

DBI COV Summary of Issues for Consideration

September 25, 2013

(Final version submitted for COV review: Oct. 23, 2013)

The COV appreciates the time and effort of the DBI scientific and administrative staff devoted to the preparation of materials for the COV to review. In particular, we are grateful to the administrative staff for logistical and technical support and also for providing necessary additional materials to e-jacket or by hard copy after we arrived on site. The COV would like to emphasize that we recognize and acknowledge the important contributions of DBI to the vitality of the biological sciences, particularly with respect to the development and support of a substantial research and human capital infrastructure for the disciplinary domain. Our overall assessment is that the work of DBI has been exemplary, particularly with respect to the integrity of the review process and the development of a robust program portfolio. In the COV template and in response to the COV open-ended questions, we have provided our perspective in the management of the division during the review period. In addition, although the 2013 DBI self-study did not request that the COV respond to specific areas such that we would target our recommendations, we would like to raise the following issues for DBI's consideration.

The COV appreciates the opportunity to understand better the workings of DBI. In addition to our assessments included in the COV template, we offer recommendations that have emerged from our study of the materials, conversations with DBI and BIO staff at all levels, and general observations over the three days of our site visit.

1. **Broader impacts.** We recommend that DBI lead the development of a Directorate-wide process to assess the effectiveness and impact of the "broader impacts" criterion, with attention to how the community has responded to changes in the guideline language for this criterion. In particular, we think it is important to know how well projects broaden participation and integrate research and education. Are there ways to increase the relevance and utility of this criterion--e.g., by requiring evidence in the proposal; by training reviewers; by training program officers? How can annual and final reports be used to assess how well the goals for broader impacts are actually being achieved? Outcomes are important!
2. **Communications.** Because DBI focuses on the infrastructure that supports many activities across the Directorate, effective communications are critically important. We recommend that the DBI intentionally increase its efforts and improve its skills in communications within DBI and between DBI and other parts of the Foundation.
3. **Assessing synthesis centers.** We recommend that DBI, perhaps in collaboration with SBE, lead the development of a robust process to assess the effectiveness of a synthesis center. The assessment should begin with a clear enunciation of the desired outcomes, and include the activities of training and outreach. This process should be used in evaluating current centers as well as in the design of new centers.
4. **Managing synthesis centers.** We recommend that DBI lead the development of a protocol by which each center is created and subsequently managed. The protocol should be assessed frequently and made transparent to the rest of the Directorate as well as the communities served by

the Centers.

5. Facilitating transformation. Recognizing that transformation can require transformative strategies, we recommend that DBI, working with the rest of the Directorate, develop strategies by which it can measure how well the infrastructure leads to transformative science. These strategies should include assessing the role of centers in encouraging transformation in the content and “pedagogy” (or culture) of science.

6. Undergraduate education. We recommend that DBI lead the development of Directorate-wide strategies to increase the effective integration of biology research and undergraduate education.

7. Self-reflection and measurement of progress. We recommend that DBI and the Directorate develop effective mechanisms through which they will track their progress on the recommendations that emerge from processes such as the COV. Documentation should detail how each level of the Foundation responds to recommendations, as appropriate.

The 2013 COV found particular challenges with the mechanics of the COV process. There appears to have been missed communication regarding the most helpful materials for the COV process. This resulted in insufficient guidance through the webinar regarding how to approach the review of materials. For those COV members who had not participated in such a process before, understanding what elements might be absent from e-jacket was difficult to ascertain before arriving at NSF. A more detailed self-study coupled with a more comprehensive overview of the materials available for review would have expedited the COV review.

The shortcomings of the COV template were particularly apparent for the Center proposals, where significant elements were missing from some of the jackets provided for review. Further, the COV template does not adequately allow for the analysis of infrastructure and complex entities such as Centers within the parameters of sections I-III. The COV attempted to adequately analyze the management issues associated with Centers, particularly given the distributed nature of BIO’s intellectual and management approach, but found it challenging within the parameters of the COV process. If DBI and the Biological Sciences Directorate are to continue to utilize a distributed and bifurcated approach to intellectual and management issues, we recommend that the communication channels among the program directors responsible for these intersecting threads be focused and enhanced over the apparent structural framework.

