UCDAVIS
OFFICE of RESEARCH

Research Core Facilities Program

Office of Research
University of California, Davis

Year 1 Report
2015-16

Contents: (links to sections)

Executive Summary

In the first year since inception, (March 2015-June 2016) the UC Davis Research Core Facilities Program (RCFP) has made excellent progress developing a support structure for core facility operations at UC Davis. The Program has established a governance and support structure for more informed decision making regarding campus investments in core facility operations, created definitions of shared research facilities that resulted in the competitive designation of 17 as Campus Research Core Facilities (CRCF), and established financial planning strategies to put facilities on firmer footing.

The CRCFs serve researchers in at least 3 colleges and/or professional schools with expert staff and professional management. This first cohort of designated facilities is used by hundreds of individual PIs and their trainees with broad impact on the research output generated at UC Davis. Financial analysis of a representative fiscal year for the CRCFs revealed a combined annual operating budget of roughly $18.5 million. The CRCFs at UC Davis received on average 21% ($3.8 million) of the annual operating budget in institutional support, which was utilized for operational subsidies, i.e. staff and maintenance, as well as acquisition of new instrumentation or services. The remainder of funds originates from recharge activities, workshop fees and grants.

Improving operational and financial management practices in the cores is beneficial to the research community. The RCFP has evaluated and extensively tested several core administrative software packages. Software acquisition is currently underway and its implementation in CRCFs including direct integration with the campus financial system will begin in Summer 2016.

The RCFP has enabled increased visibility and communication between core facilities by establishing a number of new communication and informational tools to inform the research community about the core facilities capabilities. These include a searchable dynamic database that includes 49 core facilities and more than 400 shared instruments and services across the UC Davis campus, a core facility email listserv and a web page that includes news stories and access to the RCFP Twitter feed.

Addressing a significant number of recommendations put forward in the 2014 Research Core Facilities Report has been the goal for Year 1. The majority have been implemented or are currently underway creating significant momentum as we move into Year 2.

Mission

The mission of the Research Core Facilities Program is to enable researchers at UC Davis to have access to the state-of-the-art technology and services for their scientific research, to streamline the core facility administration while improving accountability and transparency, and to provide training opportunities for faculty, graduate students and staff.

Program Description

The Research Core Facility Program (RCFP) was initiated by Vice Chancellor for Research Harris Lewin's charge to a faculty-driven UC Davis Core Research Facilities and Committee who delivered their comprehensive report in 2014. This report highlighted the need for strategic support, funding and oversight of laboratories providing research services, which have grown organically to include over 170 facilities across campus.

The RCFP is led by Klaus van Benthem, associate professor in the Department of Materials Science and Engineering, who serves as Faculty Director. In this role, Klaus is responsible for the development and implementation of a strategic plan to establish a robust and sustainable research infrastructure that better serves the campus. He collaborates closely with Associate Director Julie Auger, who joined the team from a similar position at the University of California, San Francisco. Julie's responsibility is to implement the strategic plan by guiding core facilities with the development of professional business plans and establishing best practices in day-to-day operations. Klaus and Julie both serve as ex officio members of the Research Core Advisory Council (RCAC), which serves in advisory capacity to the Faculty Director and makes recommendations about strategic campus investments and programmatic advances.

RCFP Staffing

Faculty Director
Klaus van Benthem is an associate professor in the Department of Materials Science and Engineering at UC Davis. He holds a leadership role in the Advanced Materials Characterization & Testing Laboratory facility as well as the Center for Nano and Micro Manufacturing (CNM2) in the College of Engineering. He has actively pursued instrument acquisition through federal grants, including the National Science Foundation Major Research Instrumentation Program and the Department of Defense University Research Instrumentation Program. He has secured funding for several scanning electron microscope and transmission electron microscope sample stages and a focused ion beam instrument. As Faculty Director for the RCFP Klaus is responsible for the development and implementation of a strategic plan to establish a robust and sustainable research infrastructure that better serves the campus. During the FY15-16 Klaus has served in the Crocker Nuclear Laboratory Vision Committee, the Chemistry Building Vision Committee and the Faculty Executive Committee for CNM2. He has participated in several meetings of the Academic Council of Coordinating Deans (ACCD) to provide input on core facility operations and related budget requests, and serves as ex-officio (non-voting) member of the Research Core Advisory Council.

