



December 7, 2015

TO: Committee on Academic Personnel
 Committee on Diversity, Equity, & Equal Opportunity
 Committee on Educational Policy
 Committee on Faculty Welfare
 Committee on Library, Information Technology and Scholarly Communication
 Committee on Planning & Budget
 Committee on Research
 Graduate Council
 CNAS Executive Committee
 CHASS Executive Committee
 GSOE Executive Committee
 SOM Executive Committee
 BCOE Executive Committee
 SPP Executive Committee
 SOBA Executive Committee

FROM: Jose Wudka, Chair 
 Riverside Division

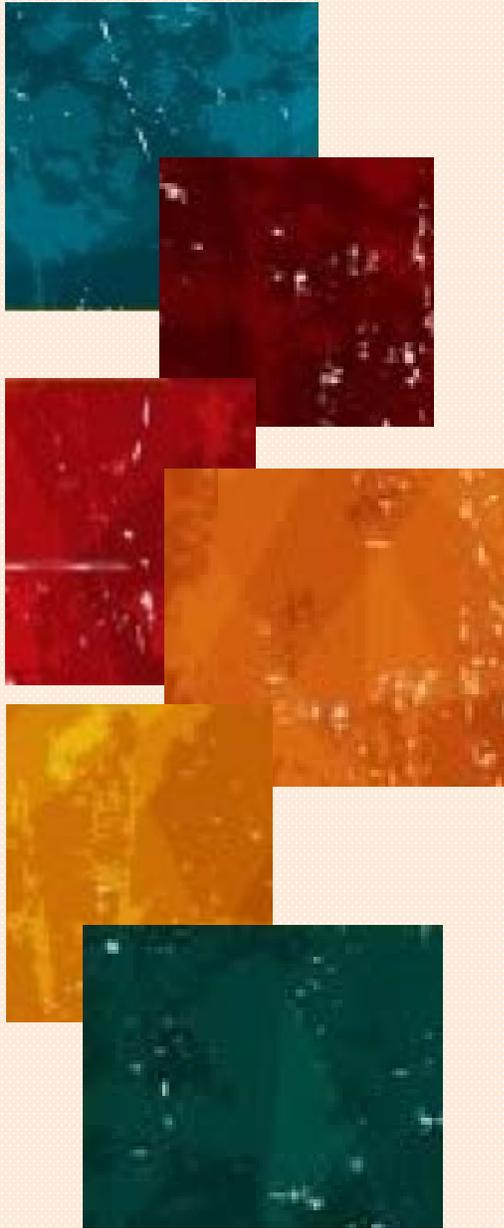
RE: CNAS Reorganization Process

The Interim Dean of the College of Natural and Agricultural Sciences has presented the attached proposal for the reorganization of the college. The main components of this proposal are (i) the establishment of two new departments "Molecular, Cellular and Structural Biology" (MCSB), and "Evolution, Ecology and Organismal Biology" (EEOB), followed by (ii) the voluntary relocation of the faculty from the departments of Cell Biology & Neuroscience (CBNS) and Biology to the new departments; and finally (iii) the disestablishment of the departments of Cell Biology & Neuroscience and Biology once they are empty.

The first and last steps require Senate-wide review and approval, so I am asking your committee to provide recommendations. Please note that the new departments (MCSB and EEOB) must be established, and the faculty transferred to them, before CBNS and Biology can be disestablished; should your committee recommend against the first action no recommendation is needed for the last one.

There is a third aspect of the proposal, the renaming of the department of Environmental Sciences to "Environmental and Ecosystem Sciences". This is not a Senate issue and there is no need for your committee to opine on it.

I would appreciate your response by **January 31, 2016**



Recommendations for Redesign

A Proposal for Reorganization of the College of Natural and Agricultural Sciences

December 2014
(revised February and August 2015)

TABLE OF CONTENTS

Executive Summary	1
Preamble.....	2
Introduction	4
History.....	4
Trajectory.....	5
Academics – Current.....	5
Faculty	5
Students.....	8
Graduate Programs	8
Undergraduate Programs.....	9
Academics - Proposed	10
Mission Statement (DRAFT)	10
Faculty	10
The Division of Agriculture and Natural Resources.....	11
The Division of Life Sciences	14
The Division of Physical Sciences and Mathematics	20
Department Administration.....	20
Teaching Contribution Policy	21
Students.....	21
Transition	23
Research.....	23
Institutes.....	23
Institute for Integrative Genome Biology (IIGB).....	24
Environmental Dynamics and Geo-Ecology Institute (EDGE).....	24
California Agriculture & Food Enterprise (CAFÉ) (under development)	25
Material Science & Engineering (under consideration)	25
Centers	26
Core facilities.....	26
Analytical Chemistry Instrumentation Facility.....	26
Genomics, Proteomics, Bioinformatics, Microscopy and Imaging.....	26
Machine Shop	27
Plant Transformation Research Core.....	27

Administration	27
Centralized Support Services.....	28
Personnel Services Center	28
Undergraduate Student Academic Affairs.....	29
Undergraduate Academic Advising Center (UAAC).....	29
Enrollment Management Center for CNAS (EMC ²).....	30
Graduate Student Academic Advising Center (GSAC)	30
Unit-Based Administrative Support	31
Current Structure	31
Proposed Structure	31
Resources	32
Permanent Budget	32
Temporary Budget	32
Resource Allocation	33
TA Resources	33
GSR Resources	34
Faculty Positions	34
Space	35
Appendix: Roles of Associate Deans	37
Roles of the Associate Dean for Agriculture and Natural Resources	38
Roles of the Associate Dean for Life Sciences, Teaching (Life Sciences and Agricultural and Natural Resources) and Facilities (CNAS)	40
Roles of the Associate Dean Physical Sciences and Mathematics	42
Roles of the Associate Dean for Student Academic Affairs.....	44

EXECUTIVE SUMMARY

The CNAS faculty has been engaged in discussions regarding redesigning the College for two years. The process involved three faculty committees, which produced reports that were synthesized and provided to the faculty for comment. An external review team, comprised of faculty and deans from other UC campuses, reviewed the committee reports and visited the campus, meeting with several groups of faculty from the life sciences, agriculture and natural resources and administrators. The faculty were provided with their report, and asked to submit proposals for the structure of the college. Based on those proposals, draft recommendations for a new structure for CNAS were compiled and distributed to the faculty for comment. This document contains the recommendations from the Dean and Associate Deans, considering all of the input received to date. Our recommendations are summarized below.

- Create a new department and Divisional structure that better reflects our scientific strengths, and fosters current and future synergies:
 - Division of Agriculture and Natural Resources
 - Botany & Plant Sciences
 - Earth Sciences
 - Entomology
 - Environmental & Ecosystem Sciences
 - Nematology
 - Plant Pathology & Microbiology
 - Division of Life Sciences
 - Biochemistry
 - Evolution, Ecology, and Organismal Biology
 - Molecular, Cellular, and Systems Biology
 - Statistics
 - Division of Physical Sciences and Mathematics
 - Chemistry
 - Mathematics
 - Physics & Astronomy
- Change the manner in which Graduate Student Researcher funds are distributed so that all graduate programs are included
- Transition to a teaching contribution policy that is uniform for all faculty
- Provide formal recognition for faculty who currently have a 100% I&R appointment and would like to conduct AES mission-oriented research and/or AES outreach activities

PREAMBLE

The bulk of the discoveries that will provide solutions to the immense challenges that confront humanity in the 21st century will come from the study and application of science. These challenges, which include addressing the causes and impacts of global climate change, the need to feed a growing human population while sustaining our natural environment, understanding human health and disease at the molecular level, synthesizing novel molecules that improve the human condition, and developing a deeper understanding of our universe on scales that range from intergalactic to sub-atomic, have long been seen as inevitable and are now imminent, yet rational solutions remain elusive. The structure of a university college that undertakes instruction and basic and applied research in science *must* address, as its primary goal, these challenges. Its focus *must* be on science, on the training of scientists, and on the general scientific literacy of the citizenry. This focus cannot be blurred. While other academicians most certainly play vital roles in developing and implementing solutions from scientific discoveries, it remains the core mission of science to understand the natural world for the betterment of humanity.

The United States bemoans the decline in its global leadership of science, citing this as a major threat to its commerce, national security, and prosperity. As a result, it implores its educators to develop the talent needed in STEM fields. This college and its sister colleges/schools of Engineering and Medicine have risen to this challenge and will continue to do so. This triumvirate of STEM colleges/schools at UCR remains the central core of fundamental and translational science on the UCR campus. This association extends beyond the instruction of students into the use of core research facilities common to all three, and the membership of faculty from CNAS, Engineering and Medicine in research institutes, graduate programs, externally-funded graduate training grants, and collaborative research grants.

The College of Natural and Agricultural Sciences at UC Riverside is strategically placed to tackle these challenges. One example of college leadership is increased student success in the STEM fields. Indeed we are already providing national leadership in this area. Students who are well-trained in the STEM fields are critical to the future of the region, state, and nation. It is projected that, to maintain its preeminence in science and technology, the U.S. needs to produce approximately 1 million more STEM students than are currently being trained; this means that the US needs to increase by 34% the number of undergraduate students receiving STEM degrees (President's Council of Advisors on Science and Technology (PCAST) Report Engage To Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics, February 2012).

“Retaining more students in STEM majors is the lowest-cost, fastest policy option to providing the STEM professionals that the nation needs for economic and societal well-being, and will not require expanding the number or size of introductory courses...” – PCAST, 2012

CNAS has spent several years developing and modifying undergraduate student success programs; many components of those programs are recommended in the PCAST report. The success of these programs in CNAS has been documented with higher GPAs and graduation rates in STEM fields, and has been recognized by the awarding of large grants from federal funding agencies and private foundations. The

continued success of these programs is best served by a college that remains intact and in focus, with all of the scientific disciplines represented.

“Further research at this intersection [of physical and life sciences] not only will advance our understanding of the fundamental questions of science, but will also significantly impact public health, technology, and stewardship of the environment for the benefit of society.” – NRC, 2010

The 2010 report from the National Research Council’s Committee on forefronts of Science at the Interface of Physical and Life Sciences makes a compelling case for breaking down the silos of traditional science disciplines:

“While the distinctions between disciplines are traditional, they are fast becoming less applicable as science crosses the boundaries that once existed ... It is becoming increasingly irrelevant whether a particular research topic fits neatly into one discipline or another; in fact, many of the most interesting scientific questions and pressing societal issues will require the collective expertise from multiple fields.”

Thus, we believe that keeping the breadth of basic and applied science within the College of Natural and Agricultural Sciences intact is *critical* to foster increased collaborations among the life, mathematical, physical and agricultural sciences.

The redesign of the college outlined in this document is the result of two years of study and analysis by internal and external committees, consultations with the faculty, and revisions based on input from departments and the Academic Senate; this redesign strategically places the college and UCR to best tackle and help solve the challenges that confront us. Our mission is **science**: science research and discovery, science instruction, and science outreach.

It is important to recognize that science has a particular culture, driven by inquisitiveness about the natural world, and satiated by practicing mathematical and logical skills of observation. This is the culture of the scientific method, a process of formulating hypotheses and ceaselessly testing them with data. This culture of scientific inquiry gives our students and faculty their intellectual identity and reason for existing. For that culture and our societal mission to work, it has to be unfettered and unleashed.

Dilution of the college’s mission in science imperils its execution, especially when the driver for dilution stems largely from administrative issues that are secondary to the task of facing critical 21st century challenges. The focus must stay on nimbleness and collaboration in scientific research, by building upon strengths in generating scientific ideas and discoveries, and by delivering the science and mathematics curricula using pedagogies that will enable our graduates to do the same. The focus should match the intensity of the challenges coming to our society in this century.

INTRODUCTION

HISTORY

The structure of the College of Natural and Agricultural Sciences (CNAS) has been largely unchanged for more than 50 years. In response to faculty input during the campus' strategic planning process, in October 2012 Executive Vice Chancellor and Provost Dallas Rabenstein and College of Natural and Agricultural Sciences Dean Marylynn Yates initiated an in-depth review and potential redesign of the organizational structure of the College of Natural and Agricultural Sciences (CNAS) at UCR. The goal was to create a structure that would stimulate synergies among CNAS faculty, strengthen the College research enterprise and graduate programs, increase the College's national and international profile and best position UCR for 21st century science.

Three committees, each with co-chairs from the physical/mathematical sciences and the life/agricultural sciences, were charged with in-depth studies of research, teaching and outreach in CNAS, and with making recommendations that would enable the College to achieve its goals. Committee members included assistant, associate, and full professors and excluded department chairs and directors of CNAS institutes and centers.

Each committee was charged with considering the best approaches to achieving excellence in its area of focus, without directly addressing current College structure and organization or budgetary constraints. The reports generated were then reviewed to determine budgetary feasibility and the implications, if any, for College structure and organization. The final reports of the Research Committee, the Education Committee, and the Outreach Committee were submitted in January 2013. A summary report was prepared and distributed in April 2013.

In May 2013, the Departments of Chemistry, Mathematics, and Physics submitted to Interim Chancellor Conoley a proposal to create a separate College of Physical and Mathematical Sciences. This resulted in a temporary bifurcation of the redesign process.

In February 2014, an external review team, consisting of five faculty members from other UC campuses, was tasked with examining the remaining ten departments in the college, and making recommendations on what organizational structure might best enable those programmatic needs to be met. They visited the campus, meeting with senior administrators, faculty, department chairs and center directors, and the Academic Senate. While it was not specifically part of their charge, Chancellor Wilcox invited the team to comment on the proposal to form a separate College of Mathematical and Physical Sciences. The team was provided with a copy of the proposal, but did not meet with faculty in the three affected departments. The team's findings were submitted in a report that was distributed to the faculty in May 2014. At that time, the faculty was asked to submit proposals regarding the structure of the college.

