

**Response to the 2005 Committee of Visitors Report
for the
Division of Molecular and Cellular Sciences
Directorate for Biological Sciences
August 8-10, 2005**

INTRODUCTION

The Directorate for the Biological Sciences (BIO) and Division of Molecular and Cellular Biosciences (MCB) appreciate the efforts of the Committee of Visitors (COV) and are grateful for the committee's thoughtful comments and recommendations. The Division, in particular, appreciates the committee's recognition of the critical role that MCB plays not only in supporting outstanding research and educational activities but also in nurturing emerging research areas, encouraging multidisciplinary research, developing young investigators, supporting research at undergraduate institutions, and incorporating underrepresented groups in science. MCB also appreciates the committee's recognition that the above accomplishments come at a time when constrained human and financial resources, coupled with increasing proposal numbers challenge MCB's ability to continue to meet its scientific and educational goals. The following is the BIO response to specific recommendations made by the committee in its report.

RECOMMENDATION 1.

Panel summaries are too terse and do not provide sufficient feedback to the PI, especially with regard to perceived weaknesses. We like the idea of using scribes to write the summaries (i.e. a panel member who did not serve as either a primary or secondary reviewer.)

RESPONSE:

The Division agrees with this recommendation and began to implement panel scribes several years ago. Science Assistants are also assigned to each panel to preview the summaries for completeness and clarity before they are finalized. Although it is difficult to change "panel culture" overnight, these processes have been increasingly effective and we expect the quality of the panel summaries to continue to improve.

RECOMMENDATION 2.

The rationale for labeling proposals "high risk" should be documented.

RESPONSE:

The definition of "high risk" has been an on-going discussion at the NSF and currently the preferred term has changed to "transformative" research, defined as research that has the potential to revolutionize an existing discipline through a paradigm shift or to launch a new discipline. The August 2004 report of the NSF Advisory Committee for Government Performance and Results Act Performance

Assessment concluded that no obvious formula exists to guide NSF as to the fraction of the portfolio that should be “high risk” (or “bold”). However, the Advisory Committee also stated “... without hesitation that it is vital that the overall portfolio contain an appropriate amount of “bold” research and that the definition of such research must be clear and widely understood by NSF’s key stakeholders”. To this end, the National Science Board established a task force on transformative research in December 2004 (<http://www.nsf.gov/nsb/committees/cpptrcharge.htm>). MCB will keep informed of this conversation and will modify its instructions to panelists and training for program officers accordingly.

RECOMMENDATION 3.

Shorter turn around (of proposals) would be greatly appreciated by the community and is especially important for new investigators.

RESPONSE:

MCB Program Directors will continue to make every effort to quickly process declines for proposals that are identified by reviewers as likely to be improved by a quick rewrite and rapid resubmission. Also, PIs who request expedited decisions will continue to be given such attention. Program Directors also are generally allowing extensions to PIs who request two to four weeks after the normal target date to revise and resubmit. This flexibility is inherent in the concept of the target date, and as success rates have declined the use of this flexibility by NSF and the scientific community has increased.

RECOMMENDATION 4.

NSF needs to be tracking success of training endeavors, which is a big part of criterion II.

RESPONSE:

Although success in training is not easy to define, the suggestion to develop methods to track the success of our educational endeavors is a good one and one we will work on implementing. NSF is currently revising the format for annual and final project reports and MCB will contribute to these efforts in order to obtain more meaningful information about the outcomes of training on research grants and special educational activities and programs.

RECOMMENDATION 5.

Insufficient information on funding for centers, groups and awards to individuals was provided. This information could surely be collected from the entire MCB program rather than presenting a subset of information.

RESPONSE:

MCB agrees and will make the requested information available for future COVs.

RECOMMENDATION 6.

Success rates of minority applicants are falling while number of applications remains constant. Why? Please provide additional information. In addition, not all individuals identified as minority applicants may actually be from underrepresented groups. How is this status confirmed? Finally, we would like to be able to compare the award statistics to the pool of underrepresented groups holding research and faculty positions.

RESPONSE:

Based on the data for the three years under review, the number of research proposals for which the PI was a member of an underrepresented minority remained the same but the success rate declined. In fact, when compared to the success rate overall, only in 2004 did the success rate for minority PIs drop below the success rate for the population as a whole. Even so, the small number of proposals from minority investigators has been a matter of concern for MCB for a number of years. A variety of efforts have been developed and/or enhanced to address this problem. Among these are increased outreach visits to minority serving institutions, a new BIO-wide Research Initiation Grants/Career Advancement Awards program, and the Quality Education for Minorities (QEM) workshop series (http://gemnetwork.gem.org/bio_workshop_description.htm) initiated by MCB. Possibly as a result of these efforts, the number of proposals and success rate for proposals from minority investigators are both up substantially for 2005, even in the face of a significant decline in the overall success rate in MCB. Indeed, some of the proposals submitted in 2005 were from scientists who had participated in the QEM Workshops. Data from the NSF "Enterprise Information System" for research grants with minority PIs are shown below.

