BER Response to the Report of the BERAC Committee of Visitors Review of the Biological Systems Science Division

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Introduction

The Committee of Visitors (COV) reviewed the Biological Systems Science Division (BSSD) in the Office of Biological and Environmental Research (BER) for the period October 1, 2013 through September 30, 2016 (Fiscal Years 2014, 2015, and 2016), including the processes used to create and manage the research portfolio. The COV presented findings and recommendations in a report presented to the Biological and Environmental Research Advisory Committee on November 2, 2017. The report provided helpful recommendations and constructive comments for the management of programs in the Division that comprise a wide range of Laboratory Science Focus Areas, University Funding Opportunity Announcements, User Facilities, and Bioenergy Research Centers.

BER has compiled the following responses to specific COV recommendations. While some responses are specific to BSSD, others apply more generally to business practices for all of BER and are grouped accordingly.

Responses to Key Comments and Recommendations

COV Recommendation	Response
General Comments for BER	
Planning for responses to funding reductions should be in place to facilitate the necessary transitions, and priorities for maintaining programs should be transparent.	BER strives to be as transparent as possible with planned reductions to programs. However, when appropriation of funds by Congress does not match the Department's Budget Request in any given year, BER must make unplanned changes to its portfolio to align with the appropriation.
Consideration of a funding mechanism for BER to evaluate research ideas that are not included in active Funding Opportunity Announcements (FOAs) is recommended.	BER thanks the COV for a thorough review of the Division's funding mechanisms. The SC annual Open Call solicitation, which is open to receive proposals throughout the fiscal year, is a mechanism whereby BER program managers can invite ideas from the research community independent of the more targeted FOAs issued by BER. The Laboratory Science Focus Areas (SFAs) also have considerable flexibility to pursue new and/or emerging BER-relevant scientific ideas.
The Internal Comments section in PAMS should contain a notation on proposals that the Program Manager (PM) views as high-risk/high-reward at the time of award. In future reviews, publications should be grouped by program.	BER will provide explicit notation to those projects where consideration of high-risk/high-reward was taken into account as a recommendation for funding. BER is currently evaluating effective mechanisms to track and analyze publications resulting from its programs.
The pre-proposal process should be more selective, such that a smaller number of pre-proposals are advanced to a full submission.	BER agrees with the COV. The preproposal process is intended to screen for those ideas that most closely align with the FOA and the goals for BER programs for full proposal preparation and review.
The COV strongly valued the summaries provided for the timelines of the SFAs and for the decision processes on the cases not following the established trajectory. The COV recommends that these summaries be made available, where possible, in future COV reviews.	BER appreciates the COV feedback. This was a new element to the materials provided to the COV this year in hopes that it would clarify SFA initiation, management and review of research conducted at the DOE Laboratories.
In a number of the SFA proposals, the long-term goal or the Grand Challenge addressed was not always evident. Since the National Laboratory interdisciplinary teams were established to address more difficult research projects that could not likely be successfully completed in a single laboratory setting, the "Grand Challenge" should be evident in each plan.	BER will work with the Labs to explicitly clarify the overall goals for SFA research in the context of the BER Scientific Grand Challenges and strategic plans for respective Divisions.

Numerical scores for proposal evaluations should be subjected to an appropriate statistical treatment before ranking, and panels should be provided time for discussion of proposal scoring to adjudicate the decisions.	Within DOE's Office of Science, numerical scores inform funding decisions made by program managers. BER welcomes helpful comments on improving analyses of scores on applications, however DOE review panels cannot engage in consensus scoring of proposals that would activate Federal Advisory Committee Act restrictions.
The COV recommends careful consideration of SFA leadership to ensure the SFA has adequate and inspired directors with sufficient time to devote to project management. The COV also notes that by distributing the leadership roles, potential opportunities may be generated for other team members -- including junior scientists -- to assume leadership responsibilities.	SFA leadership and mentorship is a prominent feature of BER's SFA review process. Each SFA at the DOE Labs is reviewed at least every three years and includes a discussion of time allocation by the SFA leadership and management plans. Also included in the review is a discussion of succession planning and leadership opportunities for junior scientists.
The PMs should use all possible strategies to gather wide input into the content of FOAs during their development stage.	BER agrees. The BER program managers currently use focused workshops, PI meetings, conferences, reviews, literature, current agency objectives, and coordination with other federal agencies to inform the content of FOAs.
Facility Recommendations	
Partner institutions should be reviewed more rigorously to ensure the Joint Genome Institute (JGI) is getting the expected level of productivity from its partners.	The partner contributions to the JGI are evaluated every three years as part of the JGI Triennial review process.
Recommendation to carefully balance the use of JGI for Bioenergy Research Center (BRC) research with that of smaller projects and users outside the BRCs.	The BRCs are offered up to 30% of JGI's sequencing capacity but often do not utilize the full allocation in which case JGI re-adjusts the allocation between the BRCs and the Community Science Program (CSP) accordingly. Sequencing projects performed for the BRCs are often complementary to CSP sequencing projects and/or help develop new capabilities due to the complexity of the projects.
While investment in the partners of the Emerging Technologies Opportunity Program (ETOP) program is currently modest, enhanced oversight of the choice and review of partners will be needed if there is an increased investment in this area.	The ETOP programs at JGI is currently modest and will need additional oversight if this area is to grow in the future.
A review of the Facilities Integrating Collaboration for User Science (FICUS) program should be conducted.	Review of the FICUS program is conducted as part of the JGI Triennial review process.