In March 2014, Chancellor Wilcox requested that the College "develop an integrated plan for the future of the College and its present complement of departments that relies on both the report of Divisional Dean Larive [the proposal from the Departments of Chemistry, Mathematics, and Physics to create a separate College of Physical and Mathematical Sciences], and that of the external reviewers of the agricultural, life and earth sciences." In response to Chancellor Wilcox's request, a report was prepared by the Dean and

Divisional Deans, which contained draft recommendations that took into consideration the input obtained throughout this process. That report was distributed to the faculty in July 2014, with a request for comments to be submitted in September 2014. A revised document taking into consideration those comments, as well as the recommendations of the original redesign committees and those of the external review team was prepared and distributed in February 2015. Additional feedback provided by departments and the Academic Senate has been incorporated into this revision.

TRAJECTORY

The current department structure in CNAS has been relatively static since the 1960s, with the exception of the addition of a few departments. Over the last half century, rapid advances in science and faculty recruitments in emerging fields have created a mismatch with the current department structure. The changes proposed in this document are intended to be the first step in a multi-step process that enables CNAS to keep pace with changes in science, and also better anticipate and respond to them. The proposed changes create a streamlined and more balanced structure in the Life Sciences that is better reflective of current science and faculty composition. In addition to the proposed departmental realignments, we seek to facilitate the creation of new institutes as vehicles for exploration of new areas of research, new collaborations, and new interdisciplinary opportunities. The superimposition of broad and integrative institutes over a set of streamlined departments/divisions creates a nimble and responsive college that is more amenable to future realignments, and more responsive to emerging challenges and opportunities.

As such, we do not see the implementation of the proposed redesign as the end of the process that started in October 2012. Rather, the aim is to best position the college so that it can most expeditiously adapt to the challenges of the decade ahead. It is our hope that additional conversations about the organization of departments within the Division of Agriculture and Natural Resources will continue with the goal of capitalizing on synergies to propel UCR as a leader in translational agriculture. As discussed below, we ask the faculty in the Division of Agriculture and Natural Resources to freely and openly discuss the questions raised in this document about an alternate structure for the agricultural sciences at UCR, and that they do so commencing Fall 2015 with a recommendation to the Dean and the Executive Committee of the College no later than the end of the 2015-16 academic year.

ACADEMICS – CURRENT

FACULTY

As of the 14/15 academic year CNAS had approximately 260 tenure-track faculty, with more than ten additional faculty members to join the college in early 2015. The faculty is currently distributed among thirteen departments, as shown in Table I. Our college is unique on campus, as UCR is one of three UC campuses in the UC Division of Agriculture and Natural Resources (ANR). Therefore, we house more than 100 Agricultural Experiment Station scientists [who hold Organized Research (OR) appointments] and Cooperative Extension Specialists [who hold Cooperative Extension (CE) appointments]. CNAS faculty have several different types of appointments: 100% Instruction & Research (I&R), split I&R/OR, split OR/CE, split I&R/CE, split I&R/OR/CE, or 100% CE. While the I&R and OR FTE are held by the campus, the CE FTE are held centrally within ANR.

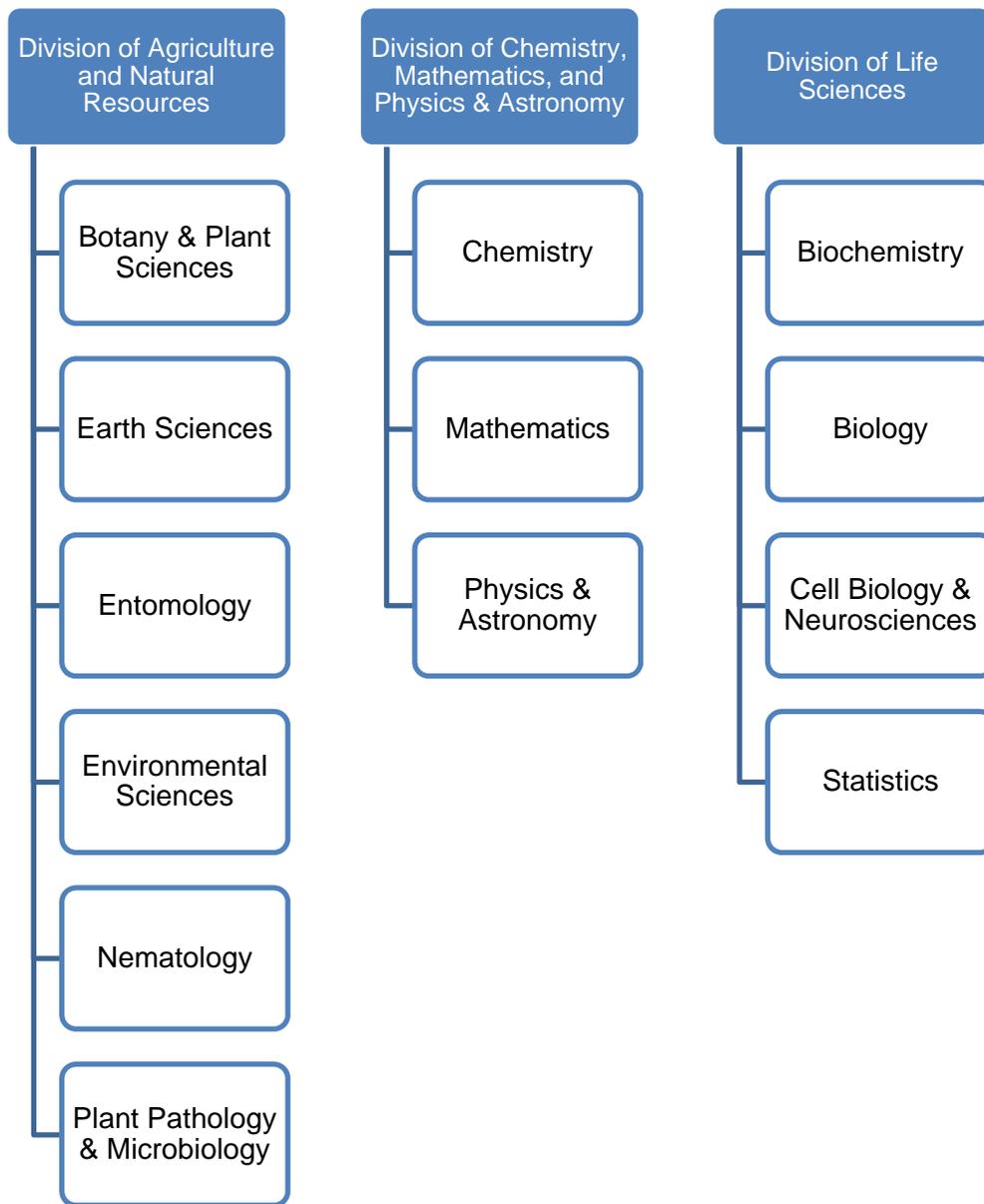
Table I: 2104/15 Faculty Distribution*

Department	I&R FTE	OR FTE	CE FTE	Total FTE
Biochemistry	10.40	2.60	0	13.00
Biology	20.75	0.25	0	21.00
Botany & Plant Sciences	9.78	21.97	7.35	39.10
Cell Biology & Neuroscience	16.20	2.50	0	18.70
Chemistry	29.10	0	0	29.10
Earth Sciences	14.50	0.50	0	15.00
Entomology	6.65	20.25	4.25	31.15
Environmental Sciences	4.25	8.60	1.65	14.50
Mathematics	24.00	0	0	24.00
Nematology	1.08	4.77	2.15	8.00
Physics & Astronomy	31.00	0	0	31.00
Plant Pathology & Microbiology	4.81	11.19	1.50	17.50
Statistics	7.50	0.50	0	8.00
TOTAL	180.02	73.13	16.90	270.05

*Totals include three new faculty with start dates effective 7-1-15

Currently, the department structure is as shown in Figure 1, with each division being headed by a Divisional Dean. The Division of Agriculture and Natural Resources is comprised of UCR's core agriculture programs and earth and environmental sciences, which focus on natural systems. The Divisional Dean for Agriculture and Natural Resources has responsibility for oversight of the Agricultural Experiment Station and Cooperative Extension activities of the campus. The Division of Chemistry, Mathematics and Physics and Astronomy will continue but will be renamed the Division of Physical Sciences and Mathematics under the new CNAS structure. While each department has its own well-defined research strengths, the interdisciplinary thrust area of Materials Science and Engineering provides synergies for many Chemistry, Physics and Applied Mathematics faculty. The Division of Life Sciences oversees the life science departments, which represent the broad spectrum of life science research, from the molecular to the organismal levels. The Division of Student Academic Affairs is described separately below, under centralized support services and centers.

Figure 1. 2014/15 Departmental Structure



STUDENTS

GRADUATE PROGRAMS

CNAS faculty administers and/or participates in numerous graduate programs. These are listed in Table II.

Table II. Headcount Enrollment in CNAS Graduate Programs (SARA, Fall 2013 data)

Department	Major	Graduate Students
Biochemistry	Biochemistry & Molecular Biology	45
Biology	Evolution, Ecology, and Organismal Biology	50
Botany & Plant Sciences	Plant Biology	55
Chemistry	Chemistry	112
Earth Sciences	Geological Sciences	42
Entomology	Entomology	43
Environmental Sciences	Environmental Sciences	23
Interdepartmental	Cell, Molecular, & Developmental Biology	32
Interdepartmental	Environmental Toxicology	40
Interdepartmental	Genetics, Genomics & Bioinformatics	31
Interdepartmental	Evolutionary Biology, joint SDSU	3
Interdepartmental	Material Science & Engineering*	21
Interdepartmental	Microbiology	17
Mathematics	Mathematics	71
Cell Biology & Neuroscience	Neuroscience	26
Physics & Astronomy	Physics	114
Plant Pathology & Microbiology	Plant Pathology	19
Statistics	Statistics	17
Statistics	Applied Statistics	27

*The number for Material Science and Engineering reflects students mentored by CNAS faculty (21) out of 53 total (Spring 2014)

UNDERGRADUATE PROGRAMS

CNAS faculty administers and/or participates in numerous undergraduate programs. These are listed in Table III.

Table III. Headcount Enrollment in CNAS Undergraduate Programs (SARA, Fall 2013 data)*

Department	Major	Undergraduates
Biochemistry	Biochemistry	708
Biology	Biology	1635
Biology	Post baccalaureate pre-med	10
Botany & Plant Sciences	Plant Biology	34
Chemistry	Chemistry	189
Earth Sciences	Geology	45
Earth Sciences	Geophysics	6
Earth Sciences	Geosciences Education	0
Entomology	Entomology	39
Environmental Sciences	Environmental Sciences	184
Interdepartmental	Cell, Molecular, & Developmental Biology	136
Interdepartmental	Microbiology	68
Mathematics	Mathematics	299
Mathematics	Mathematics for Secondary School Teachers	60
Cell Biology & Neuroscience	Neuroscience (intercollegiate with CHASS)	384
Physics & Astronomy	Physics	96
Statistics	Statistics	44
Undeclared NAUN	Undeclared – CNAS*	191
Undeclared NAUL	Undeclared - life sciences**	236
Undeclared NAUM	Undeclared - mathematical sciences**	80
Undeclared NAUP	Undeclared - physical sciences**	92

*continuing students in poor academic standing who have been discontinued from their major

**new students in good academic standing who have until the end of sophomore year to declare a specific major

ACADEMICS - PROPOSED

MISSION STATEMENT (DRAFT)

The College of Natural and Agricultural Sciences (CNAS) houses world-renowned scholars dedicated to the mission of conducting research that deepens our fundamental understanding of the universe, our planet, and the life it supports. CNAS forms the core of UCR's special mission as a land-grant university. Our scientific discoveries are critically important to sustainable solutions to the challenges of feeding a growing human population amidst global climate and ecological change. CNAS faculty work to understand human and plant health and disease at the molecular level, synthesize novel molecules that improve the human condition, and develop a deeper understanding of our universe on scales that range from intergalactic to ecosystem to sub-atomic. Central to our mission is educating a diverse population of students whose creative minds are the future of the sciences and whose ability to think critically in solving problems and fostering change will improve the lives of people throughout the world.

The college's departments encompass the agricultural, life, mathematical and physical sciences and rely on an extraordinary degree of collaboration, reflected in our interdisciplinary research centers and many cooperatively taught degree programs. Modern science is team-based, and CNAS embodies this principle in its research, teaching, and outreach activities for the betterment of the citizens of California and the world.

