

**Directorate for Biological Sciences
National Science Foundation**

Response to the
Committee of Visitors Report
Division of Molecular and Cellular Biosciences
(FY 2014-2017)

The Directorate for the Biological Sciences (BIO) and the Division of Molecular and Cellular Biosciences (MCB) appreciate the hard work, insightful comments, and constructive recommendations of the Committee of Visitors (COV) in their assessment of the review processes and portfolio management in MCB during FY 2014-2017. After receiving the COV Report, the Division held a series of meetings to discuss its contents and to develop an implementation strategy for addressing the COV recommendations. This document contains the BIO response to specific recommendations¹ made by the committee in its report.

General Recommendations

- 1. The COV hopes that NSF will recognize the high-performing nature of the MCB team and allow them the flexibility to grow, promote, and retain their staff as needed to further enhance and expand their impact on the community.***

Response:

BIO agrees that the quality and morale of staff are essential to successfully accomplishing the mission of the Division, and will continue professional development activities to ensure that the staff have opportunities to grow. These activities include a professional development course developed by the MCB Operations Manager, internal and external training offered by the NSF Academy, detail opportunities, and tuition support for graduate education. In addition, the Division will utilize existing mechanisms at NSF to reward excellence and strive to find creative (and individualized) mechanisms to recognize the accomplishments of staff at all levels.

- 2. We encourage NSF to take advantage of the fact that MCB, with its emphasis on predictive and quantitative understanding of the atoms and molecules of life, is a natural place for integration of cross-disciplinary studies among Directorates and other agencies. MCB is uniquely positioned to act as a central hub for the Rules of Life initiative and to organize research activities across length scales (atoms, molecules, through to organisms). We further recommend that MCB consider a broader approach to define, highlight, and communicate their achievements.***

Response:

BIO acknowledges that MCB is well-poised to lead in supporting interdisciplinary research at the intersection of biological, physical, computational sciences and engineering. MCB plays a key role in foundation-wide Understanding the Rules of Life activities and will continue to emphasize and incentivize interdisciplinary research, via cofunding from Division reserves. The Division has begun participating in Quantum Leap, one of the NSF Big Ideas, through support of activities in quantum biology. MCB will continue to work with partners

¹ The COV Report summarized the major recommendations in the executive summary as well as additional recommendations in the body of the report. The two sets of recommendations are largely, but not completely, overlapping. Our responses are organized to first address the recommendations in the executive summary and then to address the 'other recommendations' that were made in the templated and other sections of the Report.

across the Foundation to strategically invest in areas of science that will have unique impact and benefit the Nation. MCB will work to expand its external partnerships to leverage resources in support of its mission. In addition to foundation-wide integration, MCB also actively participates in co-review and other activities within BIO to integrate MCB science into the sciences of the other divisions.

The Division recognizes the value of more effectively highlighting and communicating its achievements. The Division will work with the Directorate Communications Officer and the NSF Office of Legislative and Public Affairs to develop a strategic communications plan that takes advantage of the Division Blog as well as other media to better tell the story of the impact of MCB support of science.

- 3. We recommend that adequate resources and procedures be put in place to implement this change [the move to “no-deadline” proposal submissions], and evaluate its impact. We also recommend that the impact of the potential cap on annual submissions be well-vetted prior to implementation.***

Response:

BIO thanks the COV for their thoughts on implementation of the no-deadline submission process. An initial cap on proposal submissions by the same PI was removed after the first three months. BIO is committed to monitoring the impacts of the no-deadline submission process on the review process and award outcomes, and is doing so in conjunction with a subcommittee of the BIO Advisory Committee.

- 4. MCB should consider establishing a more standard approach to the presentation of ad-hoc reviews during the panel discussion (even if in complete concurrence with the panelists), which is a practice that several program directors already follow. MCB should consider adjustments to the proposal evaluation form on Fastlane that would more directly address the review criteria to reduce inconsistencies among reviews. Finally, we recommend that MCB consider inviting more reviewers from outside of academia.***

Response:

The Division acknowledges that consideration of ad-hoc reviews during panels is not uniform. To address this inconsistency, the Division will revise standard operating procedures and provide “just-in-time” training for Program Directors to articulate best practices for addressing ad-hoc reviews. The instructions to panelists will be revised, including both the written and video instructions provided in advance of the panel meeting and the oral instructions provided at the start of the panel, to ensure that panelists understand their responsibility to present the ad-hoc reviews during the panel.

Suggestions will be provided to the Division of Information Services (DIS) to update Fastlane to better prompt reviewers to address review criteria. In addition, instructions from the Division to reviewers will be updated, and reviewers will be encouraged to watch the NSF orientation video, “The Art and Science of Reviewing Proposals,” <https://tipsforreviewers.nsf.gov>. Training for Program Directors will be modified to include more emphasis on their responsibility to provide good guidance to panelists on writing quality reviews (and, where warranted, to provide feedback to reviewers prior to the panel to improve the quality of their reviews). Finally, a new Blog post will be developed that addresses how to write a good review.

The Division is open to expanding its reviewer pool and appreciates the suggestion to include scientists in the private sector. The Division will consult with other Divisions, such as the Division of Industrial Innovation and Partnerships, to help expand its pool of reviewers. The Division will also task staff members to work with Program Directors to help expand the reviewer pool by using the new reviewer search tools being provided by DIS.

