



University of California Research Opportunity

UC LABORATORY FEES RESEARCH PROGRAM - REQUEST FOR PROPOSALS OCTOBER 27, 2011

Research Program

The University of California is pleased to announce a research opportunity funded by a portion of the management fees that the University receives for the management of the Los Alamos and Livermore national laboratories based on an annual performance evaluation. The annual net fee income for this opportunity is estimated to be approximately \$18 million/year. Research funded under this program must 1) be either collaborations or complementary projects between University faculty, researchers, and students and researchers from Los Alamos (LANL) and/or Livermore (LLNL) national laboratories; 2) be related to the missions of the laboratories; and 3) advance the research and training mission of UC. This research opportunity is *open to all fields*, including physical sciences and engineering, life sciences, social sciences, and the humanities. Applicants may request up to three years of funding.

A brief description of the research priorities of each of the labs is appended to this RFP. Information about LANL is available at <http://www.lanl.gov/>; the Lab's mission is described at <http://www.lanl.gov/about.shtml>. Information about LLNL may be found at <https://www.llnl.gov/>; the Lab's mission is described at <https://www.llnl.gov/llnl/missions/>.

Letters of Intent to apply are due Tuesday, December 6, 2011. Full Applications are due Wednesday, January 18, 2012. A complete timeline and application requirements are described below, and will be strictly adhered to. Awards for proposals selected through this competition are contingent on availability of funding.

The first UC Lab Fees Research Program competition was held in 2008. Awards for up to three years (2009-11), totaling approximately \$57 million, were made to over 60 research projects. General Lab Fees Research Program information, including a list of previous award recipients, may be found at <http://www.ucop.edu/labresrfp>.

Eligibility

This funding opportunity is limited to research that has no restrictions on publication, and is not restricted by classification or deemed export rules. Any member of the University of California eligible for Principal Investigator (PI) status or any full-time research staff member at LANL or LLNL eligible for PI status may submit a proposal. One Lead/Applicant PI must be designated, and collaborators may be listed as co-investigators. Because funds are to be allocated separately to each institution, a co-investigator from each participating campus or lab must be designated. Budget requirements and details are provided in the Applicant Instructions and Guidelines available on our website <http://www.ucop.edu/labresrfp/call.html> or on proposalCENTRAL. Please adhere to these instructions.

The UC Lab Fees Research Program (LFRP) does not require the signature of a campus official to submit a proposal. However, local UC campus Offices of Research (C&G or SPO), or laboratory Work for Others offices, may require review and sign off prior to submission. It is the PI's responsibility to follow local rules for submitting a proposal and confirm that all collaborators have obtained local approval, if required, in advance of submission. Campus and Lab approvals will be requested by the LFRP for those proposals nominated for funding by the review panels prior to final selection of awards.

Funding Priorities

A primary purpose of this funding opportunity is to foster new collaborations between UC faculty, graduate students and post docs, and laboratory scientists, bringing to bear the unique strengths and facilities of the research partners to launch compelling, cutting-edge research. PI-initiated innovative research collaborations should involve at least one UC Principal Investigator (PI) and one LANL or LLNL PI. Proposals may include participation of multiple co-investigators from UC campuses or the two labs. Proposals that do not involve collaboration between at least one campus and one lab PI must target the mission of the labs or propose research complementary to the laboratory's mission, and include a written endorsement from a laboratory representative. Awards are for one to three years, and funding requests may range from \$25,000/year to \$2 million/year in total project costs.

Applicants should propose outstanding, innovative research that makes compelling contributions to their fields, including multi-disciplinary and inter-disciplinary projects that carve out new frontiers in science. Proposed projects should also a) take advantage of the unique contributions and facilities of each of the participants; b) provide opportunities for meaningful graduate student training, particularly in fields that promote interaction between laboratory scientists and UC graduate programs or cultivate expertise relative to the mission of the labs; c) demonstrate bilateral (UC-Lab) benefit; and d) establish the foundation for ongoing collaboration beyond the three-year award period of this program. Proposals to extend (or renew) existing research collaborations must demonstrate how funding from this opportunity will break new ground or accomplish new outcomes that meet program goals within the extension/renewal period.

