CORE QUESTIONS and REPORT TEMPLATE
for
FY 2013 NSF COMMITTEE OF VISITOR (COV) REVIEWS

Guidance to NSF Staff: This document includes the FY 2013 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2013. Specific guidance for NSF staff describing the COV review process is described in the "COV Reviews" section of NSF's Administrative Policies and Procedures which can be obtained at www.inside2.nsf.gov/od/oia/cov[1] .

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and (2) managerial matters pertaining to proposal decisions.

The program(s) under review may include several sub-activities as well as NSF-wide activities. The directorate or division may instruct the COV to provide answers addressing a cluster or group of programs – a portfolio of activities integrated as a whole – or to provide answers specific to the sub-activities of the program, with the latter requiring more time but providing more detailed information.

The Division or Directorate may choose to add questions relevant to the activities under review. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

Suggested sources of information for COVs to consider are provided for each item. As indicated, a resource for NSF staff preparing data for COVs is the Enterprise Information System (EIS) –Web COV module, which can be accessed by NSF staff only at http://budg-eis-01/eisportal/default.aspx. In addition, NSF staff preparing for the COV should consider other sources of information, as appropriate for the programs under review.

For section IV addressing portfolio balance the program should provide the COV with a statement of the program's portfolio goals and ask specific questions about the program under review. Some suggestions regarding portfolio dimensions are given on the template. These suggestions will not be appropriate for all programs.

Guidance to the COV: The COV report should provide a balanced assessment of NSF's performance in the integrity and efficiency of the ***processes*** related to proposal review. Discussions leading to answers for Part A of the Core Questions will require study of confidential material such as declined proposals and reviewer comments. ***COV reports should not contain confidential material or specific information about declined proposals.*** The reports generated by COVs are made available to the public.

We encourage COV members to provide comments to NSF on how to improve in all areas, as well as suggestions for the COV process, format, and questions. For past COV reports, please see http://www.nsf.gov/od/oia/activities/cov/covs.jsp.

[1] The COV Reviews section has three parts: (1) Policy, (2) Procedures, and (3) Roles & Responsibilities.

FY 2013 REPORT TEMPLATE FOR
COV RESPONSE: DBI SYNTHESIS CENTERS

Date of COV: September 23rd – 25th, 2013
Program/Cluster/Section: Research Resources, Human Resources and Centers
Division: Division of Biological Infrastructure (DBI)
Directorate: Directorate for Biological Sciences (BIO)
Number of Actions Reviewed: 251 **Awards:** 107 **Declinations:** 144 **Other:** 0
Total Number of Actions Within Division During Period Under Review: 2645 **Awards:** 901 **Declinations:** 1744 **Other:** 0
Manner in Which Reviewed Actions Were Selected: For both Human Resources and Research Resources clusters, one hundred samples were randomly selected from each cluster for analysis. For Centers cluster, all of the 52 proposals that were reviewed for decisions were included in the sample. The complete list of proposals from which samples were taken was obtained from the NSF Enterprise Information System (EIS) for all of the awards and declines for each year under review (FY2010, FY2011, FY2012). The awards and declines were sorted into separate lists; each list was assigned a randomly generated value for each row (=RAND function in Excel). The award/decline lists were then sorted for FY, Program, and Random Value (in order). The number of jackets chosen for the sample reflects proportionately the total number of jackets reviewed by year, program and track within a program (where applicable). One Human Resources award was removed from the sample because it contained confidential documents, which prevented access by staff. The randomly selected samples are available for review by accessing the COV module in eJacket.

