

**UNIVERSITY OF CALIFORNIA, DAVIS
AUDIT AND MANAGEMENT ADVISORY SERVICES**

**Research Cores Review
Audit and Management Advisory Services Project #17-16**

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Fieldwork Performed by:

Lisa M. Montesanto, Senior Auditor

Reviewed by:

Tony Firpo, Associate Director

Approved by:

Leslyn Kraus, Director

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MANAGEMENT SUMMARY

Background

Research core facilities (“cores”) at UC Davis provide a variety of services to principal investigators.¹ They are a critical part of the infrastructure that supports the University’s research mission. To paraphrase one of the Deans interviewed for this project: core facilities make the difference between research excellence and failure.

UC Davis cores have traditionally originated within the schools and colleges, growing over time to serve researchers outside their original administrative host unit. This “organic” nature of core evolution, as opposed to a “top-down” approach, is valued by the UC Davis community. It represents many things, including the dedication of our faculty and the spirit of innovation that fuels discovery at the frontier.

In 2011 the then Vice Chancellor for Research appointed a Research Core Committee which in 2014 produced the report noted in footnote 1 with recommendations “suggested to facilitate the oversight of Cores and create a sustainable and successful environment for Cores.” As the result of that report and due to the leadership of the Vice Chancellor for Research, the Research Cores Facilities Program (RCFP) was created. Subsequently, the Research Cores Advisory Council (RCAC) was established within RCFP as an advisory committee that makes recommendations to the RCFP Faculty Director. The RCFP and RCAC worked together to designate 17 campus research core facilities according to carefully defined criteria and to invest \$2.1 million in those facilities in an initial funding round.²

Tremendous diversity exists among the cores on many different axes: size, types of users, stage in the technology life cycle, services offered, and degree of standardization possible in delivery. Thus there can be no “one-size-fits-all” approach to core management. At the same time certain similarities exist, most notably that the cores must produce high quality results of a very technical nature in a constantly changing landscape, and as such, have high costs for both equipment and personnel. The cores present unique governance and management challenges, including the need to constantly assess the level of subsidy that is appropriate for each. Some cores can operate self-sufficiently. Most require school, college, or central campus subsidy in order to provide their services to researchers at an affordable price.

¹ Examples of the services provided are: mass spectrometry, electron microscopy, flow cytometry, DNA sequencing, and bioinformatics. The most recent detailed inventory of all core facilities at UC Davis is contained in the UC Davis Core Research Facilities and Resources Committee Report dated February 24, 2014. That report defined a core as “an organized shared resource that provides access to technologies, equipment, services, and expert consultation, often on a fee or reimbursement basis, to enable, facilitate, or enhance the research mission of the university,” and estimated the number of UC Davis cores at 172.

²A more detailed timeline including a list of the 17 designated campus research core facilities is provided in Appendix A. The RCFP Year 1 Report 2015-16 articulates the accomplishments and future plans of the program. See Appendix B for a link to that report.

Historically, UC Davis' priorities for investment in research cores have been expressed de facto by a combination of individual funding decisions; UC Davis has no stated priorities for investment in research cores. This is consistent with the grass-roots manner in which the cores have developed. Most central campus subsidies to the cores have been allocated through the Administrative Council of Coordinating Deans (ACCD), through the Vice Chancellor for Research, or through the Provost's office. As noted above, the RCFP awarded \$2.1 million to designated cores via a competitive process in 2016. An additional \$2 million has been allocated by the Provost that RCFP expects to award in fiscal year 2018.³

Audit Scope and Objectives

A review of research core facilities was approved by the Audit Committee as an audit on the Audit and Management Advisory Services (AMAS) fiscal year (FY) 2017 Audit Plan. In our planning stage, we defined the stated objective of this review as to evaluate:

- The governance processes in place for making strategic and operational decisions and for ensuring effective organizational performance and accountability.
- The effectiveness of controls for achieving strategic objectives, ensuring the reliability of financial and operational information, and ensuring the effectiveness and efficiency of operations.