Applicants may request funding to support projects that enhance the capacity for ongoing UC-lab collaboration and the bilateral flow of people, ideas, and data. This capacity may take the form of an ongoing research and training program, institute, or virtual infrastructure, and facilitate visiting faculty and visiting scientist appointments. In addition to the priorities listed in the paragraph above, compelling proposals of this type will a) describe the resources, including financial and in-kind, from the laboratories and other sources to support the projects; and b) demonstrate the capacity to *independently sustain* meaningful ongoing collaborations and launch new research initiatives beyond the three-year award period. Funds may not be requested for fundraising or fund development.

Review Criteria and Selection Process

The Research Grants Program Office in the Office of Research and Graduate Studies will manage the proposal review. Proposals will be evaluated by multi-disciplinary panels composed of scientific peers. The number, size, and scope of the review panels, their makeup, and any special panels needed to consider categories of submitted proposals will be determined from the application pool. It is generally anticipated that panels will be organized in broad scientific areas, for example: physical sciences, life sciences, engineering, computer and numerical sciences, energy, environmental, earth and space sciences, and social sciences and the humanities. Applicants should therefore prepare their proposals in language accessible to a general scientific audience and avoid jargon.

Scientific panels will rank order assigned proposals. By panel consensus, some proposals may be triaged from full panel discussion in order to allow for more thorough evaluation of the most competitive proposals. Panel rank-orders will be forwarded to a Portfolio Review committee composed of scientific panel chairs and other experts, who will make specific recommendations across the portfolio balancing program priorities, the potential contributions of large proposals (over \$500,000 in total costs/year) relative to smaller proposals, available funds, and other funding considerations.

The specific review and scoring criteria for each of the award mechanisms follows:

- Research Excellence and Innovation: Compelling, cutting-edge research that has the potential to significantly advance knowledge or carve out new frontiers in science related to the missions of the labs
- Graduate Training and Engagement: Meaningful opportunities for graduate student support and training, especially in programs that take advantage of the unique laboratory facilities, promote interaction between laboratory scientists and UC graduate programs, or provide opportunities for graduate students to cultivate expertise relevant to the mission of the labs. Opportunities that foster career advancement for post-docs and early career faculty and scientists are also encouraged.
- UC-Lab Collaboration and Mutual Benefit: Proposed activities mutually benefit UC and the Lab(s), contribute to the strategic missions of UC and the Labs, and create or enhance UC-Lab collaboration, building on the unique strengths, capacity, and facilities of each of the partners and partner institutions, and setting a foundation for ongoing collaboration and complementary projects beyond the award period. In addition to the proposed research activities, this may be demonstrated by the creation of mechanisms to link graduate students and graduate programs with laboratory programs, and facilitate visiting faculty and scientist appointments. For proposals to support research institutes, virtual infrastructure, or other collaborative capacity building, proposed activities enhance the competitiveness for alternative funding sources to sustain collaboration and infrastructure beyond the three-year award period.
- Budget and Resources: Proposed budget and designated facilities and resources are well-justified and appropriate for the proposed scope of activities. For proposals to support research institutes, virtual infrastructure, or other collaborative capacity building, proposals must identify the resources, including financial and in-kind contributions, by the Labs to support the collaboration and infrastructure.

Online Application Process and Timeline

The proposal process includes both a non-binding Letter of Intent and submission of a full proposal. Letters of intent and proposals must be submitted electronically at: <https://proposalCENTRAL.altum.com/>. Please see applicant instructions and guidelines for completing both the LOI and the full proposal.

Interested applicants must submit the Letter of Intent (LOI) by 12:00 noon Pacific Time (3:00 PM Eastern Time) on Tuesday, December 6, 2011 through proposalCENTRAL at <https://proposalcentral.altum.com>.