FACULTY

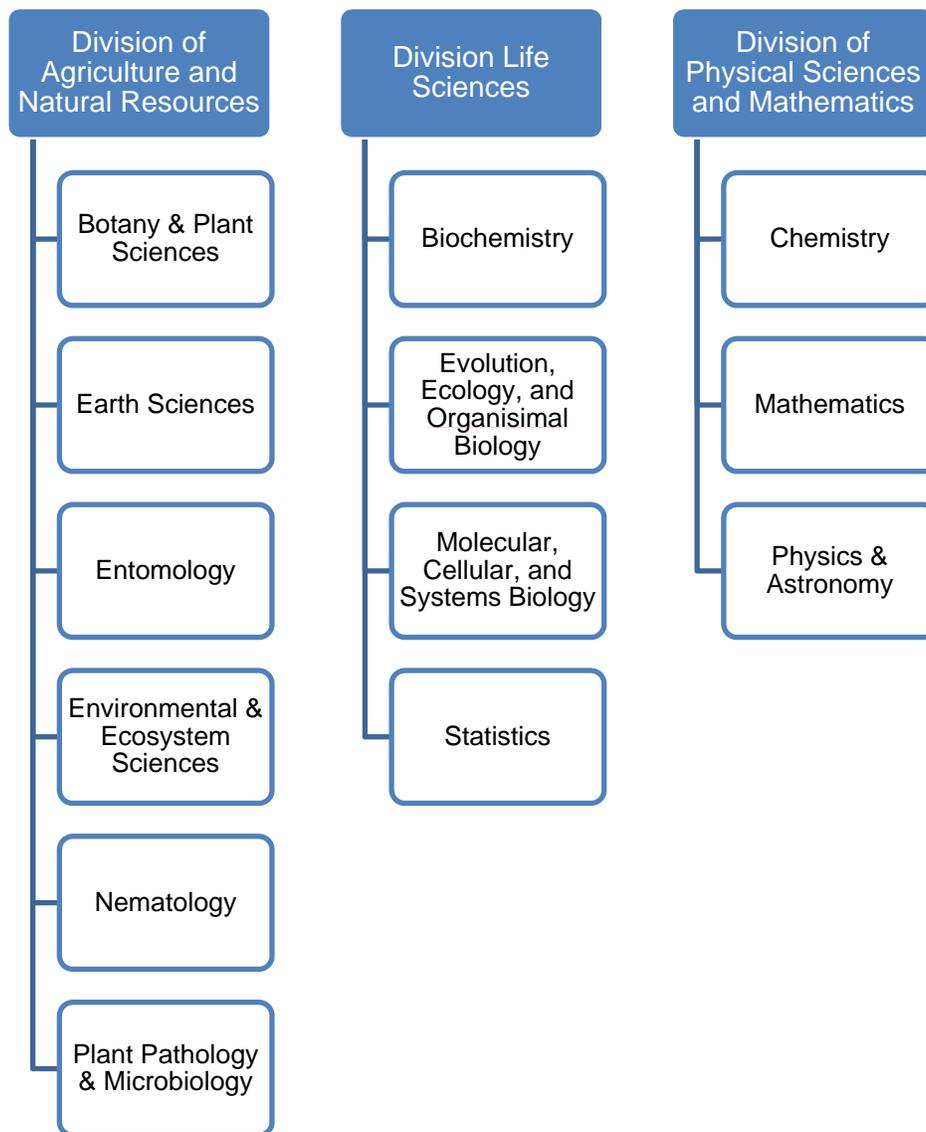
After considering the input of the faculty and the external review team, and feedback provided by departments and the Academic Senate, the following CNAS department structure is proposed (Figure 2). The departments are not intended to denote wholesale mergers of existing departments, but instead serve to suggest where many faculty members may seek to realign themselves. Upon finalizing the new CNAS structure, faculty will have the choice of which department(s) is/are best suited to enable them to pursue their collaborative intellectual activities. Should they so desire, the departmental faculty will then be in a position to propose a new or modified name for their unit that better reflects their research focus. It is anticipated that many of the departments will create internal divisions that will facilitate both governance and collaboration. The current reorganization is focused primarily on departments in the Division of Life Sciences, however we recommend that there be immediate plans to discuss and reevaluate the organizational structure of departments in the Division of Agriculture and Natural Resources. These will be described in more detail below.

The departments are grouped into three Divisions, each of which will be led by an Associate Dean (replacing the current title of Divisional Dean). Department Chairs will continue to report to the Dean, through the appropriate Associate Dean. The Associate Deans serve to facilitate communication between the faculty and the Dean's Office, and to carry out some of the academic administrative operations of the College.

The structural redesign we recommend is largely faculty-driven, with arguments for a new structure coming from faculty proposing new departments of Molecular, Cellular & Systems Biology (MCSB), Evolution, Ecology, and Organismal Biology (EEOB) and Environmental and Ecosystems Sciences. We retain the autonomy of the Departments of Biochemistry, Botany and Plant Sciences, Chemistry, Entomology,

Mathematics, Nematology, Physics & Astronomy, Plant Pathology & Microbiology, and Statistics as requested by their faculty. The focus on growing the fundamental disciplines will strengthen all of the college and will lead to a more complete integration of agriculture into the life sciences.

Figure 2. Proposed Department Structure



THE DIVISION OF AGRICULTURE AND NATURAL RESOURCES

Research in the College of Natural and Agricultural Sciences spans a continuum from mission-oriented research in agriculture and natural resources that addresses problems important to the people of California to fundamental transformative research focused on discovering new knowledge and technologies to advance both science and the welfare of Californians and the broader society.

The future of agriculture is inevitably and irrevocably intertwined with the life and physical sciences. Past and current funding models for support of agricultural research are unlikely to be reliable indicators of future federal, state, and private support as we face increased uncertainty with food production and sustainability in the face of climate change and other challenges. The question is not how we partition agriculture from the rest of the college(s). Rather it is how we properly integrate it with the life and physical sciences to optimally position UCR to successfully compete for resources using the leverage this holistic approach and structure will bring to bear on this issue of national importance and security. In doing so, UCR will have a unique structure that will facilitate global leadership solutions in the successful and sustainable practice of arid agriculture. It will also position us to better respond to calls for increasingly interdisciplinary research proposals. For example, the National Institute of Food and Agriculture's latest RFP includes a call for proposals that are not focused solely on agricultural sciences; rather they fall into the following integrative areas: Ecology and Evolution of Infectious Diseases, Food Insecurity Nutrition Incentive, and the National Robotics Initiative. Indeed, the creation and 2014 strategic plan of NIFA can be seen as the first steps toward a much broader approach to supporting agricultural research, independent of the traditional boundaries and divisions of agriculture within land grant universities. Furthermore, this integration within CNAS facilitates strategic synergies with the other academic units on campus. UCR has substantial assets that it brings to this critical challenge and opportunity: its exemplary track record in translational agricultural research over more than 50 years, its contributions to basic research in the life and physical sciences, its substantial agricultural operations center located adjacent to the campus, and a significant institutional understanding of the importance of agriculture to human and economic health and well-being.

The Division of Agriculture and Natural Resources will be headed by the Associate Dean of Agriculture and Natural Resources and, for the immediate future, will consist of six departments:

- Department of Botany & Plant Sciences - existing
- Department of Earth Sciences - existing
- Department of Entomology - existing
- Department of Environmental & Ecosystems Sciences – new
- Department of Nematology - existing
- Department of Plant Pathology & Microbiology - existing

Rationale for Structure

DEPARTMENT OF BOTANY & PLANT SCIENCES

The faculty members in this department utilize plants and plant systems as the basis for their research, with a focus on structure, function, and ecology of healthy plants.

DEPARTMENT OF ENTOMOLOGY

The Entomology department contains faculty who work across a range of disciplines and we recognize their desire to retain all of these under a single taxon-based department. Our argument for enabling the fundamental disciplines through the creation of an MCSB department has been made above. Here we note

that this may in fact enable the department to focus on those areas that have been its traditional strength, such as biological control, which will have increasing importance in the future as a “green” approach to the control of invasive insects and weeds. Collaborations with leading geneticists and microbiologists in other departments would be created. We repeat that building the fundamental disciplines such as biochemistry, genetics, and molecular and cellular biology will have enabling effect on the agricultural sciences and will *increase* the necessary integration between both.

DEPARTMENT OF EARTH SCIENCES

The Earth Sciences department expressed a strong desire to remain as a separate department.

DEPARTMENT OF ENVIRONMENTAL & ECOSYSTEM SCIENCES

The creation of a Department of Environmental and Ecosystems Sciences (E2S) was discussed by faculty from five departments, Environmental Sciences, Botany & Plant Sciences, Biology, Entomology and Plant Pathology & Microbiology, who expressed a strong interest in establishing this department. We note that the external review committee commented on the resources being available to do so and that a similar recommendation had been made by a focused review of this area in 2009. We believe that this action is overdue and, as these faculty members noted, bringing these departments together “offers a more comprehensive approach to the campus’s strategic priority in Renewable Nature by linking pollution, climate change and other anthropogenic stressors more effectively to the structure and functioning of natural and managed ecosystems”. These faculty members also noted concerns with where the study of ecology would be centered in the college and our recommendation is that faculty members be allowed to determine in which department (*e.g.*, EEOB or E2S) they wish to be based to undertake their research, with the EDGE Institute providing an overarching linkage. We envisage that there may be shifts of faculty between these departments in the ensuing years and this flexibility must be ensured. The college remains committed to this visionary proposal and supports its genesis.

DEPARTMENT OF NEMATOLOGY

The Nematology department expressed a strong desire to remain as a separate department. We maintain our belief that the department has too small a faculty number which, in the absence of both a major and a graduate program, presents it with an existential problem.

DEPARTMENT OF PLANT PATHOLOGY & MICROBIOLOGY

The Plant Pathology department expressed a strong desire to remain as a separate department. We have stated above the rationale for placing microbiology in a separate division within the MCSB department and for simultaneously enabling the study and practice of plant pathology to develop in its own right. We adhere to this proposal believing a strong focus on plant pathology best serves the college, campus and state as the impacts of climate change and disease threaten crop sustainability.

TRANSLATIONAL AGRICULTURE – A POTENTIAL NEW VISION FOR THE FUTURE

The concern remains that the structure of the agricultural sciences remains fragmented and that an opportunity exists to develop a “Translational Agriculture” thrust that would best position the college for the coming decades. The impact that climate change will have on crop productivity through ongoing shifts in abiotic and biotic stress provides an opportunity to increase collaboration, instruction and research between traditionally taxon-based departments without compromising either their independence or focus. Several of these departments have achieved national and international leadership in their disciplines. Re-envisioning our strengths in terms of “Translational Agriculture” could increase our ability to bring this excellence to bear to the pressing sustainability problems facing California and the nation and brand UCR as a leader in translating state-of-the-art life science research to practice in the environmental and agricultural sciences.

THE DIVISION OF LIFE SCIENCES

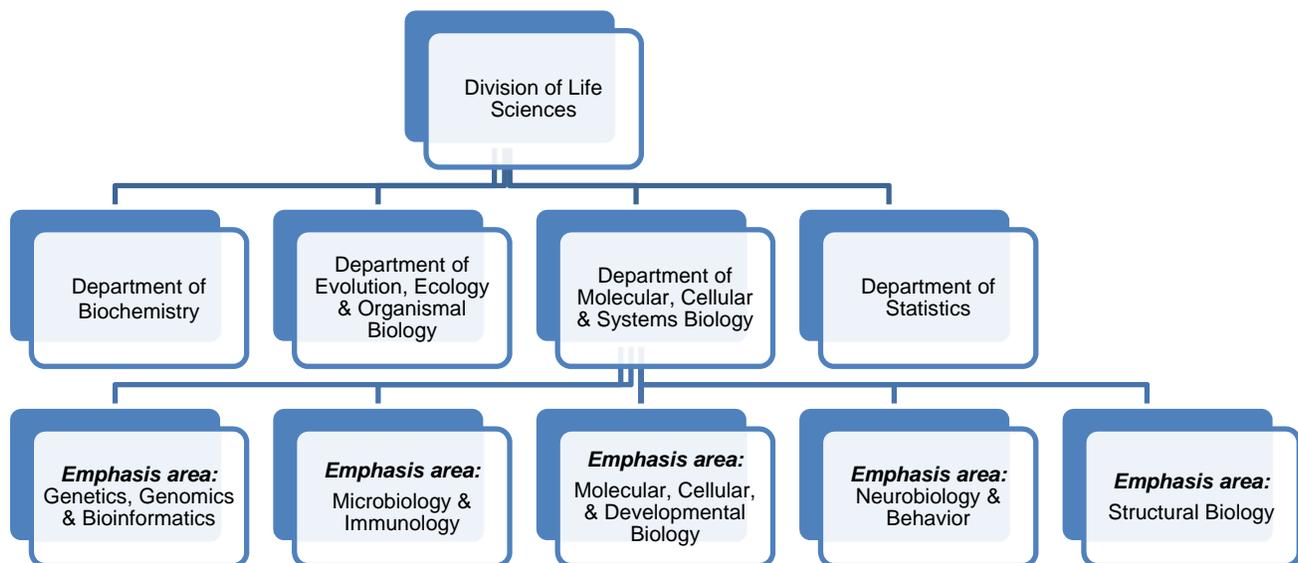
The Division of Life Sciences will be headed by the Associate Dean of Life Sciences, and will consist of four departments:

- Department of Biochemistry - existing
- Department of Evolution, Ecology and Organismal Biology (EEOB) - new
- Department of Molecular, Cellular and Systems Biology (MCSB) - new
- Department of Statistics - existing

It is anticipated that the MCSB department would consist of several internal divisions with different emphases in research and instruction. Consistent with suggestions made by the faculty, several possible areas of emphases are listed below and shown in Figure 3. The actual names will be recommended by their faculty members. For the purposes of this document, these emphasis names are used as division names throughout.

- Genetics, Genomics & Bioinformatics (GGB)
- Microbiology and Immunology (MBI)
- Molecular, Cellular & Developmental Biology (MCDB)
- Neurobiology & Behavior (NBB)
- Structural Biology (SB)

Figure 3. Structure of the Division of Life Sciences



A search for the founding chair of the MCSB department should be conducted in 2015/16 in order to attract a visionary academic leader who has an international reputation in these areas, and can lead this department to national and international prominence by 2020. The founding chair of MCSB could also be appointed as Director of the Institute of Integrative Genome Biology (IIGB), assuming oversight of the two research centers and 4 core facilities under its control. Alternatively, it may be more strategic to appoint both a founding chair of MCSB and the next Director of IIGB so that s/he can focus their attention on further developing the IIGB.

