To: Meredith Hay, Provost and Executive Vice President for Academic Affairs  
From: Vicki Chandler, Director of BIO5  
Re: Umbrella Program for Graduate Training in Molecular Life Sciences

This proposal is not for reorganization of units; it is about streamlining and improving the efficiency of attracting the best graduate students to the UA within molecular life sciences. As I believe it is essential to consider graduate training at the UA as we are going through the transformation process I submit it now with the hope it will be critically reviewed in a timely manner.

Improving the quality of graduate students matriculating at the UA is absolutely essential for improving the ranking of the UA among its peer and aspirational peer institutions. Stronger graduate students will: increase our ability to obtain external training funds; improve the success of our research projects that in turn increases the quality of publications and amount of external research funding obtained by our faculty; improve teaching at undergraduate and graduate levels; and help in the recruitment and retention of top faculty. All of the above will improve the reputation and ranking of the UA within the molecular life sciences. Importantly, molecular life sciences are essential for achieving success within many of the target areas outlined in the current UA strategic plan.

There is pervasive concern among our faculty that UA programs are losing ground in the numbers of top applicants matriculating at the UA relative to our peer institutions. There are a number of possible reasons, but one is clearly the difficulty students have figuring out how to identify the programs that are the best fit for their interests among the large number of potential programs at UA. Potential students are often left with the perception that if they apply to any one of the possible ~40 programs they will not have the breadth of opportunities that they would have at another institution with a larger, combined program. UA prides itself on its strong interdisciplinary training and research programs, yet it is clear that many of the top potential students in our country do not understand the opportunities here.

The proposing team [Kate Dixon (MCB in CoS), Maggie So (Immunobiology in CoM), Johnny Fares (MCB in CoS) and Vicki Chandler (Plant Sciences in CALS)] examined graduate programs at several institutions (i.e, MIT, UCLA, UCSD, University of Madison, Wisconsin, University of Chicago, Oregon Health Sciences University). Based on what appears to give these institutions a competitive edge with graduate student recruitment, the following proposal advocates for the establishment of an umbrella program to simplify recruitment and admission of graduate students, highlight the excellent faculty and training programs currently at the UA, and standardize first year education; all of which should increase the recruitment of more of the top graduate students in the country. Once implemented this program will also help faculty retention and recruitment; the low number of quality graduate students at UA is often cited as a reason faculty go elsewhere. Although aggressive, if the go ahead is received in October 2008, it may be possible to put enough of the program in place by December of 2008 to accept applications of students for matriculation in Fall of 2009. BIO5 has in place significant web and database infrastructure that could be readily adapted. However, it may be more realistic to establish this program for graduate student applications in the Fall of 2009 and subsequent matriculation of students in Fall of 2010.

Success in transforming the UA will require concerted cross-college efforts to streamline and strengthen graduate training. Cost savings could be achieved by pooling resources and staff now carrying out duplicative recruitment and admissions activities. In addition, by developing a single core set of courses in the first year, significant savings could occur within the teaching budgets of the multiple units and colleges involved. I look forward to hearing your thoughts on this proposal, which has been provided to the VPR, Dean of the Graduate School, Deans in CALS, CoM and CoS, and discussed with many leading faculty across campus. Much more consultation will be needed and sought once this general approach is deemed worth pursuing by central administration.
Umbrella Program for Recruitment & Admission of Graduate Students in Molecular Life Sciences (Name to be determined)

Rationale: A number of faculty members and graduate student admission committee participants have expressed concern over the past several years that our UA programs are losing ground in terms of quality of applicants and the numbers of top applicants choosing the UA relative to our peer and aspirational peer institutions. When students who chose to go elsewhere were polled as to why they preferred other institutions, a common response was that they chose another institution because of a program with larger numbers of faculty mentors and a wider range of research areas. Many of our peer institutions have established a large umbrella program, which is much simpler for students to understand and negotiate compared to the 40 or more programs at the UA that offer students degrees in life sciences. This proposal is an attempt to address these issues and advocates for the establishment of an umbrella program that would simplify recruitment and admission of graduate students, highlight the large number of excellent faculty and training programs currently here at the UA, and standardize first year education; all of which should enable the recruitment of more of the best graduate students in the country. Once implemented this program will also serve as a faculty retention and recruitment tool, as the low number of quality graduate students here at UA is often cited as reason faculty go elsewhere. Although aggressive, if the go ahead is received in October 2008, it may be possible to put enough of the program in place by December of 2008 to accept applications of students for anticipated matriculation in Fall of 2009. The reason for this is that BIO5 has significant web and database infrastructure that could be easily adapted. However, it may be more realistic to establish this program for graduate student applications in the Fall of 2009 and subsequent matriculation of students in Fall of 2010.