COV Membership

	Name	Affiliation
COV Chair:	Muriel Poston	Pitzer College
COV Members:	David Asai (BIO AC rep) Nitin Baliga Robyn Hannigan Alan Hastings Leonard Kristalka Susan Stafford Hilary Swain Michael Willig	Howard Hughes Medical Institute Institute for Systems Biology University of Massachusetts University of California University of Kansas University of Minnesota Archbold Biological Station University of Connecticut

INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

NOTE: THE COV received the i-Plant jacket as well as the jackets for prime awards to other centers quite late on the first day of the meeting.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question**.**

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
1. Are the review methods (for example, panel, ad hoc, site visits) appropriate? Comments: In general, the review of Centers as managed by cognizant PDs employs a mix of ad hoc and panel review for initial awards, along with periodic site visits and annual reports, to comprehensively evaluate the integration of activities related to scientific discovery and education. **Data Source: EIS/Type of Review Module**	YES
2. Are both merit review criteria addressed a) In individual reviews? Generally both criteria are assessed in reviews although not in a depth or breadth that parallels the complexity and monetary size of center proposals based on review by COV members. Moreover, data provided to the COV by DBI suggests that this was seriously deficient in the FY-10 review process for center proposals in which 24% of the random selection of reviews did not assess both criterion 1 and criterion 2. b) In panel summaries? Generally both criteria are assessed in panel summaries. Moreover, data	YES

provided to the COV by DBI suggests that this was consistently characteristic of the review process during all three years of the COV period, as 100% of panel summaries in the random selection of proposals included both criterion 1 and criterion 2. c) In Program Officer review analyses? In general, cognizant PDs did an excellent job of comprehensively summarizing assessments by reviewers and panelists, and providing additional insight into the valuation of proposals with regard to both criterion 1 and criterion 2. Indeed, based on the data provided to the COV by DBI, only 1of 43 review analyses failed to include comments about criterion 1 and criterion 2. The COV was quite concerned about the way in which a significant number of concerns or problems that were communicated in panelist reviews were underrepresented in programmatic review of the i-Plant renewal proposal, especially for a project of this size and complexity. Moreover, program review did not provide a comprehensive adjudication of conflicting assessments by panelists. Finally, concerns and negative aspects of the i-Plant proposal were essentially dismissed in the memo from the BIO-AD to the NSF Board. Nonetheless, the NSF's communication to the NAB (27 March 2013) did more fully explore the strengths and weaknesses of the renewal proposal. This may have contributed to the "conditional approval" of the renewal proposal by the Board. Although the COV applauds an approach to funding that considers potentially high pay-off proposals that are associated with significant risk, it questions such an approach when associated with a renewal proposal that will have totally provided 100 million dollars in support of the project, and for which significant concerns were expressed by multiple reviewers. **Data Source: Jackets**	

3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals? Comments: Generally written reviews do provide substantive comments, but these comments are often not as in depth or as comprehensive as might be desirable in the evaluation of large, complex, and high-cost center proposals. **Data Source: Jackets**	YES
4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)? Comments:	

In the review of most center proposals, this is generally well done. However, in the i-Plant renewal, ratings of the proposal in individual reviews were quite low (6/8 were F or G), yet the decision was that the proposal was "competitive". The issues raised were apparently addressed during the site review, which included two of the reviewers who gave the initial proposal low ratings. **Data Source: Jackets**	
5. Does the documentation in the jacket provide the rationale for the award/decline decision? [Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.] Comments: PDs are to be commended for the synthesis and integration of data used to document programmatic decisions. This is especially noteworthy for NESCent and SESYNC. Nonetheless, there was mismatch in the reviews, panel summary, and decision for funding that characterized the i-Plant renewal. Significant concerns were raised by multiple reviewers regarding the disappointing progress on dissemination (6 out of 8 reviewers rated the proposal F/G). Only a small proportion of the plant research community was using i-Plant – the reason noted by the reviewers was lack of prioritization. This issue was noted in several instances in the panel summary. It was noted specifically that i-Plant was not reaching-out to the community in a sufficiently broad or effective manner. Similar concerns were raised in Broader Impacts. The panel explicitly stated that they were concerned that i-Plant would maintain the status quo for the renewed funding period. This should be a significant concern for any project that is up for renewal. Moreover, the memo requesting approval for funding to NSB (March 5, 2013) was not entirely forthcoming about the degree of concerns about i-Plant as expressed by the reviewers. In short, the full process of decision-making was not transparent and failed to produce convincing rationale in light of the full suite of data available to the program. **Data Source: Jackets**	YES