Rationale for Structure

DEPARTMENT OF MOLECULAR, CELLULAR & SYSTEMS BIOLOGY (MCSB)

Support for the establishment of an MCSB department came from 35 faculty members from the current departments of Cell Biology & Neuroscience (CBNS), Botany & Plant Sciences (BPS), Plant Pathology & Microbiology (PLPM), Biology, and Entomology (ENTM). The CBNS department recommended that this proposal “merits serious consideration”. The creation of an MCSB department also received support from the Interdepartmental Cell, Molecular and Developmental Biology Graduate Program, which noted the integrative, inter-disciplinary approach of contemporary life sciences research.

The PLPM department recommended the creation of a Department of Microbe, Host, and Environmental Systems Biology, which would focus on the “biology of microorganisms and their interactions with hosts, other microorganisms, and the environment”. While based on the current PLPM department, it also included faculty from the Nematology, BPS, CBNS, Biology, and Environmental Sciences departments; however, this proposal did not receive support from faculty outside of the department. We believe it illogical to base the

broad discipline of microbiology within a department that would remain primarily focused on the discipline of plant pathology. We believe that internationally recognized mammalian virologists and bacteriologists would not likely be attracted to such a department, especially because UCR now hosts a medical school. Furthermore we believe that this dilution of the department's mission would have a negative impact on its ability to recruit and perform research in plant pathology, which will most likely increase in importance in years ahead as the effects of climate change result in increased stress to crops, making them more susceptible to disease. For these reasons, we recommend the establishment of a division of microbiology within the MCSB department.

The college strongly recommends the formation of the MCSB department for the reasons outlined by their founding faculty, these being that it brings together faculty who work on biological systems including viruses, bacteria, fungi, plants, insects and vertebrates as a research and instructional constellation who utilize contemporary techniques in genetics, genomics, molecular biology and structural biology. There are clear advantages to having these faculty under a single department with respect to: 1) enabling the hiring of outstanding and diverse faculty, 2) enabling the consolidation of research facilities and resources through reducing departmental competition for similar or identical materiel, 3) reducing and perhaps eliminating the need for college-wide searches (some of which have proven problematic in their execution), 4) providing a more consistent departmental metric for the evaluation of academic files during the merit and promotion process, and 5) providing an opportunity for the restructuring of the graduate programs, matching many of them directly with the participating faculty.

The department would be divided into five divisions reflecting the importance of each of the disciplines they represent. Importantly, the divisional structure will allow for ready flexibility so that the faculty can rapidly respond to new scientific advances and challenges. New divisions can be created and current ones dissolved through faculty consultation within the department, allowing almost immediate action, in contrast to the years that are required to form new departments. The divisional structure allows for sufficient flexibility for growth and transfer of resources between divisions. Based on the experiences of faculty at other UC campuses, it is within the divisions that the scholastic activities of instruction, research and innovation lie.

The strength of the MCSB department with its five divisions is that it brings together the college-wide expertise in the fundamental disciplines of genetics, microbiology and immunology, molecular and cell biology, neuroscience and structural biology, ensuring their autonomy while increasing the flexibility within which they can grow and rapidly change/adapt to emerging directions within them. It consolidates and streamlines the operation of core facilities within the department. It increases the ability of each division to recruit stellar faculty, knowing that they can focus on their own discipline but that the overlaps with the other fundamental disciplines are proximal. It enables the formation of graduate training grants and program project grants. The MCSB department integrates the disciplines that provide the foundation for the revolution in life sciences and so optimally positions both UCR and the college for future challenges and opportunities.

The traditional argument and arrangement within CNAS has been that placing portions of the fundamental sciences into taxon-based departments within the agricultural sciences provided integration at the departmental level. This strategy originated many decades ago and has resulted in geneticists and cell and molecular biologists being dispersed throughout the college. Without question, within this framework, these faculty members have made significant research contributions to their departments and college and attracted

substantial extramural support. The traditional argument that multiple taxon-based departments can each support faculty with breadth of expertise ranging from applied approaches at the inter-organismal population level down to basic science at the subcellular and chemical level is not without merit.

We do not believe, however, that this arrangement best serves the needs of these, and other, departments within the college and therefore does not best serve either the college or the university. The fundamental disciplines of the life sciences are those that have undergone, and continue to undergo, the most dramatic change due principally to advances in detection and measurement of intracellular components and molecules, and to advances in DNA and RNA sequencing and analysis, and in advances in mass spectrometry and proteomics. These technologies are common among taxa and require a shared and common set of skills, expertise and equipment, ranging from the relative inexpensive to very expensive.

It is an inefficient use of resources to duplicate these fundamental disciplines within taxon-based departments. The recruitment of outstanding junior faculty from these fundamental disciplines into taxon-based departments is made more problematic than it should be, as these candidates are more likely to join a department devoted to their discipline with a critical mass of faculty than one that has faculty spread across disciplines. The college has attempted to deal with this issue by initiating college-wide searches for positions in virology, epigenetics and gene regulation; however, these have proven to be problematic to execute due to the incongruence between current research directions in these fundamental disciplines and the structure of the college.

A strong group of MCSB divisions will greatly enable the School of Medicine's research arm through increasing the depth and talent of the faculty pool with respect to recruitments in both. Indeed the synergies between patient care, disease control, drug design, cell biology, genomics, neuroscience and microbiology are becoming the foundation of modern clinical practice and will only increase in the years ahead. It will have the same impact on the agricultural sciences. A large part of the revolution in life sciences is that the genetic, molecular and physical tools now make any organism a "model" organism in which alterations to genotype can be made and effects on phenotype measured. As these are increasingly applied to agricultural problems, the deep integration between the agricultural and life scientists at UCR will place the university in a highly advantageous position to develop new solutions for agriculture, improve existing ones where needed, and to assist with traditional approaches where needed. This also will have an enabling impact on the Environmental and Ecosystem Sciences department in providing expertise and synergies to ecological problems which increasingly require expertise in genomics and bioinformatics, as these enabling tools become more widely used to understand ecological- and population-scale biology problems.

The Impact on Graduate Programs

The creation of an MCSB department with a divisional structure will provide a means to directly address the inequities which have arisen over the past 15 years between department-based and interdepartmental-based graduate programs in the life sciences. For example, opportunities will arise for the merger of the Cell, Molecular & Developmental Biology Program with the Genetics, Genomics & Bioinformatics Program, resulting in a larger and more robust graduate program housed within MCSB. The interdepartmental graduate programs in Neuroscience and in Microbiology could also be placed into MCSB divisions and so would gain the added resources and flexibility of a department-based graduate program.

EMPHASIS AREA: GENETICS, GENOMICS & BIOINFORMATICS (GGB)

Geneticists within the college have been distributed across several departments, which has been a less than optimal structure as advances in genomic technology, quantitative genetics and bioinformatics have revolutionized this discipline over the past 15 years with translational outcomes now impacting the life sciences from medicine to agriculture. The IIGB and the Genomics Building have provided a partial solution to this problem and it is significant that the creation of both have served to catapult the international reputation of this discipline at UCR. Basing geneticists within a single division in the MCSB department will complete this consolidation, should directly lead to the establishment of a GGB undergraduate major, will greatly facilitate the hiring of stellar new faculty, and will further increase research synergies amongst geneticists regardless of the organism they study.

EMPHASIS AREA: MICROBIOLOGY AND IMMUNOLOGY (MBI)

At present the discipline of microbiology is administered by the PLPM department; however, microbiology extends well beyond plant pathogens and is assuming larger prominence as progress is made in genomics and in understanding how the microbiological flora of vertebrates and invertebrates can affect their phenotype. The PLPM department has argued that all positions in the college-wide search for mammalian virology be assigned to it. However, the counterargument is that a PLPM department is an inappropriate home for faculty who work on the diversity of microbiological issues, with mammalian virology being a clear example. As is the case with NBB and SB, a division within MCSB provides this discipline with the opportunity to expand and to recruit stellar new faculty who would also increase linkages with the medical school.

EMPHASIS AREA: MOLECULAR, CELLULAR & DEVELOPMENTAL BIOLOGY (MCDB)

Faculty members with expertise in molecular, cellular, and developmental biology are currently housed in different departments, namely CBNS, with many animal cell biologists and BPS, with several plant cell biologists. While some aspects of plant and animal cells certainly differ, the many similarities between them, combined with the complete overlap in genetic, molecular and physical tools required for their study (for example sophisticated microscopes) make the consolidation of this discipline necessary in order to both increase synergies between the groups and to enable the recruitment of outstanding faculty.

EMPHASIS AREA: NEUROBIOLOGY & BEHAVIOR (NBB)

Both the growth in research and funding within this discipline, combined with the increase in students wishing to major in it, dictate that this discipline now be provided with a structure that enables its rapid growth within the college and across UCR. While the division will likely commence with a relatively small number of faculty, the establishment of Neurobiology & Behavior as its own division should improve the ability of the college to recruit excellent new faculty to this rapidly-growing discipline. Considering UCR's expertise in both vertebrate and invertebrate neurobiology, this division will be somewhat unique. The new title also more accurately reflects the intercollegiate nature of this major via participation by CHASS faculty in Psychology.

EMPHASIS AREA: STRUCTURAL BIOLOGY (SB)

The college agrees with the external review committee that the discipline of biochemistry is fundamentally important to the life sciences, extending from medicine to agriculture. We recognize the strong desire of the current Biochemistry department to remain a separate department, and have maintained its autonomy as a department in the current proposal. We believe that the creation of an emphasis area in structural biology within MCSB will strengthen collaborations among the biochemists and other faculty within the department.

Department of Evolution, Ecology & Organismal Biology (EEOB)

Approximately 75% of the existing Department of Biology proposed to change the name of the department to EEOB and, in doing so, focus on these three disciplines exclusive of sub-organismal biology. The department has made the justification for this strategic move in their submission to the college and this will not be repeated here. The department has a strong reputation centered on evolutionary biology and ecology; focusing their efforts on these provides the department a clear direction and mission to expand in these overarching disciplines. These faculty members were “generally supportive” of a larger “Division of Biological Sciences” as recommended by the external review report and submit that their proposal for a new EEOB department is “in the spirit of the external review team’s recommendations”. The department posits, correctly we believe, that it is “impractical” for a faculty of 21 to adequately cover the breadth of 21st century biology and we believe that that structure presented here by the college is consistent with the department’s views. In this regard there is agreement in vision between the proposed members of the EEOB department and those of the proposed MCSB department, representing a considerable number of life science faculty members in the college, some of who are currently appointed to departments in the proposed Division of Agriculture and Natural Resources. The distinction among the two new departments really involves their different spatial and temporal *scales* of observation, which are a more modern and complementary approach than that provided by a more traditional taxonomic division.

The Graduate Program in EEOB would continue to be based in the department.

Department of Biochemistry

The BCH department expressed a strong desire to remain as a separate department, citing biochemistry as a foundation discipline and the size and quality of its large major. The department also raised concerns as to the success of future recruitments should it lose its independent status. We agree that biochemistry is a foundation discipline and note that the Biochemistry, Biophysics and Structural Biology Division in the Molecular and Cell Biology Department at UC Berkeley maintains its independence within this structure.

Department of Statistics

The faculty of the department of Statistics has strongly voiced a desire to remain an independent department, citing the impact that the discipline has on a range of scientific disciplines and that a loss of identity would be detrimental to their ability to retain and recruit faculty. The faculty who proposed the MCSB department also agreed that it was better if the Statistics department retained its departmental identity. Their placement within the Faculty of Life Sciences is reflective of their current collaborations and with the expectation that

these links will continue to flourish. Of course, it does not preclude collaborations with departments elsewhere in the college or university.

THE DIVISION OF PHYSICAL SCIENCES AND MATHEMATICS

The Division will be headed by the Associate Dean of Physical Sciences and Mathematics, and will consist of three departments:

- Department of Chemistry - existing
- Department of Mathematics – existing
- Department of Physics & Astronomy - existing

Chemistry, mathematics, and physics and astronomy are core academic disciplines central to the education of undergraduate students in most fields, and especially students selecting science and engineering majors. The graduate and undergraduate programs of these departments are closely aligned and identified with their disciplines. At the same time, there is significant intellectual overlap of the research of some chemistry, physics, and applied mathematics faculty with those in the life sciences, the School of Medicine and the Bourns College of Engineering. Their existing departmental structures have proven to be effective in administering their teaching missions, and in facilitating the disciplinary and collaborative research of the faculty. As these departments grow, the faculty may determine that the formation of formalized internal divisions would be desirable for their governance and operation.

DEPARTMENT ADMINISTRATION

Each department will determine how it will best operate, and will be asked to develop a document that describes its administration. Depending on the proposed administrative operations, the document may require review by the Academic Senate and/or Dean's Office. Herein, we present ideas for department-level administrative/governance structures and internal processes that have been implemented at other UC campuses that may be useful, especially for larger departments with internal divisions. Faculties of other institutions have found organizing around divisions to be extremely useful. An advantage of divisions is that they do not need external approval for either their formation or dissolution. Thus, faculty can rapidly respond to changes in the discipline. Departments with a divisional structure have reported that the bulk of the academic activity of the faculty rests within the division, with the larger department serving to handle some of the administrative matters and to serve as a conduit for communication with the Dean's Office.

Please note that these are only suggestions; other models may better serve the needs of individual departments. Some of these issues may need to be reviewed and approved by the Academic Senate.

To facilitate internal operations and communication, the chairs of large departments may wish to appoint division heads. These individuals could serve as the leadership committee for the department, and coordinate several activities within the division.

Some examples include the following.