Our scope included the cores and the units that host them, the RCFP, and UC Davis as a whole. We focused on the 17 designated campus research core facilities, though our observations and conclusions have relevance for other cores.

Our scope did not include risk management, recharge rates, or information technology processes.

The project focused on the cores and the RCFP early in the process of an effort to effect system wide change. It has taken place during a time in which leadership at the highest levels is in transition, most notably, at a time when the primary champion of the change begun in 2014 is no longer directing the Office of Research. At the outset of this review, we believed that an opportunity existed to preserve and further efforts to better support and unify the cores. We hope that our work will contribute to the realization of that possibility.

We commenced the project by reviewing the documents listed as items 1-5 in Appendix B. We then developed the key questions shown in Appendix C. We used those questions to focus the interviews with research core stakeholders and UC Davis leadership which constituted our primary fieldwork. These meetings included:

³ No unit on campus tracks the total amount of campus subsidies that have been allocated or that are available to research core facilities either designated or undesignated. The RCFP Year 1 Report 2015-16 indicates that institutional support to the designated cores in the fiscal year 2015 was \$3.8 million. This amount includes support from departments, schools, and colleges.

The RCFP Year 1 report relied upon financial information reported to the RCFP by the core units. Please see Section D below for a discussion of AMAS' concerns with core financial reporting.

- RCFP leadership.
- The RCAC.
- The Deans of the schools and colleges with designated cores plus the Dean of the College of Agricultural & Environmental Sciences (CA&ES), and their associated Deans for Research and Executive Assistant Deans.
- The ACCD.
- Budget and Institutional Analysis (BIA) staff.
- Selected research core directors.

Conclusions

An opportunity exists to modify existing governance structures and control processes to improve coordination and effectiveness in the strategic management of the cores. We recommend that UC Davis:

- Establish processes to allocate support via the ACCD to the cores in accordance with identified strategic priorities.
- Establish processes to ensure that UC Davis prevents unnecessary redundant investment.
- Establish processes for strategic planning and review of core units.
- Establish clear lines of accountability for all cores and clear expectations of responsibility and authority.
- Formalize RCAC member selection and RCFP recusal practices.
- Consider modification of the composition of the RCAC to preserve expert input while maximizing independence.
- Create a standard financial report that can be used to see all sources and uses of any core or combination of cores.
- Establish processes for regular review and monitoring of core financial results, including a “budget to actual” review.

Our detailed observations and recommendations are presented below along with corresponding management corrective actions.

OBSERVATIONS, RECOMMENDATIONS, AND MANAGEMENT CORRECTIVE ACTIONS

A. RESOURCE ALLOCATION

1. ACCD processes could be modified to allow that body to invest in research core facilities in accordance with identified strategic priorities.

UC Davis has no stated priorities to award subsidies to research core facilities through the ACCD, the Office of Research, or the Provost’s office. The RCFP does not receive

strategic direction from central campus to prioritize its awards.

The cores present requests for funding to the ACCD on a rolling (always open) basis, rather than all at one time in a manner that would allow for prioritization among the core facilities.⁴

We appeared before the ACCD to present an overview of this project and to ask the group to consider our key questions as they pertain to their work with the cores. We also met with the Deans of the schools and colleges that host designated core facilities and the Dean of the CA&ES. These meetings included the Associate Deans for Research and the Executive/Assistant Deans of those departments.

We concluded from our discussions that the processes whereby the ACCD allocates support to the cores can be improved to allow for prioritization of investment among the cores in accordance with objectives agreed upon by that body.

Recommendations

Establish a process to define and articulate ACCD research core investment priorities. Establish processes to ensure that ACCD funds will be allocated to the cores in accordance with those priorities.

Management Corrective Actions

1. By April 15, 2018, the Office of Research will propose to the ACCD that it poll ACCD Deans annually to establish priorities for investment in research core facilities.
2. By April 15, 2018, the Office of Research will propose to the ACCD that it modify its cores proposal review process so that it considers core investments as a whole, while making allowance for the need to provide grant match commitments throughout the year.