A small committee [Kate Dixon (MCB in CoS), Maggie So (Immunobiology in CoM), Johnny Fares (MCB in CoS) and Vicki Chandler (Plant Sciences in CALS)] looked at graduate programs at several institutions (for example, MIT, UCLA, UCSD, University of Madison, Wisconsin, University of Chicago, Oregon Health Sciences University). Based on what appears to be working to give these institutions a competitive edge with graduate student applicants, the following proposal is put forward as a starting point for discussions and input from programs interested in participating. This proposal focuses on Molecular Life Sciences as that is the field of this self-appointed group. This program could serve as a model for the establishment of other umbrella programs for fields distinct from molecular life sciences.

How will this proposal strengthen UA? Improving the quality of graduate students matriculating at the UA is absolutely essential for improving UA’s ranking among its peer and aspirational peer institutions. Stronger graduate students will: increase our ability to obtain external training funds; improve the success of our research projects that in turn increases the quality of publications and amount of external research funding obtained by our faculty; improve teaching at undergraduate and graduate levels; and help in the recruitment and retention of top faculty. All of the above will improve the reputation and ranking of the UA within the molecular life sciences. Importantly, molecular life sciences are essential for achieving success within many of the target areas outlined in the current UA strategic plan.

I- General Organization

A) The Umbrella Program would include full graduate programs (department based or interdisciplinary programs) that wanted to participate, or a subset of faculty from within a program.
B) One faculty member would be appointed to run/oversee the umbrella program and that person would work closely with an advisory committee made up of representatives from the participating graduate programs (departmental or interdisciplinary).
C) This Umbrella Program will build upon and enhance existing departmental programs or GIDPs that elect to participate; participation will be voluntary, but will require commitment of resources for students training in the specific program.
II- The Umbrella Program would consist of research interest areas (potential interest areas might include, but are not limited to, the following: Microbiology/Immunology; Genetics/Genomics; Cell biology/cell signaling; developmental biology; bioengineering; metabolism/physiology/pharmacology…). A website would describe the umbrella program and research areas and list the faculty who specialize in each interest area; there would be links to faculty members’ updated research interest statements, already available for most faculty through the BioGate faculty database developed by BIOS. In some cases these research areas might contain whole programs (for example under Genetics/Genomics, all GIDP Genetics faculty might be listed); in other cases only a subset of faculty within a department or program may be listed (for example not all Plant Sciences faculty would participate in the umbrella program and those that do might align with a variety of research areas: genetics/genomics, developmental biology, cell signaling, etc.). Also listed under each research area would be potential degrees that could be obtained from the various pre-existing programs with links to those programs/departments. Using Genetics/Genomics again as an example degree programs might include BMCB, Genetics GIDP, EEB, Plant Biology, Cancer Biology, microbiology, etc. Importantly, this umbrella program would not grant degrees (see details in second year and beyond below). What this program would do is provide one-stop shopping for students to see the breadth of opportunities at UA, coordinate recruitment activities, and for matriculated students provide a first year core curriculum in molecular life sciences that all students would take, providing uniformity to training without being too restrictive and building networks and interactions across pre-existing training programs.

III- Graduate Students Applying to the Umbrella Program.
   A) One Application submitted to the program and the graduate school. Students may indicate their preference for one or more area of interest or degree program, but do not have to.
   B) Review of Applications done by an Admissions Committee that has representatives from each participating program. The admissions committee is distinct from the Advisory Committee (see below).

IV- Recruiting/Acceptances
   A) Coordinated recruiting effort with two to three dates for student visits. All programs participate in recruiting. Recruiting visits would be organized by Advisory and Admissions Committees, working closely with all participating programs.
   B) Initial acceptances are into the umbrella program and not to individual degree programs.
   C) Funding: Recruitment expenses are borne by a centralized pool of funds (see below for potential sources of funding). First year stipends also come from these centralized funds. These funds would come from a variety of sources, including potentially: SFAz funding, or programs, training grants, colleges, departments and the graduate school contributing recruiting and first year stipend funds. Possible mechanisms for obtaining these funds for recruitment and first year students are discussed in the budget section. Second year and beyond students are supported by the degree program they join, determined once a mentor and laboratory is chosen, using mechanisms currently in place within each program. The students would receive a degree from the graduate program their mentor participates in.