Data as of: 9/12/2005

FY	Competitive								Other Actions
	Proposal Actions	Competitive Awards	Funding Rate	CGIs	Contracts	Supplements	Withdrawals	Preproposals	
2005	104	27	26%	26	0	21	0	0	2
2004	69	10	14%	33	0	16	0	0	3
2003	68	14	21%	31	0	17	1	0	2
2002	66	24	36%	19	0	12	1	0	3

MCB has been active in, and will continue to be active in, current programs and the development of new initiatives to bring needed improvements in the area of underrepresented minority participation in science. MCB will also examine the feasibility of providing the data requested by the COV on the pool of underrepresented groups holding research and faculty positions to the next COV.

RECOMMENDATION 7.

Reduce the workload associated with proposal review. This could potentially be accomplished by:

1. Modifications to the software system, enabling POs to delegate data entry to other staff and to enable efficient generation of reports to track NSF progress.

The new grants.gov technology under development should be reviewed critically to ensure that it is designed with lessons learned from the MyWork shortcomings in mind. If NSF plans to continue to use the MyWork software for internal proposal management, resources should be allocated to modify the software and bring it in line with PO needs.

RESPONSE:

MCB agrees with this suggestion and notes that a major project to modify the proposal processing system software is currently underway by NSF's Division of Information Services (DIS).

2. Increase the number of permanent POs. Although rotator POs bring fresh insights and energy to NSF, the permanent POs have the experience and institutional memory that is necessary to advance the NSF agenda most effectively. Although the POs had different opinions as to what the ratio of permanent POs to rotating POs should be, a ratio of at least one permanent PO to one rotator seems to be necessary to achieve the desired balance.

RESPONSE:

MCB currently has a ratio of permanent to rotators close to 50:50 that works well for mentoring of new rotators and allows for involvement in a number of Directorate and NSF activities that require longer-term knowledge of the Foundation to be effective.

RECOMMENDATION 8.

Increase the quality and effectiveness of communication at all levels, especially between POs and senior management of MCB, as well as with senior management of the Foundation.

RESPONSE:

Communication is clearly an important concern. Within MCB communication is facilitated by open door policies of the Division Director and Deputy, at weekly staff meetings and at annual Division retreats. Everyone is encouraged to raise issues of concern for consideration by the Division leadership or by the Division as a whole. Based on comments of the COV this appears to be seen as still not fully effective. Although the Division leadership has made a concerted effort to identify the reasons for this concern, no systematic barriers to communication at the Division level have been uncovered. During several periods over the last year, the Program Directors took the lead in raising issues related to resource allocation and success rates at both the Division and Directorate levels. Unfortunately, given the constraints under which the Division and Directorate operate the issues raised cannot always be resolved in ways that satisfy everyone. The MCB and BIO leadership will continue to make every effort to identify barriers to open communication and remove them across the Division and the Directorate.

RECOMMENDATION 9.

Ensure that POs are involved in ongoing conversations with NSF senior management about priorities and decisions made at the highest levels.

RESPONSE:

NSF senior management has experienced a number of significant changes, e.g. new BIO AD, new NSF DD, over the last several months. These changes are likely to result in differences in management style and methods and frequency of communications. MCB and BIO will keep the need for communication with Program Directors as one of our priority issues.

RECOMMENDATION 10.

Revise the NSF website for greater accessibility and transparency to the scientific community, which would enable PIs to identify appropriate programs (perhaps by keyword-based searches). While NSF management and POs assert that they can handle proposals (re-directing them as necessary), we believe many PIs would prefer to have access to more information, both to enable them to develop the most effective proposals and to determine where to send the proposal for the greatest success rate.

RESPONSE:

While MCB has only limited input into the overall design of the NSF website, the Division can and will enhance the information content of the MCB web pages to increase communication with our scientific communities. We disagree, however, that PIs should be encouraged to try to tailor their proposals to fit the MCB or BIO organizational structure or to target proposals to programs with the highest success rates. We believe that PIs should be encouraged to propose research that represents their best ideas and that NSF should adjust its organizational structure to promote the advancement of science.

RECOMMENDATION 11.

The fact that exact numbers of trainees are not available is of concern to the COV as this information is particularly relevant for securing additional funding for this agency. Tracking the success of the REU program should be considered to determine the effectiveness of this program and the impact of particular NSF mentors on their trainees. This information may be useful when budgets do not allow the funding of all REU supplements.