6. Does the documentation to the PI provide the rationale for the award/decline decision?	YES

[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.] Comments: Generally, this is done quite well, providing detailed and comprehensive documentation to the PI via all of the above-mentioned instruments. With respect to i-Plant, the cooperative agreement states a five year renewal, but the NSB resolution was that the "award was contingent upon a review at 18 months". We did not find any documents that conveyed this constraint or information to the PI. **Data Source: Jackets**	
7. Additional comments on the quality and effectiveness of the program's use of merit review process: In general, this is used to good effect in the decision-making process for center funding or renewal. Although no problems were noted in the review process, *per se*, the COV recommends additional NSF staff input concerning the process between panel reviews, SVT, and communication with NSB when funding requires such approval (e.g., 2-3 PDs comprehensively review complete jackets and approve critical documents that form the bases of funding decisions on awards of particularly large size [>10 million per annum]).	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question**.**

SELECTION OF REVIEWERS	**YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE**
1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments:	YES

Generally well done. **Data Source: Jackets**	
2. Did the program recognize and resolve conflicts of interest when appropriate? Comments: **Data Source: Jackets**	YES
Additional comments on reviewer selection:	

III. Questions concerning the management of the program under review. Please comment on the following:

1. Management of the program. Comments: Generally, the COV was impressed with the way in which PDs manage large complex and multidisciplinary proposals. The situation for i-Plant is characterized by complex management issues, several changes in PDs within NSF, and transfer from DBI to the front office within BIO. The program would have benefitted considerably from more advice and oversight from DBI or BIO on the use of best management practices for large infrastructure programs. DBI needs to strategically consider its full portfolio of centers as parts of a critical "program". The division should more comprehensively consider ways to manage these centers by including PDs from DBI and from the other thematic directorates into a management team, thereby ensuring responsiveness to the communities served by the programs, enhancing communication within BIO, and optimizing professional experiences that can be applied to management of complex cooperative agreements.
2. Responsiveness of the program to emerging research and education opportunities. Comments: This is generally a strength of the centers, and is reflected in the various strategic supplements added to the prime awards. Nonetheless, the reviews suggest that i-Plant has struggled to capture and address emerging needs of the community.
3. Program planning and prioritization process (internal and external) that guided the development of the portfolio. Comments: Both general and specific information on planning or prioritization were lacking in the materials provided to the COV with regard to centers. In many regards, "mission creep" characterizes the i-Plant program, as well as lack of planning & prioritization. Too many new and diverse large projects were introduced into i-Plant, potentially diluting its overall effort.
4. Responsiveness of program to previous COV comments and recommendations.

Comments:

Issues raised by the previous COV were not addressed (e.g., Recommendation 1.4). To complement internal strategic planning at NSF, the COV recommends that NSF undertake an external assessment and study (e.g., by the NAS) of these opportunities, and possibilities for synergy at all levels, within and across programs at DBI, BIO and NSF.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity? Comments: **Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select the Funding Rate module to see counts of proposals and awards for programs. The Proposal Count by Type Report View will also provide a summary of proposals by program.**	N/A
2. Are awards appropriate in size and duration for the scope of the projects? Comments: There were many concerns regarding inclusivity and engagement of the whole research and education community in i-Plant. **Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select Average Award Size and Duration.**	
3. Does the program portfolio include awards for projects that are innovative or potentially transformative? Comments: Most centers have produced innovative and potentially transformative research, and have changed the culture of collaboration, as well as the multidisciplinary nature of the scientific endeavor in the biological sciences. The i-Plant program has significant promise in this area, but has yet yielded transformative outcomes. **Data Source: Jackets**	

4. Does the program portfolio include inter- and multi-disciplinary projects? Comments: This is a significant strength of the centers, all of which have appreciable connections to other disciplines, especially information and computer sciences, social sciences, mathematics and statistics, or engineering. **Data Source: If co-funding is a desired proxy for measuring inter- and multi-disciplinary projects, the Co-Funding from Contributing Orgs and Co-Funding Contributed to Recipient Orgs reports can be obtained using the EIS/Committee of Visitors Module. They are available as selections on the Report View drop-down.**	YES
5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators? Comments: **Data Source: EIS/Committee of Visitors Module. Select Proposals by State from the Report View drop-down.**	N/A
6. Does the program portfolio have an appropriate balance of awards to different types of institutions? Comments : **Data Source: EIS/Committee of Visitors Module. Select Proposals by Institution Type from the Report View drop-down. Also, the Obligations by Institution Type will provide information on the funding to institutions by type.**	N/A
7. Does the program portfolio have an appropriate balance of awards to new investigators? NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant. Comments: **Data Source: EIS/Committee of Visitors Module. Select Funding Rate from the Report View drop-down. After this report is run, use the Category Filter button to select New PI for the PI Status filter or New Involvement (PIs & coPIs) = Yes.**	N/A