- Merits and promotions
 - For regular merit actions, the department may wish to allow the primary review to occur within the division. Faculty throughout the entire department would be invited to review and vote on all files at a department-wide meeting.
 - For promotions and accelerations, the faculty in the division would conduct the initial review and present the case to the entire faculty for vote.
- Position requests
 - Faculty within each division would prepare a prioritized list of position requests.
 - The division heads would work with the department chair to develop a single prioritized list of position requests from the department

TEACHING CONTRIBUTION POLICY

In May 2014, we distributed the first iteration of a college-wide teaching contribution policy. In brief, that policy created department-wide teaching targets, based on the faculty member's appointments:

- Faculty with 100% I&R appointments
 - Mathematics/Statistics: 4 courses/year
 - All other departments: 3 courses/year
- Faculty with I&R/OR appointments: 1.5 courses/year

This policy is currently undergoing revision, based on faculty input. The ultimate intent is to transition to a policy in which departmental teaching targets will be calculated on the basis of all faculty (with the exception of CE specialists) teaching the same number of courses per year (with the possible exception of faculty in Mathematics and Statistics). As in the current model, credit will be given for activities such as serving as chair or vice chair. In addition, credit will be given for conducting mission-oriented research and/or outreach that is vetted and documented, for example, by having an approved federal Hatch project.

STUDENTS

The anticipated responsibility for directing the current graduate and undergraduate programs is shown in Table IV. The new organizational structure may promote the rebranding or reorganization of current programs, and over the longer-term, the development of new undergraduate majors and graduate programs. Because undergraduate and graduate program administration requires resources (*i.e.*, staff and TA support) a review and realignment of resources will follow this faculty self-reorganization.

Table IV. Proposed Administration of Graduate and Undergraduate Programs (Headcount FTE Fall 2013)

Department	Undergraduate Programs	No. Students	Graduate Programs	No. Students	
Botany & Plant Sciences	Plant Biology	34	Plant Biology	55	
	Plant Pathology		Plant Pathology	19	
Environmental & Ecosystem Sciences	Environmental Sciences	184	Environmental Sciences	23	
	Earth Sciences	Geology	45	Geological Sciences	42
		Geophysics	6		
	Geosciences Education	0			
Entomology	Entomology	39	Entomology	43	
Chemistry	Chemistry	189	Chemistry	112	
Mathematics	Mathematics	299	Mathematics	71	
	Mathematics for Secondary School Teachers	60			
Physics & Astronomy	Physics	96	Physics & Astronomy	114	
Biochemistry	Biochemistry	708	Biochemistry & Molecular Biology	45	
Molecular, Cellular & Systems Biology	Biology ¹	1635	Cell, Molecular & Developmental Biology	32	
	Cell, Molecular & Developmental Biology	136	Genetics, Genomics & Bioinformatics	31	
	Microbiology	68	Microbiology	17	
	Neuroscience	384	Neuroscience	26	
Evolution, Ecology & Organismal Biology	Biology ¹	1635	Evolution, Ecology & Organismal Biology	50	
			Evolutionary Biology (joint with SDSU)	3	
Statistics	Statistics	44	Statistics	17	
			Applied Statistics	27	
CNAS	Undeclared - CNAS ²	191			
	Undeclared - life sciences ³	236			
	Undeclared - mathematical sciences ³	80			
	Undeclared - physical sciences ³	92			
			Material Science & Science Engineering ⁴	21	
		Environmental Toxicology	40		

¹jointly administered by EEOB & MCSB with consultation from Life Science Council of Chairs consultation

²continuing students in poor academic standing who have been discontinued from their major

³new students in good academic standing who have until the end of sophomore year to declare a specific major

⁴students mentored by CNAS faculty out of 53 total (Spring 2014)

TRANSITION

The potential for reorganization of current departmental units may be a cause for concern among junior faculty, particularly for those who have been hired into one unit, but might prefer to align with a new department. It is anticipated that the reorganization of departments and faculty will be carried out in a transparent and collegial manner and the rights of faculty to choose their departmental home will be rigorously defended. Faculty members, especially junior faculty members, are encouraged to speak with their Associate Dean or a senior faculty member about any concerns or problems. The UCR merit and promotion system, which depends on a multi-level review, will provide an additional safe-guard for transitioning junior faculty.

Accompanying the redesign/realignment, and in concert with the plans of the campus to grow UCR's faculty through interdisciplinary cluster searches, CNAS launched in the Winter of 2015 a new college-wide junior faculty mentoring program. This program is open to all newly hired faculty and current assistant professors. While the primary focus of the mentoring program is successful faculty development in research, teaching and service, the program will also provide a mechanism to support junior faculty during this period of reorganization.

RESEARCH

INSTITUTES

The proposed department structure realigns current faculty with common disciplinary research, teaching, and outreach missions and more closely represents modern science as it has evolved over the past five decades. The administrative structure provided by departments is necessary to facilitate and enable academic personnel, grants administration, and other essential functions. However, science in the 21st century is increasingly integrative and interdisciplinary such that disciplinary boundaries are frequently crossed. Furthermore, as units of academic and administrative structure, departments are not nimble enough to respond to emerging questions, technologies and challenges. Interdisciplinary research collaborations among faculty across departments within CNAS and across the campus are numerous and expected to increase in the decades ahead. Existing and proposed research institutes provide a mechanism for facilitating cross-disciplinary collaboration that spans departments, colleges, and schools. These institutes and possibly others not yet imagined have arisen from the efforts of faculty with a shared vision and provide the nimble structure and responsiveness required to address future research trends and challenges. As broad, inclusive, interdisciplinary, and research-focused entities, institutes complement departments and facilitate collaboration and interaction among all faculty members regardless of department affiliation. While departments serve as the functional affiliation of faculty for practical purposes, we envision a growing role for institutes as the scientific and research affiliation of faculty, facilitating acquisition of larger cross-discipline, training, and center grants than are possible from a single department. As institutes grow in faculty participation and their research, teaching, and outreach activities expand, we anticipate greater allocation of resources and possibly affiliation of graduate programs with institutes as they become critical and responsive research foci of the future.

INSTITUTE FOR INTEGRATIVE GENOME BIOLOGY (IIGB)

The Institute for Integrative Genome Biology (IIGB) was established in 2000 (as the Genomics Institute) to pioneer solutions for hunger, disease and environmental sustainability - some of the greatest challenges confronting the 21st century. IIGB is comprised of the *Center for Plant Cell Biology* (CEPCEB) and the *Center for Disease Vector Research*, as well as four core facilities that provide faculty (IIGB members and other faculty from CNAS, Bourns College of Engineering and the School of Medicine) with state-of-the-art facilities essential for contemporary interdisciplinary research in the life sciences. These are the *Genomics Core Facility*, the *Bioinformatics Core Facility*, the *Proteomics Core Facility*, and the *Microscopy and Imaging Core Facility*. Research within the Institute falls within the broad areas of plant and mammalian biology, vector biology, and bioengineering. The IIGB pursues its goals by embracing advances in genomics technologies and the current trend for increasingly multi-disciplinary research in projects exploring the development of more nutritious foods, disease- and flood-resistant crops, alternative fuel sources and new medical and pharmaceutical treatments, to name a few. Currently the Institute embodies the varied and collaborative research efforts of 90 physical and life scientists, engineers, biologists, computer scientists, and statisticians from approximately 16 academic departments, three colleges and one biomedical division to investigate today's significant biological questions. There is also overlap with the Stem Cell Center due to questions of cell fate, developmental biology and regenerative medicine requiring knowledge of genomics, bioinformatics and epigenetics. The Institute has thus established itself as being critical and central to the ongoing development of life, agricultural, bioengineering and biomedical research on campus.

ENVIRONMENTAL DYNAMICS AND GEO-ECOLOGY INSTITUTE (EDGE)

Ecology is the interdisciplinary study of interactions and interdependencies among organisms and their environment. Never before in human history has the need been greater to apply our understanding of ecology to solving global environmental problems. UCR's ecologists and environmental scientists are conducting work of regional, national and international importance in conservation biology, ecohydrology, physiological ecology, population ecology, invasive species ecology, urban ecology, agroecosystems, aquatic and marine ecology, ecosystem modeling, and soil microbiology. There is a critical need and unique opportunity at this time to create a unified structure for scientists working on species, ecosystems, and the environment, and activities have already been initiated to attain this goal. To capitalize on exceptional strength in CNAS in this area we propose to establish the EDGE Institute. EDGE will function as a hub that externally highlights research strength, facilitates research collaboration, serves as an umbrella for centers, and houses facilities, all addressing the strategic priority Renewable Nature. We have recently received an endowed chair, the Wilbur W. Mayhew Chair in Geo-Ecology, and recruitment for the chairholder, who will serve as the Director of EDGE will resume in Fall 2015.

EDGE will comprise several existing and proposed new centers and facilities that focus on ecosystem and environmental sciences. The *Center for Conservation Biology* (CCB) currently serves as the UCR focal point for research and service in conservation biology and environmental sciences and works to create linkages to the larger environmental community of southern California and to other stakeholders in environmental policy. The *Water Science and Policy Center* (WSPC) conducts research and addresses critical issues related to the interactions between water policy, water quality and water scarcity. We envision expanding the scope and participation in both centers through the leadership of the EDGE Institute. Global

change is a major topic of research in ecosystem science that is an area of strength at UCR. We propose to establish a *Center for Climate and Paleoclimate* (CCP) to address this issue from the necessary geological, paleoclimatic and ecosystem science perspective, which will enable effective solutions as well as education and outreach. UCR is known for its excellence in the scientific study of earthquake processes, particularly the earthquake source—the physical/chemical processes that take place on and near faults over the earthquake cycle. A new *Center for Earthquake Processes* will build on this strength and provide a hub for new hires in this area.

CALIFORNIA AGRICULTURE & FOOD ENTERPRISE (CAFÉ) (UNDER DEVELOPMENT)

Building on UCR's history and strength in agriculture and natural resources, we propose to establish the CAFÉ. Modeled after the IIGB, CAFÉ will unify a large, interdisciplinary group of faculty, centers, facilities, and activities related to agriculture and addressing the strategic priority Genomics to Harvest. CAFÉ will foster basic and translational research, facilitate interactions with statewide commodity boards and other external clientele and funding groups, and provide a conduit for dissemination of scientific information. Through participation by AES faculty and CE Specialists, CAFÉ will create a stronger linkage with UC ANR as well as with non-AES faculty, many of whom work on issues relevant to agriculture and natural resources (*e.g.*, climate change). Coalescing UCR's agricultural enterprise into CAFÉ will provide new opportunities for extramural funding, corporate sponsorship, technology transfer, and development. CAFÉ will also be integral to UCR's outreach efforts, particularly in the STEM fields. Outreach conducted by UCR researchers and staff in the form of tours for local and international groups, field days for the citrus and other agricultural industries, seminar series, and community events for the public currently brings thousands of community partners to engage in educational activities related to science and technology; CAFÉ will provide a critical conduit for supporting and expanding these activities.

MATERIAL SCIENCE & ENGINEERING (UNDER CONSIDERATION)

Materials Science and Engineering (MS&E) is an exciting interdisciplinary area of research in which novel solid-state organic, inorganic, biological and hybrid materials are synthesized, characterized and incorporated into next-generation devices and technologies. UCR currently has a significant number of faculty members working in the area of MS&E, including researchers in Chemistry, Physics & Astronomy, Bioengineering, Chemical and Environmental Engineering, Electrical Engineering, and Mechanical Engineering. We propose to capitalize on these interdisciplinary and cross-college strengths through establishment of new institute of Materials Science and Engineering that will unite faculty members from these departments under a single umbrella, and incorporate existing centers (*e.g.*, Center for Nanoscale Science & Engineering) and the Center for Catalysis (under development). The Institute would be supported by existing facilities, including the clean rooms in the Materials Science & Engineering Building.

A particular focus of UCR's MS&E research is in the exciting area of novel nano- and low-dimensional materials. Nano- and low-dimensional materials, and devices based on their novel properties, are projected to be one of the most exciting frontiers in materials science and engineering. Applications of nano- and low-dimensional materials range from advanced electronics (*e.g.*, spintronics) to catalysis and targeted drug delivery, all fueled by advances at the fundamental level. A MS&E institute will better position UCR to

capitalize on interdisciplinary funding opportunities, particularly large-scale center grants and to develop and protect new intellectual property leading to vibrant industrial partnerships and spin-offs. The recent success of Jing Shi and Alex Balandin in securing funding from the DOE Energy Frontier Research Centers program for their project “Spins and Heat in Nanoscale Electronic Systems (SHINES)” highlights both the benefits of interdisciplinary cross-college collaborations at UCR and the potential for these efforts for center funding from DOE, NSF, DARPA and other agencies.

CENTERS

While institutes will provide an organizational umbrella for interdisciplinary research centered on broad cross-cutting themes, research centers provide faculty with a more focused structure to facilitate the administration of multi-investigator research programs. Research centers can be a vehicle for funding, especially for large multi-investigator center grants. As research directions, funding priorities and the faculty composition evolve, it may be desirable to form new centers, and there should be a low barrier to doing so. Research centers may be an integral component of a CNAS Institute, or may function independently of the institute structure. A successful independent research center may become the seed around which a new institute nucleates. For a research center to be recognized by CNAS the following criteria must be met:

- The center faculty must complete an application to establish the center through the Research and Development Office (<http://or.ucr.edu/about/forms/other-forms.aspx>)
- The center must be externally funded or provide a plan by which external support will be secured.
- The center director will submit an annual report to the CNAS Dean on June 30 summarizing the center accomplishments and goals for the coming year.
- The center must undergo a review every five years.

