.

Two possible alternative administrative structures for the joint department are being considered. One in which there is a single Head, and two or more associate heads; and the other in which there are two Division Heads who rotate as Department Head in two-year cycles. The essential features of these structures are the equal representation of the two existing units at all levels, a focus on medical school, graduate and undergraduate education, an integration of the research infrastructure and consolidation of outreach and philanthropy efforts. We propose that the MCDB faculty will have their primary appointments in either CoM or CoS, with cross appointments as appropriate.

**Measures of Success:**
- Enhancement of cross-campus collaborative research as evidenced by joint grant applications, collaborative publications, and new research connections among faculty
- Successful recruitment of junior faculty into the merged department and partnering with other units in the College of Medicine and the College of Science.
- Strengthened graduate program(s) that combine research focus areas in existing programs and reach out to other disciplines on campus. Develop an integrated graduate curriculum with the goal of submitting training grant applications.
- Continued excellence in undergraduate, graduate, and medical school teaching with attention to implementation of innovations that promote student learning and assessment of learning outcomes.
- Increased visibility of the Department locally and nationally; to leverage that visibility towards the generation of a broader base of external financial support for the departmental mission.

**Relationship to the UA Strategic Plan:** The reorganization proposal is responsive to the UA Strategic Plan in the following ways:

The focus on undergraduate, graduate, and medical education will provide Arizona students with a broad education in biology and biomedical sciences and prepare them for careers in science education, biotechnology, medicine, and biomedical research.

The consolidation of existing research strength will contribute to excellence in Biosciences and Biotechnology and in Biomedical and Behavioral Health. The creation of this consolidated interdisciplinary unit will enhance student recruitment, faculty recruitment, research funding potential and lead to improved national ranking.
BUDGET

Departmental assets (FY 2008):

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<th>CBA</th>
<th>MCB</th>
<th>Total</th>
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<tr>
<td>Faculty (TE)*</td>
<td>22</td>
<td>16</td>
<td>38</td>
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<td>Undergraduate majors</td>
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<td>500-600</td>
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<td>Ph.D. students</td>
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<td>AzMed Teaching hrs</td>
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<td>Space</td>
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*Includes newly recruited faculty who have not yet arrived.

The joint department has already made strides in restructuring support activities. A single department administrator now oversees the business functions of the two units and supervises staff; an instant cost savings. One of the major challenges facing the current operation is location. Through the proposed move to MRB, we anticipate additional savings by combining information technology support, accounting, payroll and HR support. The move will eliminate travel time between the two operations and create a more efficient structure with much needed position back up. This consolidation could lead to some additional savings.

We anticipate that 9 research-active investigators would relocate from LSS. Currently these investigators occupy about 10,000 sq ft of wet lab space, about 4000 sq ft of equipment space, and about 1200 sq ft of office space.

Over time it will be important to have the resources to recruit new faculty to continue to enrich the scientific enterprise and to meet the heavy teaching needs for both undergraduate and medical students.

We expect that the renewed scientific energy of the consolidated will generate additional grant dollars and IDC and will provide a platform for submission of larger multi-investigator grants.