Associate Director
Julie Auger brings a wealth of experience and record of achievement in the operation and administration of multi-technology, multi-disciplinary academic research units. In addition to developing and managing shared research facilities in flow cytometry, monoclonal antibody production and immunohistochemistry, she has served as the institutional official responsible for the development of central administrative programs focused on cores at the University of Chicago and UC San Francisco. She has served as a reviewer at the National Institutes of Health Shared Instrumentation Grant Program, on the council of the International Society for Advancement of Cytometry, and currently serves on the Executive Board of the Association of Biomolecular Research Facilities. During FY15-16 Julie has served on several campus-wide committees including the Financial Sustainability Action Plan Phase 1 Exploration Committee: Strategic Sourcing, the Animal Task Force, the CNL Cyclotron Transition Committee, the CNL Vision Committee, the Office of Research Cost-share Committee and the NSF-MRI internal limited submissions review committee. She participates in meetings of the Academic Council of Coordinating Deans (ACCD) to provide input on core facility operations and related budget requests, and serves as ex-officio (non-voting) member of the Research Core Advisory Council. Ms. Auger's responsibilities include the implementation of strategic plans for core facility operation at UC Davis by guiding core facilities with the development of professional business plans and establishing best practices in day-to-day operations. She collaborates closely with core Faculty Directors and staff to understand the research and core business processes that support academic research.

Administrative Assistant
Ms. Shelby Benavidez and more recently Ms. Amy Schools administratively support the RCFP. Their responsibilities include scheduling of meetings, preparation of meeting materials, content management for the RCFP webpage, and social media presence.

Program Analyst (to be hired)
Under the direction of the Associate Director, the Program Analyst will analyze and administer multiple programs within the newly created RCFP. In addition to general responsibilities of program communications and organization of meetings, workshops and a technology-focused seminar series, the Program Analyst will specifically be responsible for the implementation of the Core Facility Admin Software in campus core facilities including current business process mapping and software configuration to meet scientific and business needs and facilitation of training. The Program Analyst will also participate in development of the core facility specific equipment maintenance program and manage the program to reduce the high service contract costs of sophisticated scientific equipment.

The hiring of the Program Analyst (Analyst IV) is pending.

Financial Analyst

Erlita "Yette" Neri performs financial and accounting activities in support of the RCFP managed Campus Research Core Facilities. Under the general supervision of the Director of Office of Research Business & Finance (B&F) she works closely with the Associate Director and provides support for activities related to business planning, recharge rate development, budget and forecasting, and financial analysis & reporting. This includes development and analysis of complex financial models and reports, to inform the Associate Director and other key stakeholders of the financial position of the various campus cores.

Research Core Advisory Council (RCAC)

The RCAC was charged on September 29, 2015 by RCFP Faculty Director Klaus van Benthem, and includes representatives from all science and technology intensive colleges/schools, as well as a representative from each of the Academic Senate and the Academic Federation. The RCAC makes informed recommendations to the Faculty Director for establishing, maintaining, expanding, and sun-setting of Campus Research Core Facilities (CRCF). In Year 1, the RCAC vetted the definition of a Campus Research Core Facility, established the process for review of proposals for CRCF designation and the process for funding requests to RCFP. The council has convened on average every 1.5 months to develop a strategic plan for sustainable research core facility operation and identify necessary resources (dollars, space, personnel) to implement such a plan. The RCAC was asked to specifically address the following topics:

- Establishment of suitable metrics for core evaluation, and suggestion of subsequent actions that emerge from core evaluations.
- Definition and identification of Campus Research Core Facilities that become eligible for support from RCFP/Office of Research.
- Review the funding requests process to the RCFP and make recommendations for strategic investments in and direct financial support of individual research cores.