- 5. We recommend that MCB receive additional resources for staffing and programmatic purposes to lead important initiatives effectively. Such an investment will promote the progress of molecular and cellular biosciences, and advance the national health, prosperity and welfare.**

Response:

BIO is acutely aware of the impact on workload of the development and implementation of new initiatives. BIO reviews annually each Division's staffing plan and resource needs and adjusts allocations as necessary. To ensure that MCB can be more proactive in shaping the future rather than be reactive to the demands of the moment, the Division will institute a series of strategic scientific events whereby time is dedicated to thoughtful consideration of future scientific directions.

- 6. We recommend evaluating the merits and drawbacks of various scenarios involving rotators and permanent staff in all MCB positions, including leadership. As part of that process, it would be wise to solicit input, and share perspectives, from all of the MCB and relevant BIO staff.**

Response:

BIO is committed to maintaining an even balance of permanent and rotating Program Directors in each of its Divisions. This mixture of permanent and rotator staff provides continuity in staffing while also allowing for the benefits of rotators who may have expertise in an emerging area and who are closely connected to the science community. MCB will engage all Division staff in a discussion of strategic staffing plans during one of their retreats.

As noted by the COV, the decision to staff a Division Director or Deputy Division Director as permanent or rotator is made at the level of Directorate and Foundation leadership. However, BIO has a tradition of engaging all Division and Directorate staff in the recruitment and selection of new Division leadership. Furthermore, the Division, Directorate, and NSF Academy support current leaders through training and mentoring and plan for succession through development of a cadre of potential future leaders. NSF holds internal training for new leaders through the Executive Training Program and provides resources, such as executive coaching, for existing leaders. Future leaders can also benefit from the NSF Leadership Development Program, and Office of Personnel Management courses such as "Leadership for a Democratic Society" at the Federal Executive Institute.

- 7. The COV discussed that some demographics of individuals are less resilient in the face of rejection. We suggest an exploration of tailored methods for outreach to PIs as follow-up to rejection to encourage discussion about ways to submit a more competitive proposal.**

Response:

Recent publications suggest that women and underrepresented minorities may be less resilient to rejection. However, pilot data collected by MCB suggest that women PIs who receive declines from MCB are more proactive in seeking feedback. Given this apparent contradiction, prior to developing an outreach plan to target a specific community, more data need to be collected to identify which MCB communities are less resilient in the face of rejection and how best to reach those communities. To that end, MCB will review its own data on resubmission after proposal declination and subsequently develop evidence-based outreach programs to support "less resilient" populations.

8. MCB should develop sustainable and scalable methods for career development [of graduate students] to support core competencies, career exploration, and career-specific skills.

Response:

The low response rate from the MCB PI community to the availability of supplements to promote graduate student preparedness has prompted MCB to consider alternative strategies for achieving this goal. A working group within MCB will evaluate the recent NASEM report, as well as the success of programs that have been launched in other parts of the Foundation (such as INTERN, [NSF 18-102](#), a supplemental funding opportunity to support non-academic research internships for graduate students), to consider how MCB-originated mechanisms could complement ongoing programs in other Directorates and support graduate student preparedness for workforce entry.

Other recommendations

Additional suggestions, as made in the templated sections of the COV report, and responses follow.

- *If some of the additional information in the review analysis could be provided to the PI, it would help to ensure transparency in the funding decision. However, the COV notes that some of this information might be provided in one-on-one conversations with the PI.*

Response:

MCB provides significant feedback to PIs via emails and phone conversations. The Division will provide “just in time” training to remind Program Directors to document these emails and conversations in eJacket.

- *There is some room for improvement on panelist representation. The fractions of panelists from MSIs and PUIs were lower than the fractions of proposals coming from these institutions. We recommend that MCB explore ways to achieve a panel composition that more closely aligns with submissions.*

Response:

The Division will analyze panelist demographics and make every effort to recruit panelists from every demographic.

- *MCB may wish to note Emerging Areas for education as well as for science in its Post-Panel reports.*

Response:

The Division appreciates this suggestion and will implement it at the next post-panel debriefing.

- *We encourage MCB to continue to use metric-based procedures and their experience to identify other projects with transformative potential. MCB has a number of funding mechanisms to rapidly approve funding of projects (with review by two Program Directors and the Deputy Division Director) including the EAGER and INSPIRE [RAISE] programs. It is imperative that MCB Program Program Directors continue to actively engage the community in emerging topics of interest, a task that may get increasingly more challenging with the transition to “no deadline” submissions.*

Response:

The Division agrees and will continue to engage with the community at workshops, outreach visits, professional conferences and the like.

- *The COV noted concern regarding the persistent low success rate from some states. MCB is encouraged to investigate this discrepancy and to develop means to address any issues.*

Response:

In the Self Study, the Division identified a low success rate in some states and the potential correlation between proposal submission, awards, panelist recruitment and outreach visits to certain geographic regions. The Division will do a careful analysis of the data, and if the correlation proves substantive, then will develop a strategy to do targeted outreach and panelist recruitment from states where proposal submissions and success rates are low. MCB will coordinate this effort with the EPSCoR program in the Office of Integrative Activities. A Program Analyst has been assigned to work with MCB Program Directors and Leadership with the primary responsibility of developing and implementing targeted outreach activities that are scalable and sustainable, and suitable for different “groups of concern” or underserved populations.

- *To accommodate gender-fluid people, an underrepresented and growing group of scientists, NSF could provide additional gender identity options (representative info available at <https://registrar.ucsc.edu/gender-identity/index.html>) along with “M” or “F” for gender selection.*

Response:

The Division will pass this suggestion on to the appropriate entity at NSF.

- *The COV would appreciate an opportunity for a conversation with the NSF Director at the conclusion of the process.*

Response:

The Division will pass this suggestion on to NSF leadership.