CORE FACILITIES

ANALYTICAL CHEMISTRY INSTRUMENTATION FACILITY

The ACIF is a campus-wide facility administered by the Department of Chemistry and consists of four components laboratories: Mass Spectrometry, Nuclear Magnetic Resonance (NMR) Spectroscopy, Optical Spectroscopy and X-ray Crystallography. A faculty director oversees the ACIF as a whole and a support staff of four spectroscopists manages and maintains the various facilities.

GENOMICS, PROTEOMICS, BIOINFORMATICS, MICROSCOPY AND IMAGING

The IIGB is organized around a 10,000 sq. ft. suite of Instrumentation Facilities at Noel T. Keen Hall and the Genomics Building that serve as a centralized, shared-use resource for faculty, staff and students. The Core Facilities and staff offer advanced tools in bioinformatics, microscopy and imaging, proteomics and genomics and provide a focal point for broad-based cutting-edge biological research. These facilities are housed within the same building, providing researchers with the ability to access diverse technologies and expertise at one location.

MACHINE SHOP

The CNAS Machine Shop was established in 2006 to provide state-of-the-art development and fabrication of experimental apparatus for research and teaching in the UCR College of Natural and Agricultural Sciences. The clients include faculty, staff, postdocs, graduate and undergraduate students and visiting scientists. The shop also provides its services for the CNAS teaching labs, researchers from the Bourns College of Engineering, physical plant, campus housing, external researchers who are collaborating with UCR faculty, and others. The CNAS Machine Shop facility is equipped with numerous machines and hand tools, as well as computer aided design (CAD) software. The shop is capable of designing and fabricating a huge variety of products using specified materials and within specified tolerances.

PLANT TRANSFORMATION RESEARCH CORE

The PTRC is a state-of-the-art facility that helps UCR researchers who are investigating genes important in metabolic, physiological and developmental processes. We have experience in working with in vitro plant tissue culture and micropropagation, molecular biology and plant genetic transformation techniques.

ADMINISTRATION

CNAS will be led by a Dean and four Associate Deans (one each for Agriculture & Natural Resources, Life Sciences, and Physical Sciences and Mathematics) and the Associate Dean for Student Academic Affairs. The Associate Deans will serve to facilitate communication between the departments and the Dean's Office, as well as to handle some of the administrative issues arising from the departments. For example, the Associate Deans will be the primary contacts for faculty recruitments within their Divisions, will present merit and promotion cases to the other Associate Deans and Dean, and review and approve appointments of non-senate academic personnel.

In addition, each of the Associate Deans will have some unique responsibilities.

- Associate Dean for Agriculture & Natural Resources
 - oversee the Agricultural Experiment Station (AES) activities
 - oversee Cooperative Extension (CE) activities
 - represent the campus on ANR's Program Council
- Associate Dean for Life Sciences
 - oversee all of the teaching issues (including TAs) for departments other than Chemistry, Mathematics, and Physics & Astronomy
 - oversee space issues for departments other than Chemistry, Mathematics, and Physics & Astronomy
 - oversee interdepartmental life science graduate programs
 - chair the Life Sciences Council of Chairs which enables chairs to coordinate the management of curricula in the life sciences

- Associate Dean for Physical Sciences and Mathematics
 - oversee teaching issues (including TAs) involving the departments of Chemistry, Mathematics, and Physics & Astronomy
 - oversee space issues involving the departments of Chemistry, Mathematics, and Physics & Astronomy
 - oversee interdepartmental graduate programs in the physical sciences

The Associate Dean for Student Academic Affairs will oversee undergraduate recruiting, orientation, advising, enrollment management and academic success programs within the College. The Associate Dean will also serve as the main liaison to the other colleges and campus units on issues of science course demand, course availability, and enrollment management, consulting and coordinating with the Associate Deans on such issues. More information regarding the responsibilities of the Associate Deans is provided in the Appendix.

Assuming that there will be departments that elect to create internal divisions, a change in the manner in which the Dean's Office communicates and works with the departments will be warranted. Monthly meetings that include the department chairs, division heads, interdepartmental graduate program directors, and center and institute directors will continue to be held. This will maximize information distribution and allow for more faculty input on important issues. Additional meetings, focused on the discussion of strategic initiatives within the college or on the campus, will be held with department chairs.

CENTRALIZED SUPPORT SERVICES

Many of the support services within the College have been centralized to maximize efficiency and to provide backup and cross-training opportunities. These support centers are described below.

PERSONNEL SERVICES CENTER

The CNAS Personnel Services Center (PSC) was formed in July 2013 to enact a coordinated and efficient structure for delivering academic personnel, human resources, and payroll services. Whether serving academic or staff employees, the focus is to educate, transact, and enforce the "people-related" policies of the college, the campus, and external agencies.

Academic Personnel Services Unit (APSU)

The staff of the Academic Personnel Services Unit (APSU; <http://cnas.ucr.edu/cnasprime/hr/apsu/apsu.html>) within the Personnel Services Center:

- Handle the merit and promotion files for all the departments in the college.
- Provide analysis at the college level for all academic personnel actions.
- Provide analysis at the department level for all academic personnel actions for the Departments of Botany, Mathematics, Environmental Sciences, and Earth Sciences.

Nonacademic Personnel Services Unit (NAPSU)

The Nonacademic Personnel Services (NAPSU; <http://cnas.ucr.edu/cnasprime/hr/napsu/index.html>) group within the Personnel Services Center provides:

- Payroll and human resources services for CNAS staff.
- New hire, reappointments, extensions, and onboarding for all CNAS employees.

UNDERGRADUATE STUDENT ACADEMIC AFFAIRS

In order to provide cross-training, coordination and uniform policy consistency in academic advising, course scheduling and enrollment management, CNAS has centralized its undergraduate student academic affairs staff into two Centers under the oversight of the Associate Dean of Student Academic Affairs. Centralization also allows the college to be more nimble and responsive to campus issues of meeting student recruiting and enrollment targets, meeting course demand, and improving retention and graduation rates. CNAS Student Academic Affairs also provides data and advice to the Dean and Associate Deans, who work with their assigned departments to ensure that adequate numbers of seats are offered for major, service and breadth courses. The Associate Dean of Student Affairs is the main campus liaison for CNAS on course demand and enrollment management issues.

UNDERGRADUATE ACADEMIC ADVISING CENTER (UAAC)

The CNAS Undergraduate Academic Advising Center (<http://cnasstudent.ucr.edu/>) helps students understand the policies and procedures pertaining to their degree program and academic progress. All CNAS students are assigned a Professional Academic Advisor (PAA) who provides them with the guidance they need to navigate their degree path as well as the university as a whole. PAAs work as a team with the lead undergraduate faculty advisor in each major, who provides guidance on major options, course content, research opportunities and career choices. PAAs also direct students to the proper on-campus and off-campus student resources when appropriate.

PAAs also participate in running Fall advising discussion sections for first-year learning community seminars. A dedicated PAA works as the Transition advisor for the college, helping students who are not succeeding in science majors to find alternative major options in the other colleges.

PAAs initially receive training and certification from the campus' Professional Academic Advising Course, taught by the Director of the UAAC. PAAs participate in continuing professional development via annual UCR and UC academic advising conferences and attendance at national NACADA meetings.

CNAS undergraduate student success programs (learning communities, summer research, science ambassadors, etc.) are also run out of UAAC, using both permanent and grant-based student affairs officers to assemble, manage, track and coordinate students and their activities in the various programs.

Faculty oversight of the UAAC is provided by twice-yearly meetings with the chair and lead undergraduate faculty advisor in each CNAS major, as well as monthly consultation with (and an annual report delivered to) the CNAS Executive Committee, the CNAS Chairs and Directors, and the Life Sciences Council of Chairs.

ENROLLMENT MANAGEMENT CENTER FOR CNAS (EMC²)

The Enrollment Management Center for CNAS (<http://cnasemc.ucr.edu/>) manages enrollments for classes in Biochemistry; Biology; Botany and Plant Sciences; Cell Biology and Neuroscience; Cell, Molecular and Developmental Biology; Chemistry; Entomology; Environmental Sciences; Environmental Toxicology; Evolution, Ecology and Organismal Biology; Genetics, Genomics and Bioinformatics; Geological Sciences; Mathematics; Microbiology; Nematology; Neuroscience; Physics; Plant Pathology; and Statistics. EMC² student affairs officers assist students with individual enrollment issues, including prerequisites, call numbers for research sections, enrollment eligibility, permission codes, etc.

They also maintain Senate-mandated waitlists, enrollment priorities, repeater lists and quota controls for impacted courses and make sure that pre-enrolled students still meet prerequisite requirements after grades are posted for the prior quarter. They handle course revisions and proposals for the departments and the college executive committee, and compile enrollment trend and pass rate data for the Deans and departments. They work closely with UAAC academic advisors, and with the departmental academic coordinators in large service lab courses.

Faculty oversight of the EMC² is provided by a twice-yearly meeting with the vice chairs of the departments, the senior staff of the UAAC and EMC², and the Faculty and Associate Deans.

Coordination of UAAC and EMC² activities and policies is accomplished via a quarterly meeting between the senior staff of both units, the Associate Dean of Student Academic Affairs, the other Associate Deans and senior staff in the Registrar's office.

Coordination of CNAS Undergraduate Student Affairs activities and policies with other campus student affairs units is accomplished via a monthly meeting of the campus Workgroup on Enrollment Management and a quarterly Associate Deans meeting with the Vice Provost of Undergraduate Education.

GRADUATE STUDENT ACADEMIC ADVISING CENTER (GSAC)

The CNAS Graduate Student Affairs Center Staff (<http://bioscigrad.ucr.edu/staff.html>) works closely with applicants to provide information on most CNAS graduate programs, disseminate policies and procedures, and overall facilitate the application process.¹ After admission, graduate students continue to work with the

¹ Note that Chemistry and Physics & Astronomy graduate students are served by graduate advisors in their respective departments, not in GSAC.

center staff to ensure that they are progressing in their respective programs and meeting all deadlines set forth by the university and programs.

UNIT-BASED ADMINISTRATIVE SUPPORT

CURRENT STRUCTURE

Academic departments are provided with administrative support via the centralized support units described earlier, as well as by several support units that serve individual departments or clusters of departments. The current support units were developed several years ago to achieve budgetary efficiencies rather than on the basis of programmatic needs. These units provide contract and grant administration, purchasing services, travel, overall financial management and other administrative services specific to the academic unit. These administrative support units work in conjunction with the college-wide centralized service units to efficiently meet the administrative needs of the college. The distribution of resources among the units is determined by the total expenditures managed by the unit. A number of other methods for determining the distribution have been assessed, but this method appears to be both the most straight-forward and appropriate, as it considers the significant differences in the missions and operations of each department (*e.g.*, heavy service teaching load vs. research intensive programs).

PROPOSED STRUCTURE

The centralized support units described above will remain intact. A shift in the academic structure will necessitate some movement of administrative resources between units to enable us in providing a continued efficient level of support. It would be optimal to create administrative clusters to align seamlessly with Divisions. However, financial resources are a constraint to this optimal arrangement. CNAS currently operates with extremely limited staff resources. It is our intent that the redesign effort address the most critical administrative needs, maintain the administrative clusters that have proven effective and curb further staff reductions. Additional staff reductions would compromise our ability to keep administrative processes moving while meeting our core academic and research missions

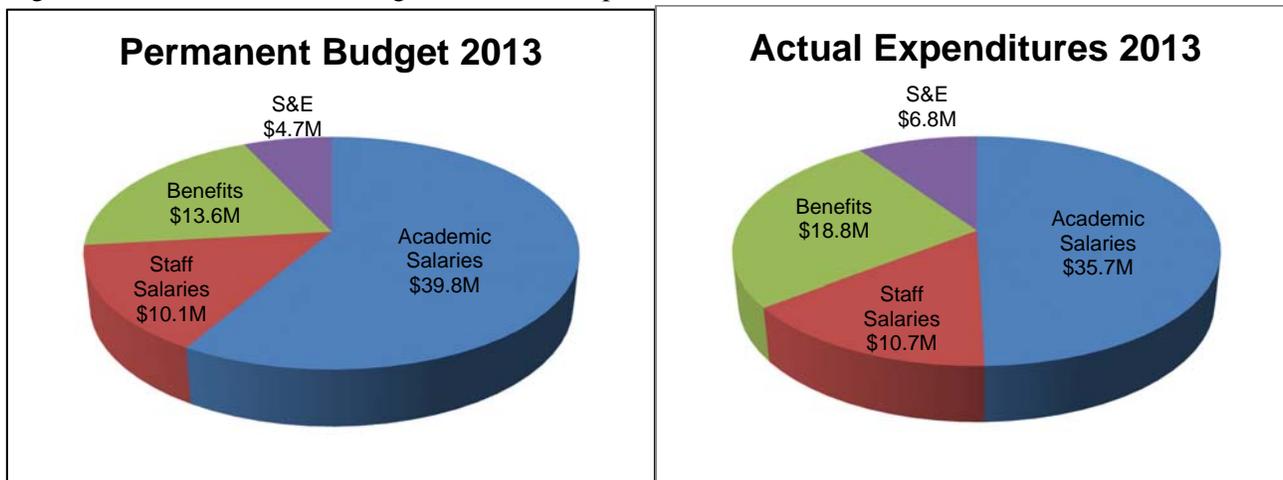
In response to prior budget reductions, CNAS centralized services and created shared FAO positions as cost-saving measures. In turn, existing administrative support units experienced dramatic staff reductions. Along with the academic redesign, CNAS will re-establish one FAO position such that we create capacity to deal with faculty growth, create opportunities for rebalancing workload and have the ability to focus on areas where training will be most impactful.

RESOURCES

PERMANENT BUDGET

The permanent budget of CNAS is approximately \$70M, more than half of which is budgeted for and spent on academic salaries (Figure 5).