The COV members sincerely hope that the COV review, recommendations, and issues for consideration are helpful to the Division of Biological Infrastructure. We see this division as pivotal to the research and education efforts of the Biological Sciences Directorate. In addition, we commend the outstanding work of the DBI senior leadership and program directors as they continue to serve the broader biological science community.

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/cov¹.

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: RESEARCH RESOURCES AND HUMAN RESOURCES CLUSTERS**

Date of COV: September 23 rd – 25 th , 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
<p>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.</p> <p>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.</p>

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.

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
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate? Research Resources Cluster: Programs primarily rely on panel review with supplemental ad hocs to fill gaps in expertise. This appears to be, for research resources programs, appropriate.</p> <p>Data Source: EIS/Type of Review Module</p>	<p>RRC: Yes HRC: YES for REU, PRFB, and RCN</p>
<p>2. Are both merit review criteria addressed</p> <p style="padding-left: 20px;">a) In individual reviews?</p> <p style="padding-left: 20px;">b) In panel summaries?</p> <p style="padding-left: 20px;">c) In Program Officer review analyses?</p> <p>Research Resources Cluster: Overall yes though the evaluation and application of the broader impact review criteria was weak in some reviews/panel summaries. The review analyses procedural change for declined proposals reduces information available to assess how decisions are made by program officers. In some cases proposals were funded despite identification of significant shortcomings in the Broader Impacts which were either not mentioned or explained in the Program Officer review analyses.</p> <p>Human Resource Cluster:</p> <ul style="list-style-type: none"> • One panel summary was missing out of the 11 that were sampled. • Most candidates did not do a good job on Broader Impacts. With revision to Broader Impacts review criteria, these problems might 	<p>RRC: Yes HRC: YES for all 3</p> <p>YES</p> <p>YES – PFRB, REU; OFTEN - RCN</p>

<p>become worse. Will the new criteria – three principles, two review criteria, five elements –address or worsen this issue? Should the mentor be expected to address the broader impacts component with the PRFB candidate?</p> <ul style="list-style-type: none"> • In the RCN program, some of the PO analyses for FY10 proposals, the PO used a boilerplate template for the analyses, and these lacked sufficient details to understand the rationale for the final recommendation. For other RCN proposals (and a different PO), the PO analyses were commendably explicit in terms of the recommendation, including a discussion of why the recommendation varies from the comments by some panelists. <p>Data Source: Jackets</p>	
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<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Research Resources Cluster: Only a minority of reviews evaluated contained little substantive input.</p> <p>Human Resources Cluster: Comments: PRFB Number lacking substantive comments was in single digits in 2010 and 2011; but improved to 0% in 2012.</p> <p>Data Source: Jackets</p>	<p>RRC: Yes HRC: YES – for all 3</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Research Resources Cluster: Panel summaries were clear and demonstrated consensus. In a few cases summaries were regurgitations of reviews. In other cases the summaries are insufficiently detailed, particularly in declines.</p> <p>Data Source: Jackets</p>	<p>RRC: Yes HRC: Yes</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[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.]</p> <p>Research Resources Cluster: Overall the documentation provided the rationale for the decision. Only in a few cases was this not the case. When information was lacking the justification in the review analysis was also lacking sufficient detail. In some cases the panel summaries lacked detail sufficient to understand the rationale for the decision.</p> <p>Human Resources Cluster: Reviewers of REU proposals expressed specific concerns in their review and panel summary. The Program Officer provided mitigating explanations to address concerns (i.e. reformat to shorter duration (10 weeks to 6 weeks), conversations with PIs about specific issues.)</p> <p>In only one instance, reviewers and panel summary did reflect weaknesses and areas for improvement but in the Review Analysis no major weaknesses were identified (REU).</p> <p>Occasionally, Review Analysis (REU) is rather cursory but adequate of all reviewers comments.</p> <p>Data Source: Jackets</p>	<p>RRC: Yes HRC: Yes</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[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.]</p> <p>Research Resources Cluster: In a minority of cases, when proposals were “on the bubble” with respect to panel placement, there was insufficient detail in the reviews, context statement, and/or panel summaries to adequately inform PIs. In too many instances there was no record of program officer communication with unfunded PIs.</p> <p>Data Source: Jackets</p>	<p>RRC: Yes HRC: Yes</p>
<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>Research Resources Cluster: Changes to solicitations over this review period reflected program planning such as the addition of “types” to IDBR and ABI. Changes to review analysis procedure for declined proposals with no excellent reviews should be</p>	