The LOI must identify the lead PI and principal collaborator(s), and include a proposal title, short abstract, primary research field(s), and estimate of the total amount requested. LOIs will be used for administrative purposes to establish the size and scope of the review and confirm eligibility. *Applicants should not expect feedback on their LOIs.* LOIs will be approved on a rolling basis. Once approved, applicants have access to the full proposal materials.

Due date for full proposal submission: 12:00 noon Pacific Time (3:00 PM Eastern Time) on Wednesday, January 18, 2012. Applicant Instructions are available at proposalCENTRAL and are also posted on our website at <http://www.ucop.edu/labresrfp>.

The current timeline anticipates final decisions and notifications for funding by Friday, June 1, 2012.

Proposal Content and Format

Applicants must utilize the templates provided, and adhere to the Application Instructions and Guidelines when preparing and submitting their proposals. Application Instructions providing detailed guidance on application materials, format, allowable costs, and how to submit the proposal are available at <http://www.ucop.edu/labresrfp/call.html> and on proposalCENTRAL. Required elements of the application include:

- Abstract (300 word limit)
- Proposal Narrative (7 page maximum) and literature cited (2 page maximum)
- Identification of Key Personnel with Biosketches or Curriculum Vitae (3 page limit for each person)
- Budget and Budget Justification

Proposal narratives are limited to seven (7) pages, including tables, figures and graphs. Proposal narratives must use 12pt font with 1-inch margins, and be uploaded to proposalCENTRAL in PDF format. No more than 2 additional pages of references (literature cited) may be included. Other required supporting documentation will be included as uploadable forms and attachments, as described in the Applicant Instructions and Guidelines. Letters of Endorsement/Support, including a Letter of Laboratory Endorsement (required for proposals without a Lab investigator only) should be included in the appendices. Supplemental documentation/optional appendices are limited to ten (10) pages maximum.

pC Technical support is available through proposalCENTRAL (Monday – Friday 8:00 AM – 5:00 PM Eastern Time. Please Note: from California call between **5:00 AM and 2:00 PM**; from New Mexico call between 6:00 AM and 3:00 PM).

Research Program Oversight

Oversight of this research program is the responsibility of the UC Office of the President. Successful awardees will submit annual progress and expenditure reports to the Research Grants Program Office, in the Office of Research & Graduate Studies (RGPOGrants@ucop.edu). The lab directors will provide feedback on the impact of the programs at the laboratories. The Vice President for Research and Graduate Studies will report to the Provost on the health of the program, the quality and relevance of the research, and provide recommendations for improvements. Updates and program information can be found at <http://www.ucop.edu/labresrfp/call.html>.

SUMMARY TIMELINE

Deadline to Submit Letter of Intent (LOI)	Tuesday, 12/6/2011 @ 12:00 noon Pacific Time
Deadline to Submit Full Proposal	Wednesday, 1/18/2012 @ 12:00 noon Pacific Time
Notification of Review Outcome to PIs	Friday, 6/1/2012
Award Start Date	7/1/2012

*Questions about this funding opportunity may be directed to the
Research Grants Program Office at **RGPOGrants@ucop.edu***



*Principal Associate Director for
Science, Technology, & Engineering*

Date: October 3, 2011
Refer To: PADSTE:12-002

Dear Dr. Beckwith,

Below please find our priority areas for investment using UC Fee.