Figure 5. CNAS Permanent Budget and Actual Expenditures, 2013*



*includes funds: 19900, 69805, 19931, Org 14, 414; open faculty lines included in academic salaries

TEMPORARY BUDGET

In addition to the permanent budget, CNAS has three main sources of temporary funds: temporary teaching funds, Facilities and Administrative Cost Recovery Funds (F&A returns) and initial complement matching funds. On an annual basis, a determination of the actual instructional workload is made, and *50% of the funds required to meet the instructional demand* due to over-enrollment is allocated to the college. For 2013-14, this amount was approximately \$1.4M. It is hoped that the new campus budget process currently under development will provide complete reimbursement of the costs of instruction incurred by the College.

The other main source of temporary funds is F&A returns. The amount of funds returned to the college is described in Campus Policy 300-26

(<http://fboapps.ucr.edu/policies/index.php?path=viewPolicies.php&policy=300-26>). Briefly, the amount is calculated based on the F&A expenditures in the college (excluding State contracts and grants), less mandatory insurance and communication worker fees, and adjusted for the UCOP funding assessment. Typically, the amount returned to the college is 35% of the F&A expenditures. In 2014-15, that amount was approximately \$3.4M.

RESOURCE ALLOCATION

Where possible, CNAS will provide resources to departments using the same metric for distribution as the basis for the total received. For instance, when distributing resources for faculty recruitments, these will be given to departments based on the number of FTE that they have been approved to hire. We make every effort to make the allocation process straightforward and disclose the information to all recipients. The college receives several temporary allocations each year, and the basis for each allocation can be different. When it is appropriate to allocate these resources to departments, we make every attempt to use the same basis for allocation. Finally, there are instances where allocations of permanently held resources are also required. In these cases, the basis may be less relevant to our operations today, but our methodology for allocation continues to aim for a straightforward approach and reasonableness given the current available facts. Considerations relevant to allocations can include, but are not limited to, total departmental faculty FTE, total departmental expenditures, total number of transactions supported by a department and total contract and grant expenditures of the department. Frequently, statistics such as these are used in concert, giving weight to more than one variable, when determining a reasonable allocation methodology.

OR resources will be used to fund activities that support the AES mission of the campus, regardless of the administrative location of those activities. For example, there are three I&R/OR faculty housed in the School of Public Policy.

TA RESOURCES

TA resources are provided to CNAS in two ways. The TA FTE are part of our permanent resources, while GSHIP is provided to the college as a temporary augmentation each year. In addition, CNAS is given an annual workload supplement to adjust total resources received for the actual teaching workload shouldered by the college. The workload supplement is given to us at the end of the year but, because we know these resources must be utilized within the academic year, we work in conjunction with Resource Planning & Budget to estimate the value of the supplement in advance of its receipt. This allows us to increase the number of TA FTE provided to departments to accommodate student demand. This total pool of TA resources is estimated in spring to accommodate the upcoming fiscal year. The college then allocates the projected amount based on departmental historical consumption of TA resources. In addition to the historical usage rate, we adjust the allocation for known changes in the teaching regimen in the college. CNAS consistently allocates more resources to departments for TA support than we receive in the combined total of permanent, temporary and workload resources specifically indicated for TA support. The college utilizes a portion of its unallocated resources to bolster overall TA FTE. The permanent budget coupled with annual allocations currently supports about 90% of college-wide TA expenditures. The remaining 10% is supported from the college's resources. Analysis has proven that we do a good job in controlling expenditures college-wide and that, even with the 10% college contribution, TAs remain underfunded. Especially for the large lower division courses, the number of sections CNAS offers needs to be increased if we are to meet initiatives to reduce section sizes to a maximum of 24 students, provide sufficient courses to enable students to take a minimum of 15 units per quarter, and decrease the time to graduation. In combination, addressing those two issues would require at least an additional \$3M in resources annually. Pressure to eliminate the college deficit is evident in our management and careful monitoring of TA

resources. CNAS would benefit from a permanent budget that helps us address the actual workload, section size maximums & time to graduation statistics.

GSR RESOURCES

The college has a very small dedicated I&R budget for support of GSRs. These funds were established specifically for use in interdepartmental graduate programs since they do not have the ability to leverage departmental resources to provide GSR support. The college augments the dedicated GSR budget significantly with OR resources. In recent years, CNAS has examined recruitment targets as a means for allocating resources to the Life Sciences & Agricultural Sciences programs. The goal is to support growing programs and help them to reach critical mass with the ability for self-sustainability. The recruitment target is used as a benchmark to determine the relative allocation level between programs. Funds are provided both from I&R and OR resources and are given to the programs based on the distribution of major professors' appointments. In view of the potentially significant shifts in the nature of the graduate programs (*e.g.*, interdepartmental programs becoming departmentally-based), the GSR funds will be distributed to all graduate programs, using the recruitment targets as a means for allocating the resources.

FACULTY POSITIONS

The process whereby faculty position requests will be solicited and evaluated is under development by the P/EVC, so this may need to change to accommodate the new process. However, it is anticipated that, whatever the process, there will be an opportunity for decanal review.

All departments, centers, institutes, and interdepartmental graduate programs will be asked to submit to the Dean's Office a five-year academic plan, with the opportunity for an annual update. In those departments with divisions, the Chair will be asked to submit a single academic plan on behalf of the entire department.

Regardless of the process used to solicit position requests, they will be evaluated by the Dean and the Associate Deans using the following criteria: relevance to UCR 2020 areas of strategic priority; building on areas of excellence; potential to increase extramural grant funding; potential to foster collaboration/interdisciplinary centers; potential to increase graduate enrollment; and contributions to undergraduate programs.

The positions will be scored by each Dean/Associate Dean, and then ranked based on the total score calculated using the individual criteria scores. After the ranking process, each of the positions will be discussed to ensure that its position on the list reflects its importance to the College and the campus. For example, programs that are growing rapidly as well as likely faculty separations are considered. Consistent with the UCR 2020 vision, high merit will be placed on research and training synergies that would attract graduate students to our college and prepare them for careers in science.

SPACE

The college has a documented serious shortfall in research and instructional space, which severely impedes its movement towards the UCR 2020 goals of increasing its undergraduate and graduate student enrollment, faculty size, and grants and contracts awarded to the faculty. The simplistic solution to the quality and amount of our space is the construction of new buildings that would not be departmental in assignment, but would house existing and new faculty in modern facilities that would facilitate research, instruction, and faculty recruitment and retention. The reality is that state funding is scarce for new buildings and, even if such funding appeared today, building occupancy remains some five to seven years distant. This presents a very serious problem for the college and campus. Even with the predicted number of separations over the next five years and a normal success rate with current and proposed annual faculty searches, the college will not have sufficient space to house new faculty from 2016 through to 2020. With a proactive approach, outlined in this document, we will avoid the prospect of asking faculty to share offices and occupy laboratories in buildings, some of which are decades old, which have not been renovated and also suffer from the absence of any substantial maintenance for several years. Taking action quickly would enhance our ability to recruit faculty from 2015-2020 and to retain our existing faculty.

Our proposed bridging solution is the staged renovation of buildings, with one project being completed each year from 2015 through to 2020, thereby releasing newly renovated space to the faculty on an annual basis. The staging would be strategic and programmatic and is predicated on the construction of surge space to enable these renovations to proceed in a timely and staged manner. In some cases, placement of existing or new faculty would be permanent. In other cases, the plan would provide surge space. In developing this plan with Capital Planning, our emphasis has been to find “lost space” within our existing buildings and to then consolidate this into renovated space. Buildings such as Spieth Hall, Batchelor Hall, Fawcett Laboratories, Physics and Pierce Hall were designed decades ago, and are poorly configured for modern science. Many can be remodeled to increase the quality of space and the density of faculty within each building. In addition, consideration needs to be made for providing sufficient space for centralized student academic affairs operations, which have expanded as the college student body has grown, along with its highly effective student success and management programs.

We have developed, in collaboration with Capital Planning staff, a five-year timeline that will deliver newly renovated space in yearly increments to the college, which will be done by programs but not necessarily existing departments. This is breaking with the longstanding UCR model that a building structure defines a departmental boundary. The advantages of this plan are that it:

- uses existing space on campus
- provides the bridge between our existing status and the opening of any new campus interdisciplinary building
- increases the number of laboratories and offices available to existing and new faculty each year
- provides the college with the flexibility in space needed to embark on large scale renovations each year
- enables more resources to be devoted to the future construction of a permanent vivarium in one of the proposed interdisciplinary buildings

- addresses the problem of aging buildings, eliminating the need for demolition and costly step-by-step, limited renovation of individual labs based on annual hiring needs
- enables the college to link renovation staging with programmatic needs consistent with the UCR 2020 Strategic Plan

The plan is described in detail in CNAS' 2014 Programmatic Requests document that was submitted to the EVC/P in January 2014.

APPENDIX: ROLES OF ASSOCIATE DEANS

ROLES OF THE ASSOCIATE DEAN FOR AGRICULTURE AND NATURAL RESOURCES

- Primary contact for Department Chairs within the Division as well as centers, institutes, and facilities pertaining to agriculture and natural resources

- Academic personnel actions for departments
 - Serve as primary reviewer for academic personnel files in the Division's departments and all CE Specialist files
 - Evaluate AES faculty personnel files for adherence to AES expectations
 - Attend CNAS merit and promotion meetings with Dean and other Associate Deans. Lead discussion of files for faculty in relevant departments. Draft letters for merits and promotions.
 - Approve faculty recruitment plans, review applicant pools for diversity criteria, and meet with candidates for faculty positions
 - Work with department Chairs to establish startup packages
 - Review and sign appointments for non-senate academic personnel in the Faculty departments
 - Coordinate retention efforts

- Academic planning and leadership within Division
 - Serve as primary liaison with department chairs in development of academic plans, particularly for faculty position requests
 - Attend CNAS Chairs/Directors meetings
 - Attend CNAS student recruitment events
 - Attend Homecoming events
 - Attend Commencement
 - Serve as *ex officio* non-voting member of the CNAS Executive Committee
 - Coordinate meetings of CNAS CE Specialists
 - Coordinate meetings of CNAS AES department chairs
 - Coordinate orientation and training for chairs and new AES faculty in AES mission and expectations

- Financial responsibility
 - Serve, with the other Associate Deans, as a member of the Dean's Budget Advisory Committee. This committee reviews all matters affecting the finances and budget of the college and provides information and advice to the Dean.
 - Recommend expenditure decisions impacting the Faculty budget
 - Coordinate bridge fund requests from faculty
 - Manage Agricultural Experiment Station (AES) and Cooperative Extension (CE) budget
 - Manage allocation of Hatch and Multistate funds to CNAS faculty and departments

- Representation for Divisional programs with external groups

- Attend monthly ANR Program council meetings (generally requiring 2 days including travel time). Review and prioritize Specialist and Advisor position requests and other ANR budget requests
- Attend meetings of the Western Association of Agricultural Experiment Station Directors (spring, summer, fall) as appropriate. Summer meeting is joint with western deans (WAHS), state CARET representatives (WCARET), extension directors (WED), and program leaders (WAP). Fall meeting is with the national Experiment Station Section (ESS) of NASULGC Board on Agriculture
- Serve as UC liaison to the Citrus Research Board and CA Avocado Commission

- Management and coordination of agricultural and natural resource centers, institutes, facilities, and research programs
 - Manage AES Mission funding program (formerly RSAP)
 - Review Hatch projects of all UCR AES investigators as they come up for review
 - Serve as Administrative Advisor for USDA Multistate Research Projects; approve project proposals, participants, and annual reports
 - Oversee operations of Agricultural Operations, including monthly meeting with the Director
 - Oversee operations of Botanic Gardens and interact with director and Internal Advisory Committee
 - Interact and serve as liaison with UCR director of UC Natural Reserves assigned to UCR

- Academic Reviews of programs within the Faculty
 - Represent College in academic reviews of departments and graduate programs
 - Ensure improvements identified in department and graduate program reviews are accomplished in a timely manner
 - Provide recommendations for Department Chair appointments and reappointments to the Dean

- Development/advancement efforts in support of the Division's programs
 - Interact with CNAS development and advancement staff and campus media representatives
 - Provide leadership for generation of effective advancement materials for the Division (website, brochures, etc.)
 - Attend CNAS Board of Advisors meetings
 - Attend UCR Chancellor's Agricultural Advisory Council meetings

- Serve as backup for Dean in system-wide and campus meetings

ROLES OF THE ASSOCIATE DEAN FOR LIFE SCIENCES, TEACHING (LIFE SCIENCES AND AGRICULTURAL AND NATURAL RESOURCES) AND FACILITIES (CNAS)

- Primary contact for Department Chairs within the Division as well as centers, institutes and facilities pertaining to the life sciences

- Academic personnel actions for departments
 - Serve as primary reviewer for academic personnel files in the Division's departments
 - Attend CNAS merit and promotion meetings with Dean and other Associate Deans; lead discussion of files for faculty in relevant departments; draft letters for merits and promotions
 - Approve faculty recruitment plans, review applicant pools for diversity criteria, and meet with candidates for faculty positions
 - Work with department Chairs to establish startup packages
 - Review and sign appointments for postdocs, specialists, and other academic titles
 - Review and sign appointments for non-senate academic personnel in the Faculty departments
 - Coordinate retention efforts

- Academic planning within the Division
 - Serve as primary liaison with the Division's department chairs in development of academic plans, particularly for faculty position requests
 - Coordinate and attend CNAS Life Science Council of Chairs meetings
 - Attend CNAS Chairs/Directors meetings
 - Attend CNAS student recruitment events
 - Attend Homecoming events
 - Attend Commencement
 - Share in responsibility for Dean's summer student fellowship program
 - Serve as *ex officio* non-voting member of the CNAS Executive Committee

