

Response to Recommendation from the Committee of Visitors
for the
Division of Biological Infrastructure
June 16-18, 2004

On behalf of the programs and personnel in the Division of Biological Infrastructure of the Directorate for Biological Sciences, I would like to thank the COV for their hard work and effort in providing an informative report and useful set of recommendations. The COV commended the Division Director on the well-balanced divisional portfolio that supports physical infrastructure and human resource development in all areas of Biology and is also effectively targeting NSF strategic goals. Further, the COV indicated that, despite the eclectic nature of DBI and its participation in numerous crosscutting programs, the high quality management of the division under these complex conditions is extraordinary. I appreciated these positive comments and I know that the DBI staff appreciated them as well. Below are responses to the many excellent suggestions and recommendations you provided in your report.

Section A. 1: Quality and Effectiveness of merit review procedures.

Recommendation:

Consider how to expedite handling of proposals that involve decisions of multiple panels.

Response:

Expedited handling of proposals reviewed by different panels that meet at different times is challenging. However, the Division will add program officer notes to FASTLANE to inform PIs of the status of their proposals. Also, the Division will increase its efforts to enhance communication and planning between DBI and non-DBI program officers so that proposal processing is as expeditious as possible.

Recommendation:

Consideration should be given to improving the return rate of ad hoc reviews, e.g. by a solicitation for reviewers through a general mailing, and by more personal contacts between the program directors and reviewers for specific proposals.

Response:

The Division agrees with the need to increase the return rate of ad hoc reviews. One way to accomplish this goal is to increase the size of the reviewer pool so that individual reviewers are not overused. Program officers will solicit new

reviewers at professional meetings, during outreach visits, and in society newsletters. As many as possible ad hoc reviewers who have been sent proposals to review, but have not submitted reviews, will be contacted and urged to send in reviews.

Recommendation:

The time to decision could be decreased by continued improvements in FASTLANE with respect to administrative functions, and by increasing the number of program directors.

Response:

The Division has and will continue to suggest enhancements and modifications to FASTLANE to improve administrative functions. While, the Division cannot increase the number of program directors, it can change the proposal deadlines in order to even out workload per program officer throughout the year. The Division will explore this option.

Recommendation:

Consider an online system for PI feedback on the review process.

Response:

Program officers provide proposal review information to PIs via FASTLANE and PIs provide feedback to NSF via e-mail. Currently, an interactive communication system for PI feedback to NSF is not available through FASTLANE. However, the Division will forward this suggestion to the FASTLANE development team.

Section A.2: Implementation of Merit Review Criteria by reviewers and program officers

Recommendation:

Continue to emphasize to potential applicants that broader impacts must be addressed in any proposal and in progress reports. In program announcements, include examples of broader impacts relevant to that program with clear indication that examples are not exhaustive/prescriptive.

Response:

The Division agrees with these recommendations and will continue to emphasize the NSF requirement that Broader Impacts be explicitly addressed in both the proposal summary, project description and progress reports in all its Program

Announcements. The Division will also include examples of Broader Impacts in its Program Announcements, as appropriate.

Recommendation:

In public relations documents and press releases, include some reference to broader impacts.

Response:

This is an excellent suggestion. The Division will contact the NSF Office of Legislative and Public Affairs who crafts press releases and public documents and suggest that they include Broader Impacts in all their releases. DBI will also insure that all DBI-relevant press releases include reference to broader impacts.

Recommendation:

We suggest that program directors specify what sort of broader impacts are relevant to a particular program. Proposal instructions need better incorporation of broader impacts criteria upon which proposal will be judged. Perhaps criterion two could be rewritten to indicate that the following criteria (as determined by the program director) are likely to be very important for evaluation of the proposal but the investigator is encouraged to describe other ways in which funding of the proposal will generate a broader impact. In this way, all proposals might be evaluated in a similar manner with the ability to recognize those proposals with strong or unique contributions to broader impacts.

Response:

If specific kinds of broader impacts will be used as selection criteria then DBI will insure that the review criteria section of its Program Announcements clearly state this. In addition, the Division will encourage PIs to consider discussing other types of broader impacts in their proposals. Program officers will continue to insure that broader impacts are addressed in panel discussion.

A.3 Questions concerning the selection of reviewers.

Recommendation:

We suggest creating an online system to allow potential new reviewers to register and describe their interests.