Los Alamos National Laboratory INSTITUTIONAL PRIORITIES FOR UC FEE

Los Alamos incorporates a broad, multidisciplinary approach to science, engineering and technology development in order to anticipate America's national security needs in a rapidly changing world. LANL missions include ensuring the safety and reliability of the US nuclear deterrent, reducing global threats and addressing emerging national security challenges (especially energy security.) To support of these missions, LANL must sustain its science, technology, and engineering capabilities under the broad topics of Materials for the Future, Science of Signatures, and Information Science and Technology for Integrative and Predictive Science. More specific identification of "Grand Challenges" associated with these topics can be found at www.lanl.gov/science/ldrd/dr. LANL has established a variety of Centers and Institutes that address these priorities for our national security missions which include current institutional relationships with UC Campuses and other academic partners (www.lanl.gov/science/centers). LANL supports proposals that address training and education of graduate students in capability areas which underpin these priorities. Topics of particular interest are:

Information Science and Technology: LANL supports research focused on the fundamental science, applied science, and underlying technologies required to extract information and knowledge from data. Advances in computer architecture and computing capacity drive the need for increasing scale in storage capability for scientific processing. The immense volume of data and the need to store, access and process this data create challenges in computer science and architecture. Research frontiers in data intensive computing include data fusion, analysis and visualization, streaming data processing, and machine learning. LANL is actively engaged in work that develops advanced models and predictive simulations that exploit advanced computer architectures (hybrid and multi-core processors) in support of the development of exascale computing. Advances in multi/heterogeneous-core programming and parallel computing will be needed to enable this next generation predictive capability. LANL is also interested in projects which apply advanced IST methodologies to areas such as quantitative biology, global climate change, materials modeling and simulation and astrophysics. The integration of Uncertainty Quantification with all aspects of simulation and data analysis is critical. Multidisciplinary research in quantum information science, computing and metrology also supports LANL IST thrusts.

Materials for the Future: LANL funding priorities in materials science and engineering focus on the understanding of advanced materials from their design and development through to their implementation in engineered systems. This broad "life cycle engineering" approach is made possible through the coupling of state of the art experimental expertise and theoretical modeling capabilities at a wide range of length-scales. Of particular interest are collaborations which examine 1) The design of new functional materials, 2) Materials for energy applications, e.g. materials for energy storage, materials for nuclear reactors and fuels, 3) Material properties under extreme conditions (mechanical, thermal, radiation) 4) Applications of machine learning and advanced pattern recognition to the understanding of engineered materials (e.g. advanced sensing systems) and 5)

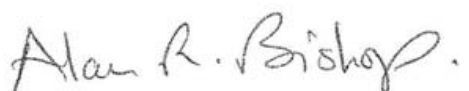
Development of predictive, multiscale materials models with integrated uncertainty quantification. Engineering challenges associated with the applications of materials include 1) Development of novel systems and processes for applications, 2) Adaptive sensing and control systems, 3) Intelligent system management, and 4) Engineering computation and simulation. Collaborations with user facilities such as the Lujan Neutron Scattering Facility, the High-Field Magnet Laboratory and the Center for Integrated Nanotechnology are of high priority.

Science of Signatures. The Science of Signatures priorities include advanced technologies for detection, identification, and attribution of signatures of threats from nuclear, radiological, chemical, and biological weapons or agents. Actinide science collaborations are encouraged through the Seaborg Institute. LANL biosecurity research focuses on enhancing our capability to understand and mitigate threats to national security, public health, and agriculture from human, animal, and plant pathogens. LANL sees strategic opportunities for joint research collaborations which focus upon 1) Development of quantitative models of infection process and pathogen evolution, with emphasis on modeling host response during early stages of infection, pathogen evolution under drug and host immune pressures; 2) next-generation platform for rapid, sensitive, and cost-effective pathogen detection and pre-symptomatic diagnosis; and 3) Development of innovative and effective vaccines and therapeutics that are not defeated by pathogenic resistance. Bio-security science is an area where integration of simulation and modeling with experimental efforts is critically important to advancing our understanding mechanisms of infection and pathogen evolution.

Energy Security. LANL has three themes that underpin our energy security mission: 1) Impacts of energy demand growth, 2) Concepts and materials for clean energy and 3) Sustainable nuclear energy. Within impacts of energy demand growth, research which explores interdependencies between climate change and energy use are of key importance. LANL endorses collaborative research on a wide range of clean renewable energy sources for funding. Development of materials and strategies for efficient energy generation, storage and distribution, and research into energy storage in chemical bonds are priority areas for funding. Nuclear energy priorities include research on materials in intense radiation environments, advanced nuclear fuel cycles, detection of nuclear material and improved approaches to predictive simulation and modeling of nuclear waste forms and repositories.