2015-16 RCAC members

- Mani Tripathi, chair (MPS Physics)
- Mario Biagioli (School of Law)
- Simon Cherry (COE Biomedical Engineering)
- Doug Cook (CBS Plant Pathology)
- Mary Delany (CAES Animal Sciences)
- Janet Foley (SVM Medicine & Epidemiology, Academic Senate representative)
- Will Jewell (OR Campus Mass Spectrometry Facility, Academic Federation representative)
- Gang-Yu Liu (COE Chemistry)
- Kent Lloyd (SOM Surgery)
- Richard Michelmore (Genome Center)
- John Morrison (California National Primate Research Center & SOM Neurology)
- Isaac Pessah (SVM Molecular Biosciences)
- Julie Auger, ex-officio (Office of Research)
- Klaus van Benthem, ex-officio (Office of Research and COE Materials Science & Engineering)

Key Initiatives & Outcomes

1. Governing Structure

The 2014 Research Core Facilities Report recommended the formation of a governing structure for the Research Core Facilities Program to enable "strategic decision making". Following this recommendation, to complement the Faculty Director and Associate Director leadership, the 12-member Research Core Advisory Council (RCAC) was charged on September 29, 2015.   See the full description of the RCAC above.

2. Definitions of Core Facilities

The RCAC together with RCFP leadership has defined and established 2 categories of core facilities for the UC Davis research communities distinguished primarily on the breadth of the research community served and the broad scientific impact.

A CAMPUS RESEARCH CORE FACILITY (CRCF) is a broadly accessible, shared research facility that provides access to technologies, training and high quality scientific services. Services at these facilities are delivered by experts on a fee-for-service basis to enable, facilitate or enhance the research mission of the university. CRCFs are professionally managed operations with a sustainable business plan and follow standards for best practices in facility management and operations. CRCFs serve a broad campus user base in 3+ colleges/schools and are considered essential to support the scientific mission of UC Davis. CRCFs are accountable to the RCFP but are administratively managed by their original home departments. Each CRCF is managed by a faculty director and a technical director. The facility leadership is supported by a facility advisory committee that includes facility clients.

SHARED RESOURCE FACILITIES (SRFs) play an important role on the UC Davis campus by providing access to scientific instrumentation, expertise and training to meet the needs of a local user base. They may serve researchers in only 1-2 UCD colleges/schools or may be departmentally focused. The size and scope of these operations vary considerably, including, for example, the number of dedicated professional staff and the levels of scientific and business management processes.

A list of the general expectations from CRCFs that were developed by the RCAC is included in the Appendix A of this report.

3. Designation of Campus Research Core Facilities (CRCF)

The definition above was used to issue a Request for Applications (RFA) to be designated a CRCF on December 4, 2015. A copy of the RFA can be found on the RCFP webpage (http://research.ucdavis.edu/research/core-facilities-services/core-resources/). The RCFP received 43 letters of intent to apply, followed by 26 applications. Through a carefully designed peer-review process outlined in the RFA, 17 facilities were conferred with campus designation status on March 10, 2016.

Campus-wide Call: Designation as a Campus Research Core Facility (Winter 2016)

- 172 facilities listed in 2014 core facilities report
- 43 letters of intent
- 26 applications received
- 17 facilities were designated as CRCF

The newly designated CRCFs with their administrative homes are:

- Bioinformatics Core (Genome Center)
- Biological Electron Microscopy Facility (SOM) & (CBS)
- Campus Mass Spectrometry Facility (Office of Research)
- Center for Inductively-Coupled Plasma Mass Spectrometry (Office of Research)
- Center for Molecular and Genomic Imaging (COE)
- College of Biological Sciences DNA Sequencing Facility (CBS)
- Controlled Environment Facility (Office of Research)
- DNA Technologies and Expression Analysis Core (Genome Center)
- Flow Cytometry Shared Resource (SOM)
- Health Sciences District Advanced Imaging Facility (Vet-Med)
- Imaging Research Center (SOM)
- Keck Spectral Imaging Facility (MPS)
- Light Microscopy Imaging Facility (CBS)
- Mouse Biology Program (Vet-Med) / (SOM)
- Nuclear Magnetic Resonance Facility (Office of Research)
- Proteomics Core Facility (Genome Center)
- West Coast Metabolomics Center (Genome Center)