Response:

This is an excellent suggestion. Since enhancing the size and diversity of the reviewer pool is an NSF-wide goal the Division will forward this recommendation to FASTLANE and EJ design and implementation groups.

Recommendation:

More effort should be spent in promoting the benefits to reviewers, e.g., except for being a panelist, there is no better way to learn how to write a good grant proposal.

Response:

DBI program officers will continue to promote the importance of participating in the review process in their outreach visits to the scientific community.

Recommendation:

We also suggest maintaining a database that tracks requests for ad hoc reviews as well as the program director's appraisal of the utility of a submitted review.

Response:

NSF has a database for tracking review requests called the Proposal and Review System. It allows program officers to add any relevant comments, e.g. whether individual reviewers returned reviews, provided substantive reviews etc. The Division will make sure that all program officers know about this feature through additional training.

Recommendation:

We encourage solicitation of reviews and panelists from underrepresented minority groups and non-PhD granting institution, including 2- and 4-year colleges and federal government laboratories.

Response:

Currently program officers solicit potential reviewers from under-represented groups and diverse institution types at professional meetings and other outreach visits

A.4 Questions concerning the resulting portfolio of awards under review

Recommendation:

DBI should encourage successful schools to engage in outreach activities such as providing workshops in grant writing at geographically close MSIs.

Response:

DBI facilitates interactions between successful and potential PIs at NSF grant writing workshops. DBI program officers often identify successful PIs to talk about their experiences in the proposal writing and review process and will encourage all its awardees at PI meetings and through other venues to do so at MSIs. Also, DBI recognizes the need to increase the number of PIs from underrepresented groups and at MSIs, and anticipates that, through outreach visits and inclusion as reviewers, this aspect of the portfolio balance will continue to improve.

Recommendation:

Continue to emphasize integration of research and education at all levels: general community, K-12, and university students.

Response:

DBI will continue to emphasize the integration of research and education at all levels in all its activities. Specifically, it will provide information on supplemental funding for Research Experience for Teachers, Research Experience for Undergraduates, and other programs, e.g. Informal Science Education, in all awards. These opportunities are also emphasized in panel discussions, outreach visits and individual interactions with PIs.

Recommendation:

Continue to put effort into solicitations to guide PIs to submit innovative proposals and proposals in areas in which the Program Director recognizes gaps.

Response:

DBI will continue to revise program announcements as appropriate, and identify the need for innovative proposals in critical areas.

A. 5. Management of the division under review.**Recommendations**

The Division Director be given the opportunity to achieve the optimal 60:40 ratio of rotating members; permanent members.

Response:

The Division appreciates the endorsement of the COV to move to the optimal 60:40 ratio of permanent program officers to rotators. As we identify appropriate candidates, we will work toward this ratio.

Recommendation:

The Division could consider ways to transfer some of the mechanical aspects of proposal handling away from program directors, to free more of their time for thinking about where science could be going in their program areas.

Response:

The Division agrees and has brought this issue to the attention of the Electronic Jacket design and implementation team. We will continue to track the progress of the EJ team in accomplishing this goal. However since the functionality of Electronic Jacket is implemented NSF-wide, the ability to address the efficiencies of the mechanical aspects of proposal administration are beyond divisional control.

Recommendation:

Two additional program directors be hired to alleviate the workload that appears to be exceptionally heavy on some program directors. The heavy workload appears to reduce the effectiveness of some program directors in carrying out the primary responsibilities to their core programs.

Response:

At present the Division has filled all of its allocated positions. The Division will incorporate this recommendation in its long range staffing plan.

Recommendation:

FASTLANE/Electronic Jacket system be optimized to allow easier delegation of tasks by the program directors

Response:

This is an excellent suggestion. The EJ team is developing this enhancement.

Part B: Results: Outputs and Outcomes

Recommendations:

No specific recommendations are made. But the COV suggested that specific metrics be identified and used in the evaluation of individual program efforts with

respect to NSF strategic Outcome goals for People, Ideas, and Tools. In particular for the area of PEOPLE, the COV suggested that increasing the number of proposals from MSIs be considered as a measurable outcome. DBI will continue to engage in systematic outreach activities to increase the number of MSIs participating in DBI programs.

Response:

The People, Ideas and Tools goals are established NSF-wide. The metrics for them are specified NSF-wide and are qualitative in nature. However, the Division will continue to engage in activities to increase the numbers of MSIs that participate in DBI programs and record the outcomes of these efforts.