<p>reexamined given the lack of information regarding decisions. Metrics of program impact on the biological research community were not presented and should be developed for each program. Balancing portfolios will become increasingly difficult as some programs have increased in their mission and so panel composition must reflect a broader constituency. With respect to collections, proposals for smaller collections appear to receive less ecumenical reviews given the balance of institution representation on the panel.</p> <p>Human Resources Cluster: It was noted in the previous COV report that mentors were not identified in the PRFB. This problem persists.</p> <p>In some cases, the use of a boilerplate review analysis by the PO did not adequately capture the rationale for the recommendation, nor explicitly describe how the proposal achieved the two criteria. This suggests a need for improved training of POs and formative assessment of their analyses.</p> <p>The RCN program might benefit from a clearer statement of the niche that it occupies. What are the defining features of the RCN that make it different from another program? What are the criteria that distinguish an RCN from a different kind of grant? Are there aspects of the Broader Impacts that are particularly relevant to successful RCN proposals? These definitions and criteria should be communicated to the PIs and reviewers.</p> <p>It was noted in several instances, that many more reviews were solicited (perhaps as many as 2 dozen) but only a handful responded (4 or 5.) This seems inefficient use of PO's time but I have no suggestion as to how to improve the process.</p>	
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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
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Research Resources Cluster: Overall the panel reviewers have the appropriate expertise and qualifications. In some cases the lack of under-represented minority panelists or panelists from MSI/HBCU institutions was evident. Moreover there is an opportunity to engage community college and PUI panelists that in some programs has been</p>	<p>RRC: Yes HRC: Yes</p>

<p>neglected. Matching of proposal diversity to panel diversity should continue to be carefully evaluated.</p> <p>Data Source: Jackets</p>	
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Research Resources Cluster: Overall conflict of interest issues were well managed by the program and identified prior to review and panel. When identified at panel they were attended to appropriately.</p> <p>Data Source: Jackets</p>	<p>RRC: Yes HRC: Yes</p>
<p>Additional comments on reviewer selection:</p> <p>Research Resources Cluster: The program officers did well to balance expertise and institution types and identified from funded and declined proposals, PIs that were eligible and appropriate to the panel. Using this to engage the community and engage potential new PIs was good.</p> <p>Human Resources Cluster: Additional comments on reviewer selection: The process described in the self-study was significant and adequate. POs are to be commended on selection for reviewers</p>	

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

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Research Resources Cluster:

The programs were effectively managed. In some cases there were gaps in funding (FSML hiatus) and delays in implementing awards though the vast majority occurred within the 6 month dwell time, this appeared to be the case primarily for awards with declines processed quickly. There was concern with the move to hold CSBR competitions biennially, which was a creative adaptation on the part of the program to a significant budget cut. As a result, award funds were merely mortgaged for the non-competition out years. We strongly recommend that annual competitions be re-instituted, especially given the OSTP and NAS directives on the critical importance of bringing the nation's biological collections into currency for science and society.

Human Resources Cluster:

The PRFB program is well-managed with an adequate review and tracking of progress. The REU program is well-managed. The RCN-UBE program is one of the very few examples of co-funding with EHR. It is currently funded on an "ad hoc" basis, and will benefit from a more permanent funding mechanism housed in DBI.

2. Responsiveness of the program to emerging research and education opportunities.

Research Resources Cluster:

All of the programs are responsive, as appropriate to their mission, to emerging opportunities. Infrastructure, whether human or research, is critical to advancing scientific discovery and it is clear that the research resources programs are central to this core mission of DBI. Each program should develop metrics to assess their programmatic impacts on and responses to emerging community needs and opportunities as identified by the community itself. The current format and constraints of the reporting system often preclude assessment of impacts and therefore the approaches taken in the REU program, separate polling of PIs regarding specific metrics of impact, would serve these programs. Research resources programs should develop outreach programs to engage PUIs, MSI/HBCU, and non-academic institutions and PIs to provide breadth and diversity to the reviewer and PI pools. Long term sustainability of digital and physical assets are also of concern and it appears that this concern has not been adequately been addressed.