4. CRCF Financial Analysis & Future Funding Models

One of the major accomplishments of the RCFP due to the established process of CRCF designation is that for the first time, comprehensive financial data has become available from the first cohort of CRCFs. The designation process included a request for financial reports of the most recent fiscal years. A financial overview of facility operations including a summary of the most recent full fiscal year (FY2014-15) is included in Appendix B. This information is useful to determine the potential annual investment needs for shared research facilities using the initial cohort of 17 designated facilities as a model group. Preliminary analysis identified the following:

A Broad Variation in Size of Annual Budgets and Funding Sources:

- The total annual operating budget in FY 14/15 for the 17 CRCFs combined was $18.5 million.
- The reported annual operating budget ranged between roughly $130k and $6.8 million with the median being $430k
- Across the 17 CRCFs, $12.5 million or 68% of all expenses were recovered through recharge revenue. Twenty-one percent (21%) or $3.8 million was supported by institutional support from OR/ACCD as well as the respective schools, colleges and departments. Roughly 5% of financial support originated from contracts, grants, and gifts.
- The institutionally subsidized expenses included equipment funding as well as operational costs including costs for personnel and maintenance contracts.
- Collectively, the CRCFs ended the fiscal year with a <$1.2 million> deficit (6% of the total operating expenses).

A Broad Variation in Expense Recovery via Recharge.

- The individual cost recovery through the recharge mechanism ranges from facility to facility with fractions of the respective operating budget as low as 23% and as high as 122%.
- The average recharge cost recovery per facility is 54% of operating expenses and originates predominantly from internal clients.

Institutional Support/Subsidization.

- The $3.8 million institutional support was used for operational support and capital investments.
- Institutional subsidies amount to roughly 21% of the total annual operating budget.
- Across the 17 CRCFs, only the CBS DNA Sequencing Facility operated without any centralized subsidy, while 10/17 CRCFs received operating support subsidies (versus capital support).
- Institutional subsidies for operations range widely between 0% to as high as 85% of the respective annual operating budget.

Year-End Surplus/Deficits and Accumulated Surplus/Debt.

- In FY14/15 total deficit spending across the CRCFs was $1.9m in 10 out of 17 facilities. The remaining 7 facilities ended the same FY with a surplus totaling $739k.
- Overall, there is an accumulated debt of $792k across 7 facilities, and an accumulated surplus of $4.3 million across 10 facilities.
- It must be noted that due to federal regulations, the surplus in one facility cannot be used to offset deficit spending in another facility.
- Future analysis and business planning activities are necessary to shed more light on the challenges faced in managing both individual surpluses and deficits.

An in-depth review of the financial analysis for each facility will lead to the development of alternative funding models to support core facility operations across campus. It has already become evident through the data provided above that continued investments in facility operations and new equipment are necessary to maintain scientific excellence and professional scientific service activities.

Benchmarking

An annual benchmarking study by iLab Solutions, the global leading provider of administrative software to core facilities, has shown that the average institutional investment in core facilities over the last 5 years has been 30%. The 2015 Core Facility Benchmarking Study included over 260 responses representing over 50 different core types from 160 institutions. The methodology of individual core reporting of subsidies is similar to our information gathering method to date.

Using that benchmark, we have identified the need to invest approximately $5m annually (30%) in the current CRCF operations and 17 facilities. Furthermore, assuming that the number of CRCFs doubles in the next 3-5 years, and that each of those additional facilities has an annual operating budget of $430k (current median), a growth of the annual operating budget in all CRCFs to roughly $26 million is expected. A continuation of 21% of institutional support will therefore require financial investments of around $5.4 million annually but the aspired goal of 30% support would require investment of $7.7million. Such budget projections do not yet consider any additional strategic assessment of equipment depreciation models.

5. CRCF Enhancement Funding

	# of CRCF	Annual Budget	21% support (current) (0,000's)	30% subsidy *(aspiration)*
FY16	17	$18.5k	$3.9k	$5.6k
FY17	22	$20.7k	$4.3k	$6.2k
FY18	28	$23.2k	$4.9k	$7.0k
FY19	34	$25.8k	$5.4k	$7.7k

Following the CRCF designation process, on April 15, 2016 a Request for Proposals was issued to the 17 designated CRCFs to apply for Enhancement Funding. It is anticipated that up to $2.5m in awards will be made. Proposals were due on May 16, 2016. Fifteen (15) proposals were received requesting a total of roughly $2.94 million, of which $1.38 million (47%) were equipment requests from 6 facilities. The remaining proposals were requests for operating subsidies.