2. As a steward of limited public resources, UC Davis should invest in research equipment in an effective manner.

Unnecessary redundant investment is not an optimal use of UC Davis funds, and it can undermine the operation of cores that are supported by central campus subsidy. Redundant investment was noted as a key finding by the UC Davis Core Committee in its 2014 report. The problem was mentioned in nearly every meeting or interview we conducted for this project. In our meeting with the RCAC, three separate core directors stated that investments in similar equipment by other UC Davis units had eroded their respective customer bases.

In some instances that we investigated, there were adequate reasons why a duplicate investment had been made. For example, in one case we learned from an Executive Assistant Dean that the piece of equipment perceived as redundant by a faculty core director was purchased as part of a larger grant package received by the college from an external funding source. To have rejected the equipment, UC Davis would have lost

⁴ We understand that certain commitments for grant match funding need to be made on a rolling basis to accommodate sponsor timetables.

the benefit provided by the entire package.

Yet we heard other examples of startup or retention packages where it might have been possible to include funds in those agreements for use in an existing core instead of making a new equipment purchase.

Most equipment purchase decisions not funded by external awards are made ad hoc by the Vice Chancellor for Research, by the Provost, or by school and college Deans; there is no formal process for centralized information sharing or decision making. As such, we have concluded that there is not an effective process in place at UC Davis to prevent unnecessary redundant investment in research equipment and other resources.

Recommendations

Establish processes to ensure that UC Davis prevents unnecessary redundant investment in research equipment.

Management Corrective Actions

1. By June 15, 2018, the RCFP will develop a plan to establish and maintain an equipment and research facilities inventory system and serve as a clearing house for the University.
2. By October 15, 2018, the Office of Research will establish a process to evaluate potential redundancies in equipment or research facilities and will request that all schools and colleges consult with RCFP when they negotiate proposed faculty startup or retention packages that include a technical requirement ask.

B. STRATEGIC MANAGEMENT

- 1. Research cores need strategic plans that are appropriate for their size and maturity. Those plans should articulate a value proposition, an analysis of market alternatives, and a sustainable financial model.**

In 2016, a structural financial deficit was identified within a core facility hosted by the School of Medicine.⁵ The facility director contacted RCFP indicating that the managing department had informed the core that they would be shut down in two months due to the accumulated debt. That core offers service to more than 90 principal investigators in 6 schools and colleges and employs two highly skilled employees as well as \$3.7 million in equipment.

RCFP intervened, completing a Strategic Business Plan review and coordinating the execution of a memorandum of understanding (MOU) among the stakeholders invested in the facility. The core is now operating under that MOU while continuing to revise and review its rate structure and strategic plan.

⁵ The annual operating deficit averaged \$53K in the fiscal years 2013-15. In October 2016, the carryforward deficit was \$97K.

This crisis situation might have been avoided if regular review and planning that included financial forecasting had taken place.

The RCFP Executive Director estimates that five out of 17 designated cores have a strategic plan. Most cores do not have a process in place for a rigorous strategic review, although the designated cores are developing those processes.

While plans will vary in complexity due to size and other variables, at a minimum a core should be able to articulate:

- a value proposition describing users served, product mix, and pricing;
- a market analysis noting the alternatives available to users and their price; and
- a sustainable financial model that includes all sources and uses of funds.

2. Those who make funding decisions need accurate, independent analysis of core business models. They need accurate financial and operational results.

We knew from our preliminary work that the Decision Support (DS) reporting function of the Kuali Financial System (KFS) cannot produce a standard report for any core that will show all sources and uses of funds.⁶ This fact combined with the lack of strategic planning described in B.1, caused us to suspect that adequate financial and strategic review was not regularly taking place to allow for high quality decisions for investment in the cores.

This idea was confirmed by our discussions with the ACCD Deans and Executive/Assistant Deans that we interviewed.

These interviewees stressed in particular that in addition to basic financial and strategic information, they lack adequate information regarding the actual results or benefits that cores provide as the result of ACCD investment. Examples of the metrics that could satisfy this need include grants and publications that result from the use of core services, and accurate data on the users of a core, including their host school or college.