Human Resources Cluster:

The PRFB program is responsive to new trends/frontiers in research. Although, it wasn't clear how the new frontiers/topics were selected. The REU program is responsive to new trends/frontiers but it

is unclear how topics were selected.

The RCN-UBE program is one of the few tangible manifestations of the integration of research and education. The program has the potential to reach a different audience of PIs than EHR programs, and can synergize with other BIO programs. The program occupies a unique niche: (1) its strategy is to support networks of scientists (vs. individuals); (2) it is timely in that it focuses on emerging challenges in biology education, a discipline that has lagged behind other STEM disciplines in recognizing the importance of education; and (3) its structure—small 1-year incubator grants followed by the potential for a “full” 5-years grant—enables NSF to fund experiments including ones with some risk.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Research Resources Cluster:

For most programs planning and prioritization processes are working though there was little evidence of external input. In some cases, program officers identify clear goals for their program which were realized in solicitations and in portfolio balance, but this was not the case for all programs. In some cases program interactions and intellectual integration of programs regarding the development of sustainable asset support (e.g., BRC and ADBC) was inferred.

Human Resources Cluster:

It was unclear where to find the relevant information for the programs associated with this cluster. It was expected in the Self-Study but was not evident.

4. Responsiveness of program to previous COV comments and recommendations.

Research Resources Cluster:

The responses to the previous COV did not include individual program-level responses. The review seemed focused significantly on ARRA issues which appear to have strained DBI staff and perhaps detracted from the normal proposal review process.

Human Resources Cluster:

Mostly. There was a request for easy access to PRFB mentor – not clear if this was addressed. It was difficult to find the information in the self-study or the pattern in the jackets provided. The idea for the RCN-UBE came from the 2006 COV of Emerging Frontiers. For the REUs, no issues were noted.

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

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity? Research Resources Cluster: The COV self-study review did not break the programs apart and so it is difficult to ascertain the level to which the portfolio balanced across sub-disciplines. In some cases the programs serve multiple disciplines very well as is appropriate to the scope of these programs. Human Resources Cluster: RCN-UBE is the only program that explicitly integrates biology research and undergraduate education, which is an important and timely objective.</p> <p>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.</p>	<p>Appropriate</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects? Research Resources Cluster: While difficult to judge the levels as only means were provided the levels appear appropriate and as does the award duration.</p> <p>Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select Average Award Size and Duration.</p>	<p>Appropriate</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative? Research Resources Cluster: In some cases the decisions appear risk averse and opportunities to fund high risk/high payoff projects were not taken. For a few of the programs, however, innovation is a core tenet of the programs and the portfolio represents this core value. In other cases there appears to be a lack of risk taking which may be reflected in a lack of risk taking by the PI community itself.</p>	<p>Appropriate</p>

<p>Data Source: Jackets</p>	
<p>4. Does the program portfolio include inter- and multi-disciplinary projects? Research Resources Cluster: In some cases other directorates contribute to funding of the projects and in other mechanism for co-review and co-funding are in place. There did not seem to be a lot of program officer-led seeking of co-funding or active development of cross-program collaboration and planning. Human Resources Cluster: RCN-UBE is co-funded by DBI in BIO and DUE in EHR.</p> <p>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.</p>	<p>Appropriate</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators? Research and Human Resources Clusters: COV documents did not discriminate among programs in terms of geography. Fastlane searches showed that programs are not adequately broad with respect to geography. This suggests there is a need for outreach to under-represented regions. It was not clear how the data were presented. There is need for normalization of the data across the States. For example, California and Massachusetts have the most awards but it is likely that they submitted the most proposals. Normalizing to number of proposals submitted or success rate per state could reveal more meaningful information.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Proposals by State from the Report View drop-down.</p>	<p>Not Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions? Research and Human Resources Cluster : PIs from community colleges, PUIs, MSI/HBCU are under-represented in both awards and declines. In some programs non-academic institutions are poorly represented. For the REUs, there were no awards to 2- and 4-year Institutions which was concerning, although DBI should track involvement of 2- and 4-year institutions as partners in other proposals.</p>	<p>Not Appropriate</p>