As part of their proposals the facilities identified an additional 63 items as 'Future Needs' on respective prioritized lists. The future needs equate to approximately $20.5 million, of which 96% (56 items) are requests for equipment and the remainder for operating support. *This character of funding requests through the main proposals compared to the 'future needs' indicates that the CRCFs have, in the short-term, prioritized funding probability over instrumentation needs. The latter are typically more expensive and, hence, were considered to have lower likelihood of approval considering the total available funding amount.*

Proposals were reviewed and scored in a manner consistent with NIH and NSF funding programs. The review panel met on June 8, 2016 to evaluate and rank the received proposals and make funding recommendations to the RCFP leadership. Award announcements were made in July and August 2016.

6. Dynamic Searchable Database

Following the original recommendations outlined in the 2014 Core Facilities Report, an inventory of available instrumentation and research services was generated. Information about equipment, services offered, contact personnel and a short list of associated key words was requested through email from all facilities listed in the above mentioned original report.
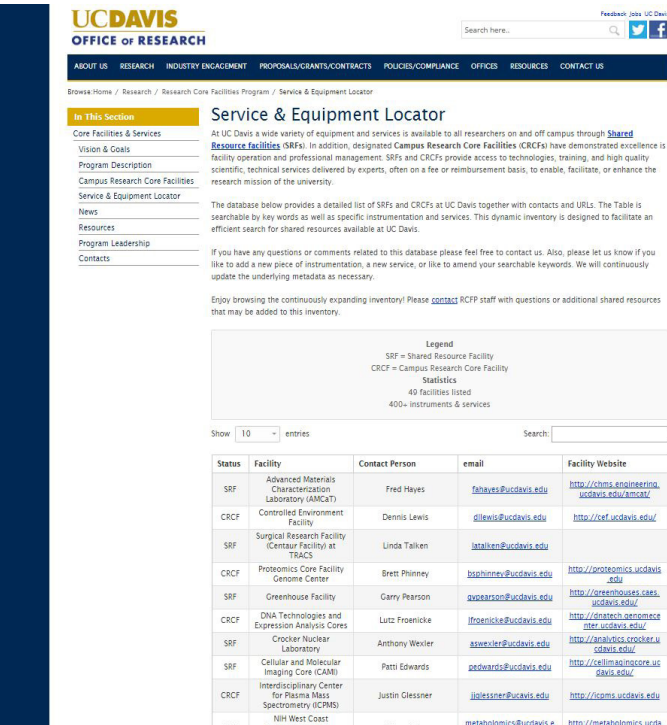
After careful evaluation of cost and benefit of various software solutions, a new searchable database was built, implemented and activated on the RCFP webpage. To date the database called "Service & Equipment Locator" includes 49 core facilities across campus from which more than 400 instruments and services are searchable. A search by keyword returns the respective core facility names, facility status (CRCF or SRF), web addresses, contact personnel, and contact email addresses. The database has proven to be efficient, is frequently utilized to identify available equipment on campus, serves as a faculty recruitment tool and provides cost-savings especially during negotiations of start-up packages for recruits by avoiding acquisition of potentially redundant equipment.

7. Core Facility Management Software

A 14 member Administrative Software Evaluation Task Force was charged in September 2015 to 1) determine the functional administrative needs for a wide variety of business practices in UCD core facilities; 2) determine necessary integration points in Kuali Financial Systems for accurate and compliant billing of services; 3) determine appropriate integration into the campus single sign-on system; 4) determine the need for other integration sites for individual core facility LIMS systems; and 5) evaluate potential vendor-supported or in-house options to meet those needs. "Buy" versus "build" on the existing campus system (e.g. Mouse Biology Program Core Services Billing System) scenarios were considered. The Task Force met bi-weekly from September 2015 to March 2016 and worked independently in demo environments provided by some of the vendors during that time. The Task Force provided significant comments regarding functionality. The Task Force determined that the speed at which a system could be implemented and the long-term upkeep of such a system would be best provided by an external vendor. On May 10, 2016 an RFP was issued for bids with a due date of May 24. Scoring of the bids and review by all stakeholders including