The COV recommends undertaking new strategies to integrate and coordinate JGI and DOE's Systems Biology Knowledgebase (KBase) activities.	BSSD has taken significant steps to increase integration of the JGI bioinformatics systems and the KBase project. Integration of KBase and JGI was a key topic for reviews of both projects in 2017. Both entities have developed and are implementing a common collaboration/integration plan that includes improving interoperability between systems and connecting with NERSC for HPC.
The COV is concerned about the recent actions within the Structural Biology portfolio, emphatically encourages the continued co-funding of these facilities with NIH and other agencies, and urges the BSSD management to restore the program funding to its previous level to enable mission-relevant research to be optimally supported at the synchrotron and neutron facilities in the U.S.	BSSD thanks the COV for its concern and is working with the DOE facilities to increase the relevance of these capabilities to BER's current bioenergy and environmental research goals. These capabilities are being advertised more broadly in the program and BSSD is exploring multi-user facility access to increase the potential for multidisciplinary use of the capabilities in BER programs.
The COV recommends that plans are developed to support the timely upgrades of facilities that support structural biology.	BSSD thanks the COV for the recommendation and is working with colleagues in Office of Science (SC), Basic Energy Sciences (BES), and other Federal partners on timelines and planning horizons for upgrades to the DOE synchrotron and neutron facilities.
DOE-BER should continue its partnerships with other agencies in supporting the Protein Data Bank (PDB). Continued support is essential, given that this data bank influences a wide range of bioenergy research from enzymology to cell biology, nationally and internationally.	BSSD will continue to work with other Federal partners to support the PDB and work to improve its relevance to the BER Bioenergy and Environment research goals.
Specific BSSD Project Recommendations	
Since the M2M imaging program is primarily focused on technology development, that aspect should be better addressed in the proposals. For proposals where a technology is expected to be the objective of the research, the COV recommends that the initial request for white papers or pre-proposals address plans for dissemination and licensing of the resulting technology, if appropriate.	BSSD is interested in supporting basic science leading to development of new bioimaging technology under the M2M program. BSSD also provides opportunities to continue R&D activities beyond the basic science via the SBIR/STTR annual FOAs.
The COV recommends a serious modification of the KBase effort.	The COV review is retrospective and covers the period from FY 2014 to FY 2016 and does not include a more recent review of the KBase project completed in 2017. KBase has undergone substantial organizational changes, the results of which were not evident to the COV for the period reviewed.

The COV is concerned with the information that researchers who are DOE Laboratory employees are strongly encouraged to use KBase, and opines that the use should be motivated by the choice of the best resource, not from the DOE's encouragement to use a particular resource.	BSSD encourages the use of KBase in the same context as BSSD encourages the use of BER User facilities such as JGI or EMSL. BSSD does not mandate the use of KBase by researchers in its programs.

Bioenergy Research Centers	
Site visit reviews of the Bioenergy Research Centers should occur in years 2 and 4 for those renewed through peer-review after at least one three-year cycle of operations. Any newly established Bioenergy Research Center should have an annual site visit for the first five years of its operation.	BSSD will continue to annually review each BRC. These review activities have been crucial to sustaining the sizeable financial support required for these large Centers over the last 10 years.
Given the high capacity to make key advances within the Bioenergy Research Centers, the Program Managers should consider a specific review and reward system for meeting high-risk, high-reward objectives. To foster such work, there should be no penalties when management-approved high-risk efforts do not come to fruition as expected.	The BRCs propose annual objectives for research and track progress towards those objectives. BSSD (and reviewers) does not necessarily expect success on every proposed objective but wants to see the results of the research that led to advancement or abandonment of an objective. There is, and has been, no penalty for high quality basic research that leads to a negative result.
Encourage Bioenergy Research Centers to make available summary statements about major experiments that are not being pursued in a continuing manner, but which may represent valuable knowledge for the broader scientific community.	BSSD agrees that the BRCs should be as open as possible with data from experiments that are no longer a central effort within the Centers. BSSD recognizes that several activities occurring within the Centers, such as production of bioenergy plant and/or cell types could still prove valuable to other researchers in a different context and will work with the Centers to make this data and/or materials available.