The RCFP and RCAC are in the process of identifying appropriate metrics and collecting data on them. This information has not yet become available to the ACCD and other investment decision makers.

3. Strategic planning for the cores must periodically consider the discontinuation of cores that may no longer be needed, that may not be viable, or that do not meet UC Davis priorities for investment.

The UC Davis cores operate in a constantly changing landscape. Both the scientific frontier and the marketplace morph at a rapid pace. UC Davis must accept the need to subsidize the cores, given their nature. Yet the University needs a way to continually assess whether or not the support it provides to the cores is appropriate, effective, and efficient.

⁶ Financial reporting will be discussed in more detail in the Financial Reporting and Review section below. This section will address strategic planning only.

AMAS observed that even cores with strategic planning processes in place do not necessarily give adequate consideration to meeting researchers' needs in alternate ways. Alternatives might include a variety of options depending on the type of core, but would at least include purchasing the service from another provider. Rare is the core that truly considers its sunset, or even the sunset of one or more of the services it offers. Yet UC Davis must examine these questions regularly to optimize use of its resources.

The Deans and Executive/Assistant Deans we interviewed emphasized this. They believe that they review the cores hosted in their schools and colleges critically and evaluate them in light of well-defined priorities. The current processes in place for them as members of the ACCD do not allow for the same level of rigor, nor do they see the "pointed questions," as one Dean called them, being asked for subsidies granted by the Office of Research and the Provost's Office.

It might be useful if the colleges documented their review processes as an aid to the RCFP. This could contribute to a greater unity of processes within the University.

4. Strategic planning and review for the cores should be conducted in an efficient, effective manner.

It makes sense that the schools and colleges should be responsible for the strategic planning and review of smaller cores that are hosted by and serve those units.

Designated cores are generally larger, more complex, and by definition, serve at least three schools or colleges. The RCFP Executive Director has the experience and expertise to provide professional business support including strategic planning to designated cores. The RCFP may thus be best positioned to coordinate and assist financial reporting, oversight, and strategic planning for the designated cores.

If the RCFP were to take on this role, strategic plans for the designated cores would need to be completed on a rotating basis since all could not be done in one annual period. Several people we interviewed—both Deans and core directors—agreed that a three year rotation would be appropriate. Over time, the presence of a current strategic plan could become a prerequisite for a funding request to the ACCD.

The RCFP could also provide best practice guidelines or even templates for conducting the reviews within the schools and colleges.⁷

⁷ We understand that cores as recharge units participate in a periodic rate review process. The examination of this process was outside the scope of our project. We encourage the incorporation of analysis completed for rate reviews into strategic planning efforts in a manner that minimizes redundancy.

In the future the University may wish to consider whether cores would be better served by centralized business management for recharge rate and recharge proposal development. At present these tasks are most often performed for each core within their school or college by those who are more accustomed to managing typical academic units that do not have the same type of financial structure as research core facilities.

Our understanding is that the funding source that supported the development of the RCFP and RCAC in the last three years has been exhausted. The Office of Research has committed operating funds from another source for fiscal year 2018, but there is no long term plan to retain the new infrastructure.

If the UC Davis community determines that the RCFP is the best option to provide strategic and other support to the cores, then the unit will need adequate funding. If not, an alternative must be developed to perform these functions in order for the research cores to operate effectively.

Recommendations

Establish processes for strategic planning and review of core units. These processes should include an assessment of each core's value proposition, a market analysis, and a sustainable financial plan.

Management Corrective Actions

1. By April 15, 2018, the RCFP will develop a plan to review designated cores on a regular rotation in accordance with criteria established in consultation with the ACCD. The review will include measurement of the value provided by the core, an analysis of market alternatives, and a sustainable financial model. Financial modeling may also include a calculation of full cost recovery recharge rates.
2. By April 15, 2018, the Office of Research will propose that the ACCD modify its processes so that once strategic reviews are taking place on a regular basis, all cores must have completed an independent review as established in 1 before they are considered for subsidy.
3. By October 15, 2018, the Office of Research Sponsored Programs office will develop a plan to collect and make available to RCFP data from PIs submitting grant applications regarding the designated cores that they intend to use on those projects.