- Financial responsibility
 - Serve, with the other Associate Deans, as a member of the Dean's Budget Advisory Committee. This committee reviews all matters affecting the finances and budget of the college and provides information and advice to the Dean.
 - Recommend expenditure decisions impacting the Division's budget
 - Coordinate bridge fund requests from faculty

- Development/advancement efforts in support of the Division's programs
 - Interact with CNAS development and advancement staff and campus media representatives
 - Provide leadership for generation of effective advancement materials for the Division (website, brochures, etc.)
 - Advocate for funding opportunities for faculty

- Attend semi-annual CNAS Board of Advisors meetings
- Teaching within the Divisions of Life Sciences and Agriculture & Natural Resources
 - Coordinate TAs, faculty recall and lecturer appointments within the Life Sciences and Agriculture & Natural Resources Divisions
 - Coordinate and attend the Life Science TA Allocation Committee
 - Facilitate graduate and undergraduate program development
 - Work with staff to coordinate Dean's summer fellowship program
 - Primary contact for Graduate Programs
 - Serve as liaison with Graduate Division
 - Provide oversight of Graduate Student Affairs Office and the Enrollment management office (the latter shared with the Associate Dean of Student Affairs)
 - Promote CNAS faculty participation in programs to encourage new pedagogy
 - Ensure improvements identified after undergraduate program reviews are accomplished in a timely manner
- Representation for the Division's programs with external groups
- Serve as backup for Dean in system-wide and campus meetings
- Academic Reviews within the Division
 - Ensure improvements identified in department and graduate program reviews are accomplished in a timely manner
 - Represent College in academic reviews of departments and graduate programs
 - Provide recommendations for Department Chair appointments and reappointments to the Dean
- Facilities, Safety and Space
 - Responsible for space and facilities management in the college and advising the Dean on these matters
 - Serve as college liaison with Physical Plant, Capital Planning, Architects and Engineering and Design and Construction
 - Serve on design and construction committees for college buildings and facilities
 - Serve as college liaison with external agencies supporting or funding facilities and building projects.
 - Oversee the college Facilities and Space Planner/Safety Coordinator
 - Attend monthly campus RISC meetings
 - Serve as college liaison with EH&S
 - Attend monthly college facilities meeting to coordinate ongoing college projects with the college CFAO

ROLES OF THE ASSOCIATE DEAN PHYSICAL SCIENCES AND MATHEMATICS

- Primary contact for Department Chairs within the Division as well as centers, institutes and facilities pertaining to the Departments of Chemistry, Mathematics, and Physics and Astronomy
- Academic personnel actions for departments
 - Serve as primary reviewer for academic personnel files in the Division's departments
 - Attend CNAS merit and promotion meetings with Dean and other Associate Deans. Lead discussion of files for faculty in relevant departments.
 - Approve faculty recruitment plans, review applicant pools for diversity criteria, and meet with candidates for faculty positions in relevant departments
 - Work with department Chairs to establish startup packages
 - Review and sign appointments for postdocs, specialists, and other academic titles
 - Review and sign appointments for non-senate academic personnel in the Division's departments
 - Coordinate retention efforts
- Academic planning within Division
 - Serve as primary liaison with the Division's department chairs in development of academic plans, particularly for faculty position requests
 - Attend CNAS Chairs/Directors meetings
 - Attend CNAS student recruitment events
 - Attend Homecoming events
 - Attend Commencement
 - Share in responsibility for Dean's summer student fellowship program
 - Serve as *ex officio* non-voting member of the CNAS Executive Committee
- Financial responsibility
 - Serve, with the other Associate Deans, as a member of the Dean's Budget Advisory Committee. This committee reviews all matters affecting the finances and budget of the college and provides information and advice to the Dean.
 - Recommend expenditure decisions impacting the Division's budget
 - Coordinate bridge fund requests from the faculty
- Development/advancement efforts in support of the Division's programs
 - Interact with CNAS development and advancement staff and campus media representatives
 - Provide leadership for generation of effective advancement materials for the Faculty (website, brochures, etc.)
 - Attend CNAS Board of Advisors meetings
- Teaching within the Faculty of Chemistry, Mathematics, Physics and Astronomy
 - Coordinate TAs, faculty recall and lecturer appointments within the Chemistry, Mathematics, Physics and Astronomy Faculty
 - Facilitate graduate and undergraduate program development

- Work with staff to coordinate Dean's summer fellowship program
 - Primary contact for Graduate Programs
 - Serve as liaison with Graduate Division
 - Promote CNAS faculty participation in programs to encourage new pedagogy
 - Ensure improvements identified after undergraduate program reviews are accomplished in a timely manner
-
- Representation for the Division's programs with external groups
-
- Serve as backup for Dean in system-wide and campus meetings
-
- Academic Reviews of programs within the Division
 - Represent College in academic reviews of departments and graduate programs
 - Ensure improvements identified in department and graduate program reviews are accomplished in a timely manner
 - Provide recommendations for Department Chair appointments and reappointments to the Dean
-
- Facilities, Safety and Space
 - Responsible for space and facilities management within the Departments of Chemistry, Mathematics and Physics and Astronomy and for coordinating these activities with the Associate Dean for Life Sciences
 - Primary contact for issues related to safety among these Departments

ROLES OF THE ASSOCIATE DEAN FOR STUDENT ACADEMIC AFFAIRS

- Oversees Division of Student Academic Affairs programs and staffing for all undergraduate recruiting, advising, enrollment management and academic success activities, including:
 - Undergraduate Academic Advising Center
 - Enrollment Management Center
 - Freshman Scholars Learning Communities
 - Science Ambassadors
 - Grant- and donor-supported scholarship programs
 - Highlander Day, Discovery Day, Transfer Day, Highlander Orientation, Mandatory Freshman Orientation, and Commencement

- Develops, refines, recommends, interprets and enforces policies and regulations pertaining to undergraduate student academic affairs, in collaboration and consultation with:
 - Dean and Associate Deans, College Executive Committee, Department/Program Chairs, and Department/Program undergraduate faculty advisors
 - Senate Committees including Educational Policy, Courses, Undergraduate Admissions, Rules and Jurisdiction, and Preparatory Education
 - Campus administrative offices and committees including Undergraduate Education, Student Affairs, and the student affairs offices in the other colleges.

- Acts as faculty advisor for all undeclared majors in the college

- Evaluates and adjudicates undergraduate student petitions pertaining to regulations, policies and deadlines, including dismissals, late withdrawals/additions, major changes, readmissions, grade disputes, and degree requirements

- Seeks, develops, writes/co-writes and submits internal and extramural funding proposals for college-wide undergraduate academic support programs, including opportunities from National Science Foundation, Dept. of Education, and private foundations

- Financial responsibility
 - Serve, with the other Associate Deans, as a member of the Dean's Budget Advisory Committee. This committee reviews all matters affecting the finances and budget of the college and provides information and advice to the Dean
 - Recommend expenditure decisions impacting the budget for the Division of Student Academic Affairs

Advantages of forming a new Department of Molecular, Cellular and Systems Biology

MCSB:

- Is faculty driven, consistent with the original intent of the College re-design.
- Involves a large, cohesive and enthusiastic group of faculty that interacts well together and is among the most well-funded in the life sciences.
- Is conducive to a continuum of research activity and teaching - including molecular biology, cell biology, genomics and bioinformatics, genetics, and physiology.
- Is a modern department structure that is not phyla based.
- Streamlines faculty hiring and helps attract and retain the best faculty.
 - *A department with a large number of successful members will be better able to recruit the best faculty.*
 - *UCR has recently lost some of the most successful junior faculty and there is a definite risk that additional faculty could leave UCR without the appropriate department to support their careers. The investments of time, space and startups made in these new hires are a substantial loss to UCR*
- Eliminates interdepartmental competition for resources and ambiguity/confusion recently experienced in college-wide searches where ideal departmental homes were not always available for the recruits.
- Leads to more rigorous tenure and promotion processes by setting higher standards.
- Provides a flexible divisional structure that can more easily adapt to new scientific challenges as disciplines evolve.
- Allows groups to coalesce around program project and training grants more easily.
- Provides leadership for the undergraduate major in CMDB and will help streamline the teaching of other life sciences courses.
- Provides core leadership in the CMDB, GGB and Neuroscience graduate programs, and could facilitate merging of GGB and CMDB Programs.
- Confers long-term stability for the life sciences.
- Will more effectively leverage needed resources both intra- and extramurally.

MCSB faculty signing the Sept 2014 response to the CNAS Dean's Redesign plan

Undersigned Faculty (in alphabetical order)*:

- 1 Michael E. Adams, Professor, CBNS and Entomology
- 2 Jeff Bachant, Assoc. Professor, CBNS
- 3 Julia Bailey-Serres, Professor, BPSC
- 4 Maxim Bazhenov, Professor, CBNS
- 5 Xuemei Chen, Professor, BPSC
- 6 Margarita Curras-Collazo, Assoc. Professor, CBNS
- 7 Scott Currie, Assoc. Professor, CBNS
- 8 Sean Cutler, Assoc. Professor, BPSC
- 9 Anupama Dahanukar, Asst. Professor, Entomology
- 10 Shou-wei Ding, Professor, Plant Pathology and Microbiology
- 11 Thomas Eulgem, Assoc. Professor, BPSC
- 12 Todd Fiacco, Asst. Professor, CBNS
- 13 Sarjeet Gill, Professor, CBNS
- 14 Thomas Girke, Assoc. Professor, BPSC
- 15 Weifeng Gu, Assit. Professor, CBNS
- ~~16 I-Chueh Huang, Asst. Professor, CBNS~~
- 17 Hailing Jin, Professor, Plant Pathology and Microbiology
- 18 Isgouhi Kaloshian, Professor, Nematology
- 19 Fedor Karginov, Asst. Professor, CBNS
- 20 Karine Le Roch, Assoc. Professor, CBNS
- 21 Morris F. Maduro, Assoc. Professor, Biology
- 22 Manuela Martins-Green, Professor, CBNS
- 23 Dmitri Maslov, Professor, Biology
- 24 Connie Nugent, Assoc. Professor, CBNS
- 25 Natasha Raikhel, Professor, BPSC
- 26 Anandasankar Ray, Assoc. Professor, Entomology
- 27 Venu Reddy Gonehal, Assoc. Professor, BPSC
- 28 Martin M Riccomagno, Asst. Professor, CBNS
- 29 Frances Sladek, Professor, CBNS
- 30 Patricia Springer, Professor, BPSC
- 31 Glenn Stanley, Professor, CBNS and Psychology
- 32 Linda Walling, Professor, BPSC
- 33 Susan Wessler, Professor, BPSC
- 34 Zhenbiao Yang, Professor, BPSC
- 35 Nicole zur Nieden, Asst. Professor, CBNS

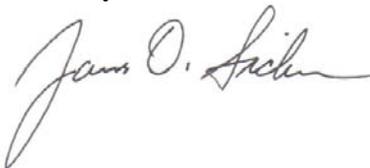
January 4, 2016

Sarjeet Gill
Chair, CNAS Executive Committee
University of California
Riverside, California 92521

Dear Sarjeet

In response to your December 14th email, the Department of Environmental Sciences revisited the proposal to rename the Department: Environmental and Ecosystem Sciences (E2S). The Environmental Sciences Departments wishes to convey their strong support for the proposal and their enthusiasm for joining more closely with ecosystem scientists across the College. E2S offers a more comprehensive approach to the campus's strategic priorities in Renewable Nature, including the establishment of the EDGE Institute, by linking pollution, climate change and other anthropogenic stressors more effectively to the structure and functioning of natural and managed ecosystems. We envisaged that establishment of E2S will add to the ongoing reinvigoration of the ENSC Graduate Program through the creation of an Ecosystem Sciences field area. At the undergraduate level, we will explore the creation of an Ecosystem Management track within the ENSC major to replace the old Social Sciences track which is being discontinued owing to the transfer of ENSC faculty to the new School of Public Policy at UCR. In the next few weeks, ENSC faculty will be making contact with ecosystem faculty in Botany and Plant Sciences, Plant Pathology, Biology and Entomology, to discuss the formation of E2S and directions for integrating faculty through research, teaching and outreach activities.

Sincerely,



James O. Sickman
Professor of Hydrology and Chair
Department of Environmental Sciences
University of California, Riverside
Room 2324 Geology
Riverside, California 92521
Office: (951) 827-4552
E-mail: james.sickman@ucr.edu



January 25, 2016

To: Jose Wudka, Chair
Riverside Division

From: Sarjeet Gill, Chair, Executive Committee
College of Natural and Agricultural Science

Re: College Reorganization

There was an error in item 2, and this is corrected here.

The CNAS Executive Committee at their January 5th meeting reviewed the College Reorganization plan.

The committee voted for the following:

1. The establishment of two new departments "Molecular, Cellular and Systems Biology" (MCSB), and "Evolution, Ecology, and Organismal Biology (EEOB) = 15 for, 1 abstention
2. The voluntary relocation of the faculty from CNAS life science departments to the newly established departments. = 15 for, 1 against
3. The disestablishment of the Department of Biology and Department of Cell Biology and Neuroscience once they are empty = 16 for (unanimous)
4. The renaming of Environmental Sciences to "Environmental and Ecosystems Sciences." = 16 for (unanimous)

Hence there was very strong support for all actions proposed by the Dean of CNAS. Dean Uhrich, the new Dean of CNAS voted in favor of all actions.

Yours sincerely,
Sarjeet Gill, Chair
CNAS Executive Committee