<p>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.</p>	
<p>7. Does the program portfolio have an appropriate balance of awards to new investigators?</p> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>It appears that new investigators are well represented. In some programs the program officers have actively cultivated new PIs through panel service and mentoring.</p> <p>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.</p>	<p>Appropriate</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Research Resources Cluster: There is no explicit effort in these programs to adequately integrate research and education. However in many cases PIs develop plans to integrate mentoring of students and/or post-docs. Broader impacts, overall, are not well attended to by reviewers or PIs.</p> <p>Human Resources Cluster: RCN-UBE includes projects that integrate research and education.</p> <p>Data Source: Jackets</p>	<p>Appropriate</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups²?</p> <p>Research Resources Cluster: While some of the resources developed through program funding engage under-represented groups (e.g., FSML) there is a woeful lack of PIs from MSI/HBCUs. The programs do very well in supporting female PIs.</p> <p>Human Resources Cluster: REUs demonstrated participation of underrepresented groups.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Funding Rate</p>	<p>Appropriate</p>

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.

<p>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.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: Some programs have done well to engage in strategic planning (FSML) while others have not. The programs do support directives to ensure resources are available for research and education communities. All programs are encouraged to develop appropriate mechanisms to maintain relevance to the community, the agency, and constituent needs.</p> <p>Data Source: Jackets</p>	<p>Appropriate</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

V. OTHER TOPICS

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

There appears to be an absence of obvious connections between the disciplinary programs and the infrastructure and human resource programs of DBI. Further, the efficacy of interactions between the Research Resources Cluster and Human Resources Cluster was not well documented in the self-study. In addition, the Research Resource programs need to do more to engage a broader representation of geographies, institution types, and under-represented PIs. What outreach is done by the programs?

Opportunities to enhance effective communication might be helpful within DBI, not only among the staff (scientific and administrative) but also between the divisional leadership and the staff. Also, cross-training and facilitating back-up support for programs could avoid the information challenges that arose during the COV when the single individual responsible for Center administrative support transferred and others had to scramble to provide requested data.

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

a. between programs within DBI?

Yes, although it seems that synergies seem to arise by serendipity. The vision for DBI was not self-evident in the self-study itself.

b. between DBI programs and other Divisions in BIO?

Need more explicit interactions with research directorates to ensure that infrastructure supports research and is responsive to the “leading edge”.

c. between DBI programs and other Directorates in NSF?

Aside from the significant RCU-UBE collaboration between DBI and DUE which is cross-directorate, there does not appear to be other significant cross-directorate collaborations. Informal working groups and collaborative outreach and workshops could add capacity in this area.

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

Catalyzing new investments requires taking risks in research infrastructure. The programs should be encouraged to support innovation and high risk/high payoff projects. In addition, long term commitment to programs can enable innovation and sustain products and programs that support the community. For example, the cyberinfrastructure and database curation challenges that are presented by DBI programs and Centers may benefit from incorporating strategies to facilitate incubation of novel approaches and assist in leveraging opportunities across directorates.

The senior program staff referenced a strategic planning process that took place over four years ago and that was not implemented. Such a strategic planning process may be helpful at this transitional moment.

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

Two areas raised particular concerns regarding award size and funding levels. The Centers presented issues with regard to administration and management of projects that require Science Advisory Board approval (see Center COV report). Also, the alternate year cycle for the CSBR program does not seem to have been based on a documented assessment of program impact. Further, it is not clear that evaluation criteria are available to determine if award sizes are appropriate. Does the division have a strategic planning process for acknowledging divisional priorities, determining funding allocation, and evaluating the relative success and impact of programs, in the context of community needs? It is not clear that proposal pressure, based solely on proposal load, should be the only metric used in determining program impact and effectiveness.

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

While we appreciate budget constraints and the need to scale for efficiencies we would remind NSF what happens when programs are subsumed, when new competing programs come online and cannibalize existing programs. There can be no doubt that a mechanism must be applied to evaluate program longevity and it could be argued that re-invention of programs may be needed. Specifically, absent a DBI strategic plan based on expected and actual outcomes and current and future priorities, the COV cannot recommend any specific program for scaling back.