NOTE: Additional strategic discussion regarding two specific cores is included in Section E below.

C. GOVERNANCE

1. Clear responsibility and accountability should be established for every research core unit.

Most cores have a faculty director who—often in partnership with a technical director or manager—is responsible for leadership of the unit. We found that in some instances it is not clear who at the next level above the director is responsible for a core.

This was true of the example cited in the strategic planning section B.1 above. In that instance, the problems of the unit were exacerbated by the fact that each of the stakeholder units believed that one of the others had taken responsibility for oversight and management. The lack of clarity delayed proper intervention.

Without a clear administrative structure for authority, fiscal responsibility, and oversight the cores risk deficit spending, layoffs without planning, and strategic decisions that do not serve the host or the University.

Recommendations

Establish clear lines of accountability for all cores and clear expectations of fiscal responsibility and authority. Best practice guidelines should be distributed to the University regarding clear lines of responsibility and accountability to the cores. This would include the expectation that administrative homes would establish and enforce expected performance standards for core Directors.

Management Corrective Actions

1. By August 15, 2018, the RCFP will circulate best practice guidelines to the schools and colleges that will discuss the need for clear lines of accountability and authority for each distinct core.

2. **RCAC has not yet established formal guidelines and criteria for how its members will be selected.**

The Academic Senate Committee on Research (COR) stated in a 2014 letter to the Senate Chair that there should be clear guidelines and criteria for how members are appointed to the RCAC.⁸ To date RCAC members have been selected annually by the Vice Chancellor for Research and/or the RCFP Director. While the current director has a process whereby members are drawn from all schools and colleges and Academic Senate and Federation members are included, at present there are no documented guidelines or criteria by which those selections are made.

A more robust and durable governance structure should be established for the RCAC.

Recommendations

RCFP should establish formal guidelines and criteria for the selection of RCAC members.

Management Corrective Actions

1. By May 15, 2018, the RCFP will establish and document guidelines and criteria for RCAC member selection. It will document the annual process to appoint and reappoint RCAC members.

⁸Concern was expressed as follows by the COR's October 30, 2014 letter to then Chair of the Davis Division of the Academic Senate, Andre Knowsen: "Some COR members are concerned that the RCAC will be appointed and "hand-picked" by the Vice Chancellor for Research. Therefore, there should be clear guidelines and criteria for how people are appointed to the RCAC."

3. Roles must be managed so that groups that make funding and other important recommendations properly balance the need for expert scientific and technical input with the need for independence.

UC Davis faces the challenge of managing the tension between the interests of researchers, core facilities, and the University as a whole. The cores pose unique management challenges compared to other units where similar tensions may exist because their work at the cutting edge of science and technology requires input from subject matter experts. Yet that input must be obtained in a transparent manner that strives for fairness and avoids decisions that are self-serving in fact or appearance.⁹

In the case of the designated cores, AMAS observed that the RCAC includes 17 members, 11 (65%) of whom have an association with a core facilities unit.¹⁰ We understand that RCFP has required members to recuse themselves from decisions in which they have an interest. This meant that in the first enhancement funding round conducted in 2016 to award \$2.1 million, the RCFP was required to recruit faculty reviewers who were not on the RCAC so that the application review process would be independent.¹¹

It is expected that this practice will need to be continued in subsequent rounds if RCAC membership is not modified. Moreover, AMAS has concern that even with members rotating out of decisions that affect them directly, a group so heavily weighted with members with a potential interest could develop a quid pro quo environment or be perceived by others as having such an environment to the detriment of the cores and the University.¹²

With its current composition, the RCAC may not be sufficiently independent to make recommendations regarding priorities for strategic investment in the cores.

Recommendations

RCFP should document its guidelines that require recusals to prevent the possibility of self-serving decision making or the appearance of the same. The Office of Research should consider modifying the composition of the RCAC to reduce the percentage of members who have direct involvement in the cores.