Please feel free to contact me if you require additional information.

Sincerely,



Dr. Alan R. Bishop
Principal Associate Director (Acting)
Science, Technology and Engineering
and Laboratory Fellow
Los Alamos National Laboratory

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Charles McMillan, LANL Director, A100
Edward Kober, Institutes Office, T001



September 6, 2011

Dr. Steven Beckwith
Vice President for Research and Graduate Studies
University of California, Office of the President
1111 Franklin Street, 11th Floor
Oakland, CA 94607

Dear Dr. ^{Steve}~~Beckwith~~:

As requested, I am providing the Lawrence Livermore National Laboratory's priorities for the UC Lab Research Program. The priorities are in the following order of importance:

1. **Mission relevant, PI- and small team-driven research.** Collaborative projects driven by principal investigators who are addressing problems closely aligned with LLNL missions are of interest. Topical areas in order of priority are:
 - a. *High-Energy Density Science.* Specifically, projects that build teams to take advantage of the capabilities for basic astrophysics, nuclear science and materials science afforded by the National Ignition Facility (NIF).
 - b. *Computer Science and Applications.* Specifically, high performance computing (HPC) algorithm and methods development for exascale computing and simulations, as well as methods for data-intensive supercomputing, and multi-scale methods extending through the continuum. HPC applications to clean energy research.
 - c. *Materials for Energy Research.* Specifically, materials in radiation environments, materials (including nanomaterials) for energy storage, and materials for carbon capture and other clean energy technologies.
 - d. *Micro- and Nano- Fabrication Technologies.* Specifically, to advance the ability to realize the benefits necessary in bio-security, radiation detection and target fabrication.
 - e. *Laser Science.* Specifically, projects aligned with the development of high-average power and high-intensity lasers.
 - f. *Carbon/Climate Science.* Specifically, science for accurate assessment of the regional impacts of global climate change and methods for uncertainty quantification.
 - g. *Ultrafast Science and Technology.* Specifically, efforts aimed at investigating the materials properties with free-electron lasers and fast electron pulses as well as the development of technology to provide the necessary spatial and temporal resolution to be able to "see" the requisite physics.
 - h. *Biosecurity and Medical Technologies.* Specifically, efforts that compliment LLNL's biodetection technology development efforts.



2. **Access to unique LLNL capabilities.** Existing LLNL Institutes have a sound history of providing UC faculty and students access to unique capabilities. Specifically, the *Center for Accelerator Mass Spectrometry (CAMS)* operates the world's most productive AMS systems for environmental, biomedical and national security research; the *Institute for Geophysics and Planetary Physics (IGPP)* provides access to state-of-the-art scanning transmission microscopy; the *Institute for Laser Science and Applications (ILSA)* provides access to the Jupiter laser for high energy density science applications; the *Institute for Scientific Computing Research (ISCR)* provides access to high-performance computing resources; and the *Glenn T. Seaborg Institute* provides access to capabilities for nuclear chemistry, chemical engineering and materials science. Funding that enables UC access to these facilities should be encouraged.
3. **Laboratory professorships.** Fee funding should be used to augment LLNL's Professional Research or Teaching (PRT) Leave Program, which enables sabbatical leaves at UC campuses. Projects that provide for significant involvement of LLNL staff at a host campus should be encouraged. In addition to engaging in collaborative research, staff can teach specialty courses and serve on university committees.

Each of these priority areas enables collaborative research as well as faculty and student access to LLNL capabilities. Please feel free to contact me if you require additional information.

Sincerely,



George H. Miller
Director

Copy:
Tomás Díaz de la Rubia
John Knezovich