V- First Year of Graduate Study –Umbrella Program
   A) Suggest 3 standard courses all students would take:
      1) Data management & analysis (bioinformatics and statistics)
      2) Proteins and Nucleic Acids
      3) Genetics/Genomics
   Fourth course for 1st year would be an elective based on area of concentration, chosen from a list of possible courses developed by the Advisory Committee and from courses currently taught in participating units. The above core courses would be designed and team taught
such that they would satisfy requirements of all participating degree programs either as primary courses or electives.

B) Three to four rotations within any lab; all rotations could be within one research emphasis area or span multiple areas, depending on students’ preferences and breadth of interests. First year students will be advised/mentored by a committee composed of faculty reflecting the breadth of the participating programs. To maximize each student’s experience, the committee will meet with the student before the first semester begins and at the close of each semester, to monitor progress and detect any problems the student may encounter. If the student is undecided as to research area, the committee will work with the student to match his/her interests with faculty in the program. Faculty members would serve three year terms on this Advisory Committee. If the entering student has declared an interest in a particular program, a faculty from that program will also participate in mentoring that student. Once a student joins a program/department, mentorship is transferred to that program/department.

C) Stipends and student costs for first year covered by centralized funds.

D) Declaring lab: At the end of the first year, once students have completed rotations and chosen a lab, they then follow the requirements of the graduate program that their faculty member is associated with. PI must have an active extramural grant with at least 2 years of funding left to accept students into his/her lab. Oversight to guarantee funds for the duration of study is provided by graduate program directors, department heads and approved by the appropriate dean, depending on whether the program is interdisciplinary or departmental/college based.

VI- Second Year and Beyond – Individual Programs

A) Qualifying exams are the domain of the individual graduate programs (not the umbrella program). Qualifying exam committee must include at least one faculty member outside of the mentor’s graduate program, but within the umbrella program.

B) Upper level courses are the domain of the individual graduate programs (not the umbrella program). A student may take upper level courses from any program provided the courses enhance the student’s research and his/her thesis committee agrees. Sometimes a qualifying exam will identify a weakness in the student’s command of an area and that student will then be asked to take an additional course that may or may not be given by the student’s home program.

C) A student’s thesis committee will be comprised of faculty members of the student’s home program, plus at least one faculty member outside the home program and from the umbrella program, whose research is related to the student’s thesis work.

D) Official PhD degree is conferred by home program (Department or Interdisciplinary Program) and is from The University of Arizona.

BUDGET

It is anticipated that recruitment expenses and first year stipends will be borne by a centralized managed pool of funds. These funds would come from a variety of sources, including potentially SFAz funding for graduate students as well as programs, training grants, GIDPs, institutes/centers, collages, departments and the graduate school contributing recruiting funds and/or stipends. One possibility is for contributions from units to be retroactive based on the number of students joining their degree programs from the umbrella program. This would mean that each unit would not have contributed support during the first year for the student(s) that joined their program, but would provide support in the second year to the centralized pool of funds to be used in supporting other first year students. To establish such a model, seed funding will be needed to initiate the umbrella program and BIO5 is willing to consider potentially contributing toward this seed fund. An alternative approach would be that representatives from departmental, GIDP or training grant committees with funds to support first year students would review applicants and commit funds to particular students if they matriculate. Second year and beyond students
Recruitment expenses are estimated at $500 per student, thus $20,000 would likely cover the costs to bring the top 40 applicants to campus. If we envision successful recruiting of ten of these students (25% is a conservative estimate given that these students will be receiving offers from other top institutions across the country), stipends for the first year would be ~$250,000 plus ERE. These funds do not require new monies, as the participating units are already spending funds on recruitment and stipends and BIO5 will provide staffing for IT efforts and administration. Cost savings to units could potentially be achieved through pooling resources and staff now being used in duplicative rather than combined recruitment and admission activities. In addition, developing a single set of core courses for first year students would reduce the need for every unit to teach their own core courses and should result in savings within the teaching budgets of the multiple units and colleges involved.