This recommendation is similar to that suggested by the 2002 COV. In that report, specific recommendations were made for tracking the development (success) of the training programs which included documenting publications of trainees arising from NSF funded research, tracking awards and prizes arising from student research, and tracking career paths upon completion of training.

RESPONSE:

The number of undergraduates (including REU students), graduate students and postdoctoral scientists funded on MCB awards can be obtained from NSF databases. We apologize if the COV was not provided with this information in accessible form among the materials they were given. A larger issue is establishing widely accepted measures of success of the REU programs and collecting data such as numbers of publications involving REU students and their career paths. Although information on these measures is contained in annual reports and final reports, there is at present no easily searchable dataset on factors other than numbers supported. Since many NSF COVs have noted the need for such information, a task group is currently at work revising the NSF-wide project reporting system to make it possible to mine annual and final project reports for data that will, among other uses enable evaluation of the educational impacts of funded projects.

RECOMMENDATION 12.

It is the opinion of the committee that the MCB Division is doing the best it can under financially trying times to serve the nation in enabling discovery across the frontiers of science and in related arenas connected to learning, innovation and service to society. In so doing, the Division attempts to balance its science portfolio with a diversity of single PI projects and large multi-investigator awards. The Committee recommends that the Division continue to scrutinize the productivity of large grants awarded as they are made at the expense of funding single investigator projects with proven track records.

RESPONSE:

MCB is committed to evaluating the outcomes of all grants and is striving to maintain a balanced portfolio with respect to award size among other factors.

RECOMMENDATION 13.

Judging from the increase in the number of proposals and the lack of increase in staffing levels, it might appear that the efficiency of the merit review system has improved within NSF. The COV concluded that the major credit for processing so many more grants goes to the diligence and dedication of program officers who regard their obligations to shepherding grants as their highest priority. However, this is not a sustainable system and there is every indication that the number of proposals being submitted will continue to increase annually. We urge the Division to self-evaluate their process so that they can become more efficient and make the best use of their talented scientists.

RESPONSE:

As discussed above, MCB will continue to explore ways to improve the efficiency of the proposal review process and come up with ways to increase proposal flow while maintaining the high quality of the overall process.

RECOMMENDATION 14.

... the COV had concerns about how the agency designs and revises software to meet the needs of the users, both internal and external. For example, the process of assigning grants efficiently does not allow an applicant to identify with a specific scientific program area, but requires one-to-one correspondence with cluster names. This translates to an increased workload for the POs because administrative personnel do not have the knowledge to assign a proposal to a program.

These problems suggest inattention to or incomplete knowledge of the needs of end-users. It is essential to arrange representative groups to do beta-testing and gather feedback before implementation and release of new software. It would be ideal to respond in a timely way and change the process.

RESPONSE:

The workload associated with proposal assignment for cluster leaders is a result of the cluster system of organization that directs all incoming proposals submitted to that cluster to a single program officer's MY WORK. As with the other issues discussed above, the Proposal Process Flow project underway in NSF's Division of Information Services (DIS) is designed specifically to identify and develop methods to reduce such problems.

It should be noted that NSF does extensive beta testing of software modifications, and employs working groups to develop the requirements for the software.

RECOMMENDATION 15.

Although the NSF is a PC-based organization, the scientific and educational community is not PC-centric, and the proportion of people operating in a Linux, UNIX, or Macintosh environment (about half, or higher in some fields) is much greater than the population at large. Therefore, we recommend that as NSF prepares materials for dissemination, it provide its staff with support to determine whether information that is placed on websites is viewable on several platforms and with multiple versions of available software.

RESPONSE:

MCB agrees with this recommendation. BIO will convey to the Division of Information Systems and NSF administration the COV's message about the importance of multi-platform support to the scientific community.

RECOMMENDATION 16.

The COV is concerned that this workload is compromising PO opportunities for continuing education and public outreach, as well as their ability to initiate new programs, and promote visibility of their successes in funding cutting edge research.

RESPONSE:

The effects of increasing demands on our Program Directors' time are indeed a serious issue. As discussed above we clearly agree with the need to evaluate and will continue to look for ways to increase the efficient use of Program Directors' time.

RECOMMENDATION 17.

The COV hopes that when significant changes are made in the management structure of MCB (such as changing to a "cluster" organization), a review of the outcome will be planned and some criteria for success will be monitored annually so that all stakeholders may provide input.

RESPONSE:

We agree with the need for assessment and will undertake it when organizational changes are implemented.

RECOMMENDATION 18.

The Cluster system needs to be more transparent to the community. The Clusters could still be the organizing unit but the community would appreciate the ability to request a program within a cluster when submitting their proposals. This would have the additional benefit of reducing the initial PO workload.