8. Does the program portfolio include projects that integrate research and education? Comments: This is a significant strength of the various centers. **Data Source: Jackets**	YES
9. Does the program portfolio have appropriate participation of underrepresented groups[2]? Comments: Active **recruitment** of participants from underrepresented groups or from the full spectrum of institution types into the activities of the centers remain a challenge. This should be an active are where experiences and success should be shared among centers in a programmatic way. **Data Source: EIS/Committee of Visitors Module. Select Funding Rate from the Report View drop-down. After this report is run, use the Category Filter button to select Women Involvement = Yes or Minority Involvement = Yes to apply the appropriate filters.**	MIXED
10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports. Comments: **Data Source: Jackets**	YES
11. Additional comments on the quality of the projects or the balance of the portfolio: Generally the centers involve cutting edge science and innovative approaches. It is unclear if issues regarding portfolio balance have been addressed by DBI in the development of a portfolio of centers, with explicit consideration of issues regarding their sun-setting, renewal, or origination.	

[2] NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

V. OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

Management of centers as part of a larger administrative unit within DBI (e.g., Centers Cluster) is desirable from a number of perspectives: leveraging capacity and expertise, catalyzing cross-fertilization of ideas and best practices, enhancing communication, informing strategic planning.

2. In looking across programs in DBI, do you find synergies:

    a. between programs within DBI?

Centers, especially if managed as a cluster, could more effectively interface with "human resource" and "infrastructure" clusters.

    b. between DBI programs and other Divisions in BIO?

Clearly different centers, because of their thematic foci, inherently relate and connect to other Divisions in BIO (and the communities that they serve). Joint leadership on center proposals by a PD from a relevant thematic Division and by a PD from DBI represent a logical management structure for enhancing communication, facilitating a desirable level of managerial reduncancy, and ensuring and optimal allocation of resources to serve the BIO community.

    c. between DBI programs and other Directorates in NSF?

Centers have logical connections to CISE (Information Sciences and Technologies), SBE (social science dimensions, policy), Engineering (sensor and sensor networks), and International Programs.

3. Are there emerging areas where DBI can make new or additional investments to catalyze or advance the biosciences field?

DBI should, in collaboration with other Divisions of BIO, explore the needs of various biological disciplines, and use the center mechanism to stimulate innovation, creativity, culture shifts, and transformative research and education. For example, creation of a Biological Systems Science Center could explore various thematic areas of biology that extend across all levels of biological organization (biomolecules to the biosphere) to explore linkages among biological disciplines and commonalities of structure and function that characterize the hierarchical nature of life.

4. For the various programs in DBI, are the award sizes appropriate for the activities funded.

5. If DBI's funding base were decreased, what programs should be scaled back?

This issue can only be assessed within the context of a strategic plan that inherently considers risk and uncertainty.

6. Please provide comments on any other issues the COV feels are relevant.

Management of large complex proposals such as i-Plant should **not** be the domain of a single individual but rather should emerge from **sustained** interactions of a team of PDs. When new proposals or renewal proposals emerge that require SAB approval, we recommend additional scrutiny of documents and jackets beyond the management team to ensure transparency and effectiveness of documentation that support the overall division and directorate recommendation.

7. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The current COV template is not adequate for examining issues regarding large complex proposals, such as those associated with centers. Moreover, providing additional Division-specific issues to be addressed in light of strategic initiatives or Division-wide values would be useful in guiding COV activities toward ends that would enhance the long-term vitality of the DBI.

SIGNATURE BLOCK:

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For the DBI 2013 COV
Dr. Muriel Poston
Chair