⁹ We have intentionally avoided the use of the term “conflict of interest” in this section so as not to imply the legal definition and to avoid suggesting that decision makers might derive a personal benefit from their actions in a professional role. We do not intend to imply either. Rather we wish to highlight how professional interests of one sort might conflict with those of another if roles are not properly managed.

¹⁰ Some of the core affiliations of RCAC members are with non-designated cores.

¹¹ Nine of 11 reviewers were recruited ad hoc. Only two available RCAC members were sufficiently independent to serve as reviewers in the first year.

¹² We wish to state unequivocally that we observed no inappropriate behavior on the part of any RCAC member. Our concern here is with the structure of the body. It is important that the RCAC structure protect against any future misuse and that it provide reassurance to the University community that the RCAC is sufficiently independent.

Management Corrective Actions

1. By March 15, 2018, the RCFP will document its guidelines for member recusal from participation in making recommendations that may affect cores with which they have an affiliation.
2. By September 15, 2018, the RCFP, in consultation with ACCD, will review the current composition of the RCAC and will modify membership as determined by that process in order to reduce the percentage of members who have direct involvement in the cores.

D. FINANCIAL REPORTING AND REVIEW

- 1. Standard financial reports using general ledger data should be regularly reviewed by core management and oversight units, including RCFP. They should be readily available to other stakeholders such as BIA, ACCD, and Dean's offices.**

Our interviews revealed that regular financial assessments take place in many cores, but financial assessment and oversight processes are inconsistent among the cores, schools, and colleges.

The UC Davis Kuali Financial System (KFS) reporting function (Decision Support or DS) does not have a report that will show all sources and uses of funds for a core unit. Analysts within RCFP and the schools and colleges use the DS 193 and 55 reports to view core activity. These reports show only recharge or external charge income and associated expenses; they do not include subsidies or expenses funded by other sources.

It is understandable that in an academic setting where most accounts are monitored for their compliance with an approved budget, that the current practices for core review have persisted. However, for units like the cores with revenues and expenses that fluctuate more like a business, this is an ineffective way to report and review financial condition.

The example cited in the strategic planning section B.1 above demonstrated the risks of this condition: the deficit occurred because a grant that funded a portion of a key employee's salary expired and this was not discovered either because adequate financial review did not take place or because a review of the basic DS recharge reports did not highlight the problem, or both.

Many units compensate for the limits of DS by creating Excel worksheets that combine data from various DS reports in order to see the whole picture. The Center for Comparative Medicine compiles such reports for the Mouse Biology Program (MBP) which has an estimated operating budget of \$6.8 million. The Genome Center, which houses four designated cores with estimated operating budgets totaling \$6.1 million, also can produce a full core view as needed for its annual report.

Such processes are prone to error, inefficient, and overly dependent upon the knowledge of analysts within the units. The Genome Center director declined to give AMAS an updated set of financials because he felt the level of work to produce these outside the normal annual reporting schedule would be burdensome under current conditions.

In addition, there is no process in place to efficiently produce reports that allow comparisons among cores or a report on the designated cores as a portfolio since transactions are organized within KFS in a unique way for every core. AMAS, BIA, RCFP and others cannot access reports on individual cores or groups of cores without requesting those from the cores themselves. Moreover, there is no efficient way to validate any reports received from the units, since they do not link directly to any one DS report.

The RCFP is expected to provide advisory oversight to the cores. It must have adequate tools to do so.

Recommendations

Create a standard report that can be used to see all sources and uses of any core or combination of cores with transaction data pulled directly from the general ledger. The RCFP should review this report for the designated cores on a regular reporting schedule.

RCFP should include a discussion of financial reporting and review in a best practices document provided to the schools and colleges and posted on the RCFP website. The guidelines should include recommendations about how to set up organizational structure and accounts within the Kualu Financial System in order to successfully use existing DS reports and the newly created standard report.

Management Corrective Actions

1. By August 15, 2018, the RCFP, in cooperation with Accounting and Financial Services and core units, will establish standards for core account organization within the Kualu Financial System.
2. By August 15, 2018, the RCFP will coordinate with Accounting and Financial Services and other units to create a standard report that can be used to see all sources and uses of any core or combination of cores.
3. By September 15, 2018, the RCFP will circulate standards and guidelines to the schools and colleges regarding proper set up of organizational structure and accounts for the successful use and review of the standard cores report.
4. By October 15, 2018, the RCFP will establish and implement a process to regularly review the financial results of the designated cores.