Part C: Division Level Questions

C.1. Comments on actions taken by the Division in response to the last COV's recommendations.

Comments: In the DBI-COV Report of 2000, there were 21 Recommendations of the COV. DBI and NSF have addressed the majority of these Recommendations. However, the current COV notes that some of the previous Recommendations are still valid:

Recommendations 3 and 5

The Division should consider increasing the number of permanent program directors such that there is an approximate equal balance between rotators and permanent program directors.

Response:

At the time of the last DBI COV (March 2000), the Division had 8 program officers (3 permanent and 5 rotators). As of June 2004, DBI has achieved the BIO identified ratio of 60/40 with 7 rotators and 5 permanent program officers.

Recommendation 6

An effort should be made to update and MAINTAIN the database of potential ad-hoc reviewers especially with regard to current e-mail addresses.

Response:

Updating the reviewer database is a NSF-wide challenge since it is a shared resource. DBI science assistants will be tasked with imputing changes in e-mail addresses into the NSF reviewer database. At the same time, DBI will suggest to

the FASTLANE team that a module, which automatically updates reviewer e-mail addresses when reviews are entered, be added to FASTLANE. .

Recommendations 7 & 8

NSF must commit more resources to the continued improvement of FASTLANE to make sure it is stable, effective, and able to reliably handle high levels of traffic if the agency is going to require electronic submission of all proposals and reviews.

NSF should consider consulting outside electronic commerce experts (editors of electronic journals, commercial vendors who use the WWW extensively, etc.) to help with the continued improvement of FASTLANE.

Response:

These issues are outside the scope of the Division or even the Directorate. They are being addressed at the highest levels of NSF. DBI Program Officers will continue to provide comments, suggestions and participate on FASTLANE focus and user groups in order to insure that these concerns are addressed.

Recommendation 10

All parts of the proposal process, from the envisioning of a proposal, the writing of it, the reviewing and decisions must give stronger focus on Criterion 2.

Response:

Since the last COV, NSF has instituted policies and procedures that require PIs to explicitly address Criterion 2 - Broader Impacts in the proposal project summary and description. Proposals that do not address both Intellectual Merit and Broader Impacts in the Project Summary will be returned without review. DBI will continue to insure that all review and decision processes give significant weight to Criterion 2.

Recommendations 14 & 19

While the programs directors are dedicated to increasing minority participation and participation of small institutions and those in EPSCoR in DBI, more needs to be done. An institutionalized commitment to broadening participation in DBI programs needs to be developed so that more individuals at smaller institutions and institutions that serve minority students can be involved. Program directors need to be proactive in outreach to this clientele so that these scientists and their students can benefit from these programs.

DBI should increase funding for the REU and CRUI programs and encourage proposals from HBCU/HSI/TCU and from community colleges that will reach underrepresented groups of students.

Response:

The Division has increased diversity among its professional staff, and broadened participation of under-represented scientists and scientists from minority-serving institutions, small schools and EPSCoR state institutions in the review process. Over half of DBI's PO travel is for outreach. The Division continues to do everything possible to increase participation of scientists traditionally under-represented or under-served in the division's activities. Since 2000, the Division has increased funding for REU sites program. decreased budget, more importantly, some of the recent REU and cRUI awards are to EPSCoR institutions and minority-serving institutions.

C. 2. What are the most pressing infrastructural needs in the biological sciences research community? Do the current programs serve the needs of the community? Are there other infrastructural needs crossing disciplinary or organizational boundaries that we should address?

Recommendation: BRC should track funding for databases and collection rehousing separately.

Response: The Division agrees that tracking the resources used for cyberinfrastructure in collection support would help in determining the infrastructure needs for this research resource and assist with program planning. It should be noted that data basing the natural history collections is becoming a major component of the activities of collection repositories and is an integral part of the BRC funding portfolio.

C. 3. DBI's education/training programs have specific target populations and goals. Are they the appropriate targets and goals? Should we choose specific topics education/training programs e.g. REU sites or postdoctoral programs? Are there any opportunities we are missing or communities we are not serving?

No recommendations

C. 4. Please give us some advice on the following two major questions facing the biological databases today: (1) How should crucial data collections, particularly long-lived data collections, be sustained? and (2) Should a comprehensive 'data plan' be a part of every NSF proposal that would generate significant data sets?

