

National Science Foundation  
Directorate for Biological Sciences

**BIO Advisory Committee Meeting (Virtual)**  
**June 27, 2013**  
**NSF Stafford I, Room 687**

**Summary Minutes**

**BIO AC Members in Attendance:**

Dr. José Onuchic, Chair	Dr. Jonas S. Almeida
Dr. David J. Asai	Dr. Katherine L. Gross
Dr. Hopi Hoekstra	Dr. Linda Hyman
Dr. Gaetano Montelione	Dr. Wendy Raymond, CEOSE Liaison

**BIO AC Members not in Attendance:** Drs. Carol Brewer, David Burgess, Sean Decatur, Nalini N. Nadkarni, Brett Tyler and Peter Wyse Jackson

Dr. Charles Liarakos, Senior Policy Advisor for the Directorate for Biological Sciences reviewed the meeting logistics and agenda with the participants.

Dr. Jose Onuchic, Advisory Committee chair, convened the meeting by welcoming advisory committee members, NSF staff and guests and requested introductions by the meeting attendees. The minutes from the September 2012 Bio AC meeting were approved unanimously.

**BIO FY 2014 Budget Request - Dr. John Wingfield, Assistant Director**

Dr. Wingfield summarized the NSF FY14 Budget Request and discussed the potential impact of sequestration on the research supported by the Biology Directorate. Major investments built around the Five Grand Challenges for 21<sup>st</sup> Century Biology include neuroscience and the brain, Research at the Intersection of Biology, Math & Physical Sciences and Engineering (BIOMaPS), Cyberinfrastructure for the 21<sup>st</sup> century (CIF21), and Science, Engineering and Education for Sustainability (SEES). Additional BIO priorities include Strategic Integration of the Biological Sciences (SIBS), Partnerships in Undergraduate Life Sciences Education (PULSE), the National Ecological Observatory Network (NEON), and Brain Research through Advancing Innovative Neurotechnologies (BRAIN). Dr. Wingfield provided background for the BRAIN initiative and the current efforts within NSF and in partnership with other federal agencies.

The advisory committee discussed the impact on the Biology Directorate budget of sequestration, computational and data storage needs for CGIs and for neuroscience research, integration of BRAIN initiative activities within NSF and with other federal agencies, inclusion of BIOMaPS and BRAIN in the budget request, and the impending start of NEON operations. *The BIO AC requested more information about the exciting things happening in BioMAPs (portfolio review) at the next meeting.*

**NEON construction and activation update – Dr. Elizabeth Blood**

Dr. Blood provided an update on the National Ecological Observatory Network. NEON has entered its 2<sup>nd</sup> full year of construction and has 10 sites in which civil construction has been completed. Expectations for 2013

include installation of instruments at 3 sites; biological sampling at 6 sites; AOP fly over of 6 sites; and data streaming late in the year. Dr. Blood also reported that a 2013 White House Champions of Change award was given to Sandra Henderson in recognition of her accomplishments for NEON Citizen Science.

The advisory committee discussed the standard set of NEON measurements, evaluation and review of NEON operations, the potential of NEON as a model for data dissemination and accessibility, the kinds of experiments enabled by NEON, and expanding information about NEON to other research communities.

**NSF plans for access to federally funded published research and digital scientific data as per Office of Science and Technology Policy (OSTP) memo (Feb 22, 2013), Office of Management and Budget (OMB) memo (May 9, 2013) and Executive Order (EO) of the President (May 9, 2013) – Dr. Jane Silverthorne**  
Dr. Silverthorne summarized the OSTP memo and EO of the President and their requirements as they pertain to NSF. The OSTP stipulates expanded public access to the results of taxpayer-funded research. Agency plans for expanded access will include both publications and data, will be developed within the existing budget and published on agency websites following review by OSTP and OMB. Dr. Silverthorne described establishment of a NSF steering committee and working groups to get input from Directorates as well as interagency coordination efforts consistent with OSTP guidance. The OSTP memo definition of data is the same as OMB circular A-110; however, implementation will fit the more expanded NSF definition of data.

The advisory committee discussed linking and indexing data, the similarity between NIH practices and NSF, the concern that separate grants to purchase required architecture and to provide the data to the community will be needed, and how much of the onus will be put on small research grants.

#### **Analysis of BIO proposal Data Management Plans (DMP) – Drs. Melissa Cragin and Tony Cak**

Drs. Cak and Cragin reported on their analysis of 6,633 DMPs submitted to BIO between 1-17-11 and 11-21-12. The types of data described in the plans and location of data deposition was investigated. In a qualitative sample of DMPs, they found that only 14% used the recommended structure, 35% used some other structure, and 52% used no defined structure. They also discovered that PIs wanted control over who would get the information and when it would be available. Methods of data dissemination ranged from publications to managed databases. Examination of data resource use (online repositories) revealed a wide range of diversity with 7 main clusters of repositories being used by BIO PIs.

The advisory committee commended Drs. Cragin and Cak for their analysis, and discussed the potential use of different repositories to affect policy, the use of the DMPs in the BIO response to OSTP, the opportunity for NSF to use repositories to establish standards, journals and societies with associated resources, and the availability of this data to grant writers.