E. STRATEGIC PLANNING FOR SPECIFIC CORES

We observed in the course of our work that in the absence of a mechanism for the regular strategic review of core facilities, other processes have been developed to serve the same purpose. This is true in the case for two of the largest designated cores. One is the subject of a campus Task Force review and the other will soon be reviewed via an ACCD process.

We offer commentary and recommendations below on each that is based upon the observations we made during our interviews and audit procedures. We hope that our

comments will be useful to those involved in conducting these reviews and to the University.

The examples of these two large programs within the UC Davis portfolio of units that support core research provide a glimpse at the complexity involved in effective strategic management of the cores. While processes are underway to evaluate each of these units via the Task Force and the ACCD review, it is our hope that the University will strive to develop centralized processes within the RCFP program that will be robust enough in the future to address these types of strategic issues.

The mention of these two programs is in no way intended to suggest priorities for review within the RCFP.

1. Mouse Biology Program

Our interviews revealed that there has been disagreement as to the value that the Mouse Biology Program (MBP) provides to UC Davis and to the advancement of science. It was outside the scope of this review to delve into the data that is needed to engage in a fact-based discussion of those topics.

Recommendations

We understand that MBP will be undergoing an ACCD required review in fiscal year 2018. We understand that the Office of Research will provide general suggestions to the review committee regarding the scope and criteria for the review. We wish to underscore certain topics that arose in the interviews we conducted in this project by recommending that the committee objectively analyze the following:

- Has MBP provided a net financial cost or benefit to UC Davis over the course of its existence?
- What non-financial benefits has the program provided? Can these benefits be quantified?
- Whom does MBP serve? Who are its primary users?
- Are there viable alternatives for researchers who need the products MBP offers? Are UC Davis researchers electing to use MBP or other providers? Why?
- What is MBP's vision for the future?
- What financial or other support will be required from central campus to achieve that vision?
- What will be the benefit to UC Davis for providing that support?

We further understand that MBP has a commitment for central campus subsidy through 2019. We recommend that after the ACCD review has been completed, that the Center for Comparative Medicine and executive leadership conclude whether or not that subsidy will be continued. We recommend that this decision be made in the context of support for campus research core facilities as a whole, as recommended in Section A.

Management Corrective Actions

1. By February 15, 2018, the Office of Research will include the recommendations in this report that pertain to the Mouse Biology Program in the template package provided to the coordinating dean and the reviewers selected to conduct the ACCD review of the Program in the fiscal year 2018.

2. Bioinformatics

AMAS noted in our report *16-67: College of Biological Sciences Administrative Review* that the Bioinformatics Service Core within the Genome Center hosted by the College of Biological Sciences (CBS) has a structural deficit. At fiscal year-end June 30, 2016, the accumulated deficit was \$1.3 million.¹³

It was outside the high level scope of this research cores review to provide specific recommendations to address the Bioinformatics deficit. A Task Force on Bioinformatics at UC Davis was formed by a charge letter issued by Interim Provost and Executive Vice Chancellor Burtis on January 19, 2017. The Task Force has been asked to develop a five year strategic plan for bioinformatics research support. Presumably this plan will include subsidy, but would be a sustainable plan.¹⁴

AMAS wishes to echo that charge letter by stating that it is imperative for adequate analysis and coordination to take place so that bioinformatics service is provided with maximum efficiency without sacrificing quality.

Specifically, we believe that questions must be asked and answered regarding:

- What bioinformatics services are most vital to UC Davis?
- What is the appropriate balance between analytical support, computational infrastructure support, and training?
- How much customization in service is actually required to serve the needs of most users?
- Can UC Davis meet the needs of most users at a reduced cost by taking advantage of opportunities to use alternate resources available within the University, within the UC system, nationally, or commercially?

Recommendations

None. This section is for informational purposes only.