RESPONSE:

We understand the COV suggestion as both a benefit to the community as well as a potential time saving to the programs. Several ideas have been put forward, such as a key to programs on the Division's web site. This is a suggestion that the Division will evaluate along with others designed to streamline the submission and review process.

RECOMMENDATION 19.

Intellectually, MO belongs in EF but the program has thrived under the MCB umbrella, which has nurtured and championed the program and has a vested interest in its success. We strongly urge that MCB maintain strong involvement with this program regardless of where it is administratively housed.

RESPONSE:

BIO agrees with this suggestion and will continue to have the MCB Division Director provide the oversight for MO-MIP in EF.

RECOMMENDATION 20.

Are there plans to assess the compliance with and effectiveness of Criterion II? All proposals should be required to document their training and outreach activities. We understand that the data currently being collected in Final Reports is in narrative form and thus cannot be queried in order to determine how many undergraduates, graduates and postdoctoral fellows NSF is training. We strongly urge that the NSF invest in the software required to access this information.

RESPONSE:

While the narrative information is difficult to query, it is possible to access the funded positions in the different budget categories. As mentioned above, a task force is currently at work on a redesign of the project report system.

RECOMMENDATION 21.

The COV sees postdoctoral training as an efficient manner in which to meet many Agency goals. The Bio directorate currently funds 30-40 postdocs a year at a relatively low cost, similar, for instance, to the cost of a single FIBR award. The COV recommends that serious consideration be given to expansion of postdoctoral fellowship programs.

RESPONSE:

Currently, all BIO postdoctoral fellowship programs are directorate-wide and focused on specific themes. As part of its annual planning process, BIO examines its postdoctoral fellowship portfolio. During that process, MCB will present the suggestion of the COV.

RECOMMENDATION 22.

Program Officers are increasingly burdened with clerical work that used to be undertaken by clerical staff. This appears to be a direct result of the move from paper to electronic media, and the fact that only one person is able to make changes to an individual file. While we recognize the difficulties inherent in allowing multi-user access to electronic records, allowing limited access by clerical staff for specific functions would shift some of the clerical burdens off the POs, allowing them to focus their limited time on work that requires their expertise and that only they can do.

RESPONSE:

As discussed above, the burden placed upon Program Directors by the design of eJ and related eJ issues have been recognized and are being addressed at the Foundation level.

RECOMMENDATION 23.

With flat budgets, there is clearly a conflict between sustaining programs that handle unsolicited proposals and the cross-directorate programs now housed in the virtual Emerging Frontiers division. It is clear from our analysis that there are plenty of exciting "emerging frontier-like" projects within each cluster. Faced with a decision on where to direct the dollars, we feel strongly that initiation of new programs at the expense of the existing programs should only be undertaken if the budget climate improves.

RESPONSE:

BIO notes that decisions about allocation of resources among various priorities must always be considered very carefully. We understand that this is particularly important in a flat budget environment.

RECOMMENDATION 24.

First and foremost, the materials must be made available to the committee members well in advance of the COV meeting. ..We would have appreciated receiving the charge to the committee and access to the web site at least two weeks ahead of the meeting. An opportunity to hold a conference call to discuss the format of the meeting and the nature of the documents would also be helpful. We appreciate the enormous amount of work by staff to amass all the data required for the COV review. We would have all benefited from more time to familiarize ourselves with the COV database and to absorb all the information in the self-study and other documents. We also would have appreciated having printers available in the meeting room.

RESPONSE:

Based on the COV's suggestions, MCB has undertaken a review of how the process might be improved next time and has produced a list of suggestions for the next MCB COV. MCB is also providing this list to the Directorate to help with COVs in other Divisions.

RECOMMENDATION 25.

We find the report template to be repetitive and constraining. Many of the questions were confusing. We did like the ejackets and found them easy to use. Better database search functionality would facilitate analysis of NSF's success at achieving key aims and objectives.

RESPONSE:

The COV report template is updated annually based on suggestions made by COVs. MCB will ensure that the recommendations of the MCB COV are forwarded to the NSF offices in charge of this activity.

RECOMMENDATION 26.

Many of the issues raised by the last COV have not been addressed, although we recognize that some of these cannot be fixed in the current budget climate. Time to decision, duration and amount of awards have not changed significantly. We appreciate that budget cuts have not been passed along to PIs (i.e. budgets have not gone down for those few grants that are being awarded).

RESPONSE:

Using the resources available to it, MCB will continue to strive to address the issues noted by the last and this current COV with respect to time to decision and award size and duration. The most important change since the last COV is the addition of a new permanent program officer in 2002.