#### **Cyber Infrastructure for the Life Sciences (CILS) Strategic Plan – Drs. Craig Stewart and Peter McCartney**

Dr. Stewart explained that building cyberinfrastructure (CI) is about applying best practices to building CI that works for the end user. He described the history of CI at NSF and the BIO Directorate, the BIO FY12 investments in CI, and the mapping of those investments to the scope, scale, and stage of CI development. Dr. Stewart summarized the four strategic goals of the CILS strategic plan and emphasized that, while there was no new money associated with the plan, it attempted to leverage existing programs and funding to increase BIO cyberinfrastructure and get a larger benefit from those programs.

There were no questions from the Advisory Committee. Dr. Stewart requested an endorsement of the strategic plan by the Advisory Committee and Dr. Onuchic asked advisory committee members to vote by email. Dr. Liarakos expressed appreciation to the Data Management subcommittee for their work with BIO on the plan.

#### **MPS AC Meeting, Data report – Dr. Jonas Almeida**

Dr. Almeida provided an update from Mathematical and Physical Sciences Advisory Committee and the development of the StatSNSF Subcommittee with Iain Johnston as co-chair. The task of the subcommittee is to examine structure of support for statistical sciences within NSF and to provide recommendations for NSF to consider. Dr. Almeida outlined a number of topics including the transformative edge of moving to interdisciplinary data science, the “huge” economic stakes involved, the evolving relationship between statistics and mathematical sciences, the logistic and training challenges in taking science to where the data is, the workforce development to include more immersive learning opportunities, and the data office at NSF.

The advisory committee discussed large data sets for different scientific communities, training of biostatisticians, and the need for a more complete description of the data office.

#### **NSF Strategic Plan – Dr. Alan Blatecky, Division of Advanced Cyberinfrastructure**

Dr. Blatecky summarized the requirements of for strategic plan as described in OMB circular A-11, and the process and timeline for NSF to meet those requirements. The plan, based on NSF’s Mission, Vision, and strategic goals, has been submitted to OMB for review and comment. Dr. Blatecky outlined the strategic objectives underlining each strategic goal. He then asked for the committee’s thoughts or comments on the objectives.

The advisory committee discussed the agency’s use of the plan, further development of the objectives, investments and partnerships, what is meant by societal needs and PI involvement in the implementation of the plan.

#### **Discussion of NSF Working Group Recommendations for the Graduate Research Fellowship (GRF) Program – Dr. Judy Verbeke**

Dr. Verbeke presented the status of the oldest standing program at NSF: the Graduate Research Fellowship Program. She began with the Foundation’s current investments in graduate students: 80% Research Assistantships (RA), 13% fellowships, and 7% traineeships and the goals of the GRF program. 18,000 GRF applications are received and 2000 awards are made each year. Dr. Verbeke described the characteristics of a fellowship, the distribution of applications across disciplines at NSF, and the percentage of awards made to self-identified members of under-represented groups. The GRF program is also providing opportunities for international experience in partnership with 17 other countries.

The advisory committee discussed the timing of the application in academic career, options for a non-traditional track, professional development, an accelerated PhD program, number of fellowships versus RA, salary as an incentive to the institution, and under-represented groups.

#### **CAREER Program – Drs. Theresa Maldonado and Anita La Salle**

Drs. Maldonado and La Salle, who co-chair of the NSF CAREER Working Group, described the program’s history and some current concerns within NSF as a new CAREER solicitation is being developed. They

reported results from a number of internal and external focus groups and sought comments and suggestions from the BIO AC on both the BIO CAREER program and the future of the NSF-wide CAREER program.

The advisory committee had questions and comments about several aspects of the CAREER program including:

- Importance of the program,
- Prestigious nature of the award,
- Funding Rate,
- Performance of awardees,
- Education component importance,
- Inclusion of educational training as a part of faculty professional development, and
- Duration of the award.

### **Update and discussion of Integrated Organismal Systems (IOS) and Division of Environmental Biology (DEB) pre-proposal process – Drs. Jane Silverthorne and Maureen Kearney**

Dr. Silverthorne provided the background for the change to the proposal submission process in IOS and DEB. She described some desirable effects such as a more manageable workload as well as efforts by both divisions to monitor areas of concern through data collection and PI and panel surveys. Currently monitoring includes: the number of invited full proposals, the number of pre-proposals and proposals submitted by RUI and MSI PIs, beginning investigators, female PIs and PIs in EPSCoR states as well as the funding rate of invitees. Dr. Kearney outlined the changes in DEB, presented the questions and results from some of the panel and PI surveys, and noted the improved communication with the scientific community by both DEB and IOS. She described some concerns from the DEB scientific community, including the perceived inflexibility of the once per year submission deadline and that some highly ranked full proposals were not being funded.

The advisory committee discussed funding rate, submission frequency and other issues associated with the new process as well as differences between virtual and in-person panels.

### **Meeting with Dr. Cora Marrett, Acting Director, National Science Foundation**

The advisory committee prepared for Dr. Marrett's visit by developing a potential list of topics for discussion.

Dr. Marrett began by expressing gratitude to the committee for its service to BIO. The topics discussed included:

- Change in philosophy with the change of director;
- Research initiatives that are driven by the communities, such as BioMAPs
- The proposed High Quality Research Act;
- Identification of "societal needs for research and education" and how NSF plans to address the needs
- Future NSF and the intended move;
- Community concerns about a perceived emphasis on collaborative and infrastructure awards at the expense of single investigator grants and the appropriate dynamics of the mix
- Big data concerns and NSF's role in addressing big data issues.

Dr. Onuchic thanked everyone for their participation and commitment and adjourned the meeting.