¹³ The amount shown was obtained from a Decision Support FIS193 report for the period. As noted in Section D above, this report does not provide a comprehensive view of any self-supporting unit. It is cited here as a rough measure of the scale of the problem that must be addressed.

¹⁴ It is expected that the Bioinformatics Service Core also will participate in the new RCFP process to develop and review sustainable business plans.

Appendix A

RCFP Timeline

Item	Date
Vice Chancellor for Research appoints Research Core Committee	Late 2011
Committee surveys faculty and core Directors	Summer 2012
Core Services Billing System (CSBS) initial module launches	November 2013
Publication of Core Facilities Report <ul style="list-style-type: none"> • Defines 172 facilities as research cores 	February 2014
Establishment of Research Core Facilities Program (RCFP)	March 2015
Establishment of Research Core Advisory Council (RCAC)	September 2015
Integration of CSBS with Quali	Summer 2016
Request for Applications to be classified as Campus Research Core Facility (CRCF) <ul style="list-style-type: none"> • 43 letters of intent received • 26 applications received 	December 2015
Seventeen facilities granted CRCF status: <ul style="list-style-type: none"> • Bioinformatics Core • Campus Mass Spectrometry Facility • Center for Molecular and Genomic Imaging • College of Biological Sciences DNA Sequencing Facility • Controlled Environment Facility • DNA Technologies and Expression Analysis Core • Biological Electron Microscopy Facility • Flow Cytometry Shared Resource • Health Sciences District Advanced Imaging Facility • Imaging Research Center • Interdisciplinary Center for Inductively-Coupled Plasma Mass Spectrometry • Keck Spectral Imaging Facility • Light Microscopy Imaging Facility • Mouse Biology Program • Nuclear Magnetic Resonance Facility • Proteomics Core Facility • West Coast Metabolomics Center 	March 2016
Call for Applications for Enhanced Funding	April 2016
Creation of Searchable Service & Equipment Database	Early 2016
RFP for Facilities Management Software	May 2016
Publication of RCFP Year 1 Annual Report covering Mar 2015 – June 2016	August 2016
Announcement of recipients of \$2.1 million enhanced funding	August 2016

Appendix B

Additional Reading

1. UC Davis Core Research Facilities and Resources Committee Report dated February 24, 2014. Available at: http://research.ucdavis.edu/wp-content/uploads/Core-Facility-Report-February-2014_final.pdf
2. RCFP Year 1 Report 2015-16. Available at: <http://research.ucdavis.edu/wp-content/uploads/Core-Facility-Program-Report-10-26.pdf>
3. Turpen, Paula B., Philip E. Hockberger, Susan M. Meyn, Connie Nicklin, Diane Tabarini, and Julie A. Auger. "Metrics for Success: Strategies for Enabling Core Facility Performance and Assessing Outcomes." *Journal of Biomolecular Techniques: JBT* (2016). Available through RCFP.
4. UC Davis Genome Center Seven Year Review 2008-2015.
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Appendix C

Research Cores: Key Questions

- What processes are in place to ensure that core and school or department management, the Research Core Facilities Program (RCFP) and Research Core Advisory Council (RCAC), and campus leadership regularly review financial results of the cores?
- What processes are in place to ensure that core and school or department management, RCFP and RCAC, and campus leadership regularly review the strategic plans and performance of the cores?
- Who is ultimately responsible for the performance of a core? To whom do the Directors “report”?
- What processes are in place to budget and allocate central campus funds to support the core facilities as a group?
- What processes are in place to ensure that central campus funds are allocated to cores in accordance with campus strategic goals and objectives?
- Who or what body identifies strategic areas that require campus subsidy?
- Potential conflicts of interest: How are situations managed where there is tension between what serves different interests, groups, or individuals? How is adequate expert input obtained without compromising the integrity of the process? Examples of this are the establishment of recharge rates and campus subsidy priorities.
- How regularly and in accordance with what criteria is the option to discontinue a core facility’s service considered?
- What other options have been considered or might be deployed to maximize the benefits that the campus receives from the cores while minimizing the use of central fund subsidies?