RCFP, Procurement & Contracting Services, CCM/MBP, and the Office of the CIO should be completed by June 10 allowing for negotiation of pricing and issuance of a PO by June 30, 2016. Implementation is expected to begin in July 2016. This enterprise-wide software will initially be made available to the designated Campus Research Core Facilities at reduced cost. After implementation in the CRCFs the software will also be made available at cost to any other shared resource facility on campus.

8. Marketing & Advertisement of Cores

The RCFP created a new website (cores.ucdavis.edu) that provides general program information, news, and RCFP resources, including funding opportunities and the dynamic Services & Equipment Finder database (see section #6 above).

Regular communications pieces are provided via a Twitter feed (@DavisCores), while more traditional interactions with the core facility community are enabled via subscription to a new mailing list core.facilities@ucdavis.edu. This mailing list is open to any member of the UCD community. The RCFP participated in the 2016 Office of Research Expo. Additional development of communication tools is expected as the RCFP staffing increases.

9. Communication & Outreach to Campus Community

During the Fall Quarter of 2015 the following communication pathways were established:
- Core Facilities email list server [core.facilities@ucdavis.edu]
All core directors and managers listed in the 2014 Core Facility Report were invited to join the email list, which is now frequently utilized to share information among core facilities and to disseminate information from RCFP to the campus community.
- RCFP webpage [cores.ucdavis.edu]
In November 2015 the RCFP webpage was activated with program updates and provision of resources (see section #8 above). The webpage includes the dynamic database, a Twitter feed, and published news items.
- Twitter feed [@DavisCores]
a Twitter feed was established in October 2015 that has recently picked up a significant number of followers on and off-campus. Any RCFP announcements and relevant workshop announcements are also disseminated through this medium.
- OR Open House & Expo
    The RCFP had a booth at the OR Expo and presented the new webpage and dynamic database. The booth was well attended by many members of the research community who received information about the RCFP.

Julie Auger and Klaus van Benthem have visited 20+ core facilities across campus to engage in general and specific discussions about core facility operations, the goals of the RCFP, and the new funding and decision making processes in place. In addition, RCFP staff gave

presentations about the program to the following audiences:
- School of Medicine Vice-chairs meeting
- SOM Pre-Clinical Chairs
- Center for Plant Diversity / herbarium
- Dept. for Land, Air Water Resources
- Pathology Research Faculty meeting
- New Horizons Colloquium - SOVM
- Associate Deans, College of Engineering
- Basic Health Science Council
- National Primate Center
- informal and ad-hoc partial reports to Provost Hexter and Prof. Ken Burtis

10. Equipment Maintenance Program

As an inaugural member of the Phase One Exploration Committee: Strategic Sourcing of the campus Financial Sustainability Action Plan (FSAP), Julie Auger submitted a proposal to the program for a self-funded scientific equipment maintenance program. The Research Equipment Self-Funded Maintenance initiative seeks to develop a program to make more informed decisions regarding the use of original equipment manufacturer (OEM) service contracts by first assessing the risk associated with the equipment. Maintenance of research instrumentation is critical to the research community for assurance of precise measurement and data generation. There are two ways to arrange for major equipment maintenance and repairs: pay for an ongoing service contract from the OEM that guarantees the manufacturer will do the repairs within a specified time period, or pay for the repairs as needed from campus services or the manufacturer (called self-insurance). OEM service contracts are often more expensive than the benefit received.

Developing a comprehensive equipment maintenance program will reduce costs to the institution (departments and schools), as well as to the researchers via lower equipment usage fees in recharge centers. The proposal was approved by the Chancellor and is currently being further developed in collaboration with Tim McGuire, UCD Chief Procurement Officer, to develop an inventory of assets that may be included in the self-funded maintenance program. The metadata recorded for the RCFP equipment database is serving as a starting point for this development. A video explaining this program can be found on this webpage: http://fsap.ucdavis.edu/reserved/campus-showcase/.