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

DBI is a unique resource within the BIO Directorate and NSF, but this singularity was not evident in the self-study. The self-study did not (a) discuss the meaning and lessons learned behind the statistics; (b) the division's strategic goals and priorities, or (c) connect DBI to the strategic plan goals of NSF. We would encourage DBI to use the response to this self-study as an opportunity for reflection and programmatic assessment/evaluation.

DBI is the primary locus in the BIO Directorate that focuses on undergraduate education and thus has an opportunity to demonstrate the integration of research and education. In this context, it would perhaps be useful for the undergraduate education programs to evaluate their efficacy in the context of the relevant research and literature on student outcomes associated with research interventions and discipline based undergraduate educational practice. The RCN-UBE program component is an important community building effort but it was difficult to assess the efficacy of program management since it used a variety of approaches, e.g. ad hoc reviews, virtual panels, etc.

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

It would have been helpful for DBI to have validated that the relevant and necessary documents were uploaded into the COV module, e.g. annual reports and review analyses were not always associated with the jackets. The data presentation and analysis in the self-study was not always helpful in understanding DBI processes. For example, many parts of the Center proposals/transactions were not available at the start of the COV and thus delayed the progress in the review of these portfolios. In addition, the COV template is not particularly helpful in assessing the efficacy of program management for the Centers given that these are shared responsibilities between the management function of DBI and the intellectual stewardship of the disciplinary divisions. The tension between these competing entities was evident in the evaluation of the Center program management.

SIGNATURE BLOCK:

For the DBI 2013 COV
Dr. Muriel Poston
Chair

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/cov¹.

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 23 rd – 25 th , 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
<p>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.</p> <p>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.</p>

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
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>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.</p> <p>Data Source: EIS/Type of Review Module</p>	YES
<p>2. Are both merit review criteria addressed</p> <p style="padding-left: 20px;">a) In individual reviews?</p> <p>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.</p> <p style="padding-left: 20px;">b) In panel summaries?</p> <p>Generally both criteria are assessed in panel summaries. Moreover, data</p>	YES

<p>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.</p> <p>c) In Program Officer review analyses?</p> <p>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 1 of 43 review analyses failed to include comments about criterion 1 and criterion 2.</p> <p>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.</p> <p>Data Source: Jackets</p>	
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<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>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.</p> <p>Data Source: Jackets</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p>	

<p>In the review of most center proposals, this is generally well done.</p> <p>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.</p> <p>Data Source: Jackets</p>	
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<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[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.]</p> <p>Comments:</p> <p>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.</p> <p>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.</p> <p>Data Source: Jackets</p>	<p>YES</p>
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<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p>	<p>YES</p>
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<p>[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.]</p> <p>Comments:</p> <p>Generally, this is done quite well, providing detailed and comprehensive documentation to the PI via all of the above-mentioned instruments.</p> <p>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.</p> <p>Data Source: Jackets</p>	
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<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>In general, this is used to good effect in the decision-making process for center funding or renewal.</p> <p>Although no problems were noted in the review process, <i>per se</i>, 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]).</p>	
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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
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments:</p>	<p>YES</p>

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

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

<p>1. Management of the program.</p> <p>Comments:</p> <p>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.</p> <p>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.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments:</p> <p>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.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments:</p> <p>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.</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p>

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.

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments:</p> <p>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.</p>	<p>N/A</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <p>There were many concerns regarding inclusivity and engagement of the whole research and education community in i-Plant.</p> <p>Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select Average Award Size and Duration.</p>	
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments:</p> <p>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.</p> <p>Data Source: Jackets</p>	

<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments:</p> <p>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.</p> <p>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.</p>	<p>YES</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments:</p> <p>Data Source: EIS/Committee of Visitors Module. Select Proposals by State from the Report View drop-down.</p>	<p>N/A</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments :</p> <p>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.</p>	<p>N/A</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new investigators?</p> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>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.</p>	<p>N/A</p>

<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments:</p> <p>This is a significant strength of the various centers.</p> <p>Data Source: Jackets</p>	<p>YES</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups²?</p> <p>Comments:</p> <p>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 area where experiences and success should be shared among centers in a programmatic way.</p> <p>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.</p>	<p>MIXED</p>
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>Data Source: Jackets</p>	<p>YES</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>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.</p>	

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 redundancy, 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:

For the DBI 2013 COV
Dr. Muriel Poston
Chair