Recommendation:

That DBI facilitate (at least within the Biological Sciences Directorate) the specification of appropriate economic models for long-term management of biological databases. A variety of mechanisms could be used to develop and promote these guidelines, including workshops, contracted studies and white papers, and ultimately, the establishment of data management requirements as criteria for project awards.

Response:

Currently, DBI program announcements that invite the creation of databases require information on long-term maintenance. This topic is a major concern at NSF. The National Science Board has a taskforce on long-lived data and one of the DBI PO serves as the executive secretary to the taskforce. This will be a major policy issue for the next several years that needs to be addressed BIO-wide, if not NSF or government-wide.

C. 5. With respect to management issues, is there the appropriate balance and distribution of professional staff given the range of programs and activities undertaken in the division?

No recommendations

C. 6. What can DBI do to better inform the community about available funding opportunities in DBI?

Recommendations:

Specific actions are recommended to provide information to the community. Many of these are already part of NSF activities. See below:

In addition to publication on the NSF web site, the following actions could also be taken to inform the research community of program updates and new funding opportunities within DBI:

- e-mail URLs to past reviewers, panel members and applicants
- send URLs to administrators and faculty at Minority Serving Institutions
- announce at national meetings of professional societies
- announce at NSF workshops
- post information in newsletters of professional societies, including biology teaching societies such as the National Association of Biology Teachers
- include in Community of Science (COS) service
- post on the Web site "University Faculty Voice of the nation's Historic Black Colleges and Universities": www.facultyvoice.com

Response:

The above recommended actions are excellent. DBI will implement them, as appropriate.

PART D. OTHER TOPICS

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

Recommendation:

Regularly update program announcements.

Response:

In conjunction with the redesign of the NSF Website, all program announcements will be updated in the fall of 2004. All DBI program announcements will be updated by the deadline.

D. 2 Please provide comments as appropriate on the division's performance in meeting division-specific goals and objectives that are not covered by the above questions.

No recommendations

D. 3 Please identify agency-wide issues that should be addressed by NSF to help improve the division's performance.

Recommendation:

Avoid duplicate proposals to different programs

Response:

NSF does not allow the simultaneous review of the same proposal by different NSF programs. However, with over 300 programs and proposal solicitations NSF-wide it is often difficult to know when a PI has sent the same proposal to two different programs, especially when one of the programs is outside DBI. DBI will determine the extent of this problem and seek to rectify it through better communication between program officers.

Recommendation:

Increased funding for NSF

Response:

The Division concurs with this recommendation and will do all it can to support the NSF budget requests.

D. 4 Please provide comments on any other issues the COV feels are relevant.

No recommendations

D. 5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

Recommendation

It would have been very useful to have the laptops networked. That would facilitate the group-writing process and communication.

Response:

This is an excellent suggestion that will be implemented for all future COVs.

Recommendation

It might have been useful to be alerted to the most important background documents that would be useful to read prior to arrival at NSF for the COV meeting. These would include the prior COV report.

Response:

The Division is reluctant to pre-determine what information may be most important to the COV prior to the COV meeting. Some COVs object to this kind of advice from NSF and other COVs prefer it.

Recommendation

The large amount of raw data as provided in Table C.2 made it difficult to evaluate the Division's performance against criteria of appropriateness, balance, and the needs of the larger community (A.4). Instead of color coding, if the data were presented with an extra column to indicate codes for high-risk, innovative, etc. proposals, this would allow the spreadsheet to be sorted and resorted to get a sense of the proportion of each category relative to the whole portfolio. Additional graphs showing recent performance in the broader context of previous years would have been very helpful. That said, all of our requests for additional data were responded to quickly.

Response:

Excellent suggestions that will be implemented for future COVs.

Recommendation

It would be helpful to understand how budgeting priorities were established. Although we are given the relative funding for each division, it is not clear how funding was portioned within the division and why funding allocations were set at the current levels. This information is critical for the COV to comment on this aspect of the process.

Response:

The COV template does not specifically ask the COV to address financial matters. However, DBI will provide additional information on resource allocation to future COVs.

Recommendation

The COV recommended specific metrics for measuring outcome goals for People, Tools, and Ideas.

Response:

NSF People, Ideas and Tools goals are established agency-wide. Metrics for them are also agency-wide and qualitative in nature. Since COV reports from all of NSF are forwarded to a special COV , which evaluates NSF's overall performance, specific DBI metrics would be inappropriate. However, NSF is continually examining and refining its GPRA goals and indicators and DBI will forward the COVs suggestions to the NSF Working Group charged with these tasks.