11. RCFP Participation in Committees across campus

The RCFP has participated in a considerable number of committees across campus to represent the interests of core facilities. RCFP staff has collaborated in the following committees:
- Selected Academic Council of Coordinating Deans (ACCD) meetings
- ad-hoc reviewer for HIP proposals
- CNL Vision Committee and CNL Cyclotron Transition Committee
- Chemistry Building Vision Committee
- Executive Committee for Center for Nano and Micro Manufacturing (CNM2)
- Financial Sustainability Action Plan: Phase One Exploration Committee – Strategic Sourcing
- Animal Task Force
- Office of Research Cost-share committee
- NSF MRI limited submissions review

Future Directions

The highest priority for the Research Core Facilities Program in FY16-17 will be to secure stable funding from the leadership at UC Davis in order to maintain and expand core facility operations. Efforts must include attention to collaborative development and implementation of administrative best-practices across campus as well as day-to-day functions administered for the CRCFs that are housed within the Office of Research (Campus Mass Spectrometry Facility, Controlled Environment Facility, Nuclear Magnetic Resonance Facility, Interdisciplinary Center for Inductively-Coupled Plasma Mass Spectrometry).

The following programmatic goals for FY16/17 were established via discussion with and recommendation from the RCAC:

•Continue to align expectations of the RCFP with those of the Deans and the ACCD
Ensure a proactive approach is developed for strategic investment and support of core facilities that meets the needs of the research community.

•Secure a budget for the RCFP that matches the strategic needs of the program
Budgetary line items include instrumentation investment as well as investment in operating expenses necessary provide access to state-of-the-art tools and expertise for discovery and applied scientific research.

•Establish expert advisory committees
Recommended by the original core facilities report, these committees provide well-informed input on strategic decision making for resource allocations.

•Review and coordinate cores that offer overlapping services
Avoids internal competition and redundancies across the campus.

•Establish administrative support infrastructure available to all cores
Implement the core management software across the CRCFs. Once completed the software and associated best practices will be made available to the broader campus community.

•Evaluate suitable funding models for core facilities
Sub-groups within RCAC will develop and analyze different funding models that are employed across UC Davis and at other institutions. One major anticipated outcome is the provide guidance on how to identify core facilities that will generally not be able to reach financial sustainability

•Develop and establish the Self-Funded Equipment Maintenance Program
Informed decisions regarding service contracts will ensure best use of core facility operating funding and reduce rates for facility users.

•Designate additional CRCFs that have broad scientific impact
17 CRCFs were designated that serve at least 3 colleges or schools, while some other facilities may provide unique and/or strategically critical services to the UC Davis campus community and were previously excluded. This effort will also include the annual review of existing CRCFs.

Research Core Facilities Program

Campus Research Core Facilities (CRCF)
Expectations & Requirements

•Utilization: Campus Research Core Facilities provide strategically important non-redundant services and access to instrumentation and expertise not available in any other campus core facility. Specifically, Campus Research Core Facilities must:
- be broadly accessible to all researchers on and off-campus
- primarily serve UC Davis researchers
- be accessible on a first come-first served basis in a manner that is consistent with equitable access of Core services to the campus community and consistent with efficient operation of the Core
- demonstrate utilization in excess of 50% of available capacity

•Management & Operations: Dedicated Campus Research Core Facilities are considered the cornerstones of broadly accessible scientific resources at UC Davis. They must be professionally managed and set standards for best practices in operations. The professional management structure includes specifically:
- Faculty Director (≥ 1 month effort)
- Technical Director (100% effort)
- Facility Advisory Committee (typically meets at least 2 times/year and is advisory to the Faculty Director). Their deliberations should be accessible to the RCFP.

•Training Activities: As part of the day-to-day operations CRCFs provide specific training to new and established users. It is expected that facilities actively engage with the scientific community by providing workshops and training sessions for on- and off-campus researchers.

•Strategic Planning: CRCFs provide, maintain and annually review separate 5-year strategic plans regarding the scientific activities and business planning, including assessment of current capabilities vs. state-of-the-art, equipment acquisition and maintenance as well as human resources.

•Financial Management: CRCFs will be eligible to receive financial management assistance by RCFP. CRCF's will be asked to provide an annual report with presentation to a joint meeting of RCFP and ACCD. The following criteria are essential for CRCFs:
- Utilization of common sets of financial tools (core facility management software)
- Transparent cost analysis for usage rates with annual review in coordination with the Campus Rate Committee
- Financial record keeping through the RCFP-provided software tools
- Electronic usage tracking/reporting/billing; software provided by RCFP
- Invoicing performed monthly

•Reporting: Each CRCF will be periodically reviewed. Annual reports submitted to RCFP staff will include:
- Scientific impact
- Finances & Operations
- Definition of goals and self-assessment of success
- External Benchmarking and outsourcing possibilities
- User survey including RCFP recommended survey questions

• Visibility & marketing: CRCFs must be visible to the community. This will be facilitated through the centralized RCFP webpage and the campus-wide searchable database. In addition:
- Each facility will maintain its own website with the following information: Contact information, location, fee schedule, services and equipment available, access information ensuring equitable access to all
- Each facility continuously updates information on searchable database
- The facility participates in RCFP hosted visibility events like "Core Day" at the annual OR Open House.
- When appropriate, facility users shall acknowledge RCFP support in manuscripts by providing suitable language. Text for acknowledgement shall be provided by posted signs, the facility website, and during new user training.

•Grantsmanship/instrument replacement: Campus Research Core Facilities are expected to support and participate in center grant proposals, and seek to expand and renew capabilities through shared instrumentation grant proposals. Campus Research Core Facilities will, however, not receive preferential status during limited submissions proposal review.

Appendix B: Financial Overview of CRCF Operations (FY14-15)

Table: FY 14-15 Recharge Revenue as a percent of Annual Operating Budget
(last column indicates the percentage of revenue due to internal clients)

	Oper. Budget	Recharge revenue	% of total op budget	% from internal clients
Mouse BiologyProg.	$6.8m	$5.1m	75%	62%
DNA Technologies	$2.8m	$1.9m	67%	80%
Bioinformatics	$1.2m	$510k	42%	95%
Imaging Res. Center	$1.2m	$945k	80%	100%
Metabolomics	$1.2m	$1.4k	122%	51%
CMGI	$1.1m	$498k	47%	100%
Proteomics	$930k	$671k	72%	35%
NMR	$490k	$118k	25%	100%
ICPMS	$430k	$178k	41%	63%
Contr Environment	$400k	$191k	47%	100%
CBS DNA	$380k	$291k	77%	91%
EM Facility	$370k	$110k	30%	88%
Flow Cytometry	$360k	$275k	77%	99%
Mass Spec.	$250k	$61k	24%	84%
Adv. Imaging Facility	$230k	$73k	32%	100%
MCB Light Microscopy	$220k	$125k	57%	100%
Keck Spectral Imaging	$130k	$29k	23%	99%
Totals:	**$18.5m**	**$12.5m**	**68%**	
			Core Avg. 54%	

Table: FY14-15 Institutional support (Provost, OR, Colleges/Schools, Departments).

	Oper. Budget	Inst. Subsidy	% of total op budget
Mouse BiologyProg.	$6.8m	$492k	7%
DNA Technologies	$2.8m	$932k	33%
Bioinformatics	$1.2m	$370k	31%
Imaging Res. Center	$1.2m	$75k	6%
Metabolomics	$1.2m	$134k	11%
CMGI	$1.1m	$265k	25%
Proteomics	$930k	$279k	30%
NMR	$490k	$221k	45%
ICPMS	$430k	$176k	41%
Contr Environment	$400k	$135k	33%
CBS DNA	$380k	$0	0%
EM Facility	$370k	$313k	85%
Flow Cytometry	$360k	$23k	7%
Mass Spec.	$250k	$108k	42%
Adv. Imaging Facility	$230k	$79k	34%
MCB Light Microscopy	$220k	$142k	65%
Keck Spectral Imaging	$130k	$67k	52%
Totals:	**$18.5m**	**$3.8m**	**21%**