

National Science Foundation  
Directorate for Biological Sciences

**Advisory Committee Meeting**  
**April 25-26, 2017**  
**Room 1235**

**Summary Minutes**

**BIO Advisory Committee Members in Attendance:**

Dr. Katherine L. Gross, Chair	Dr. Wilfredo Colón	Dr. Greg Florant
Dr. Steve A. N. Goldstein	Dr. Stephanie Hampton	Dr. Susan Marqusee (4/25)
Dr. Richard McCombie	Dr. Randy J. Nelson	Dr. Dominic Poccia
Dr. Michael Purugganan	Dr. Stacia A. Sower	Dr. Joan E. Strassmann
Dr. Paul E. Turner		

**BIO Advisory Committee Members attending via telephone:**

Dr. Hannah V. Carey

**BIO AC Members not in attendance:**

Drs. Elizabeth A. Kellogg and Margaret McFall-Ngai

**Tuesday, April 25, 2017**

Dr. Katherine L. Gross, Advisory Committee Chair, convened the meeting at 8:30AM by welcoming the Advisory Committee (AC) members, National Science Foundation (NSF) staff and guests, and requesting introductions.

The summary minutes from the October 2016 BIO AC meeting were approved.

Dr. Gross reviewed the meeting agenda. Dr. Brent Miller, Science Advisor of the Directorate for Biological Sciences (BIO), reviewed the Advisory Committee Charter and the Federal Advisory Committee Act.

**BIO Update – Dr. James Olds, Assistant Director, BIO Directorate**

Dr. James Olds, Assistant Director of the Directorate for Biological Sciences (BIO), provided an update on the BIO budget including the FY 2017 continuing resolution, the FY 2018 request currently being drafted and the upcoming FY 2019 budget preparation.

Dr. Olds also provided an update on the Rules of Life. He informed the BIO AC that BIO will continue to use the Rules of Life as a framing device for its spectrum of research funding, but indicated that foundation-wide activity for Rules of Life will depend on the budget. He highlighted several promising intersections between the Rules of Life theme and broader NSF priority areas, particularly promoting convergence science and investing in large-scope, innovative research questions via NSF 2026: Seeding Innovation.

Dr. Olds conveyed his appreciation for the BIO AC's Leading Edge presentations at the previous AC meeting, and informed the AC that internal Leading Edge activity has been undertaken as well. Senior managers within BIO have been preparing for FY 2018 budget, including evaluating potential future workloads and funding levels. He also reminded the AC that this meeting will be the last in the NSF Arlington office, as the NSF will move to its new headquarters in Alexandria in September.

**NEON Update – Dr. James Olds, Assistant Director, BIO Directorate**

Dr. Olds updated the AC on the status of NEON under the new management of Battelle Memorial Institute in the last year. He reviewed the availability and current utilization of NEON data products, construction status of observatory sites and sampling locations, the expected timeline for the commencement of operations in the fully commissioned instruments, and a possible future collaboration with the Department of Energy. Dr. Olds also explained the evolution of the expected deliveries of this project since its initial conception in 2003, and indicated that this evolution was expected to continue over the next decade. The AC showed its approval of the current construction progress and discussed the possibility of future collaborations with other agencies and international partnering efforts.

**AC Leading Edge Portfolio Analysis – Dr. Brent Miller**

Dr. Brent Miller, Science Advisor for BIO, presented the results of a portfolio analysis assessing current NSF activity in the areas covered by the Leading Edge topics discussed in the previous AC meeting. Topics assessed covered:

1. Circadian, seasonal, daily rhythms
2. Protein structure, function, and stability
3. Genome evolution, mapping, and genome to phenome
4. Microbiome

**CSBR/IDBR Update – Dr. Muriel Poston, Division Director of the Division of Biological Infrastructure (DBI)**

Dr. Muriel Poston presented two five-year retrospective evaluations on two DBI programs: the Collections in Support of Biological Research (CSBR) program and Instrument Development for Biological Research (IDBR). She informed the AC that though it was not included in the FY 2017 budget, the CSBR program will return for FY 2018. Given significant overlap with the Directorate for Engineering in making tools and technology for disciplines in the Division of Molecular and Cellular Biosciences (MCB), the evaluation recommends IDBR consider ways to refocus the program to better serve the wide range of biological disciplines.

**Preliminary Proposal Pilot Review Update – Dr. Alan Tessier, Deputy Division Director of the Division of Environmental Biology (DEB)**

Dr. Alan Tessier provided an update on the assessment of changes to the preliminary proposal process in DEB and the Division of Integrative Organismal Systems (IOS). DEB and IOS were the two divisions to pilot the process, which sought to reduce the burden on proposal reviewers and panelists. Though the new process was found to improve and stabilize the funding rate of full proposals and reduced the burden on institutions and reviews, the AC voiced concern over certain findings of the report, including the potential narrowing scope of research, principal investigator

and NSF staff dissatisfaction over increased workload, and fewer opportunities to submit funding proposals.

### **Partnerships: Supporting Rules of Life Introduction**

The focus of this session centered around partnerships that would support Rules of Life. Dr. Olds informed the AC that BIO has formal international collaborations within Australia, Canada, the United Kingdom, Israel and Japan.

### **Partnerships: United States Department of Agriculture (USDA) – *National Institute of Food and Agriculture (NIFA)/BIO – Dr. Parag Chitnis, Deputy Director of USDA NIFA Institute of Food Production and Sustainability (IFPS)***

Dr. Parag Chitnis, Deputy Director of NIFA, gave an overview of the NIFA-NSF collaboration. Dr. Chitnis provided background on NIFA's work, budgeting process and programs. He described the strong history of partnership between NIFA and BIO, including the Ecology and Evolution of Infectious Diseases (EEID) program and the Plant Biotic Interactions collaboration with IOS.

### **Partnerships: National Aeronautics and Space Administration (NASA) – Ideas Lab – *Dr. Mary Voytek, Senior Scientists for Astrobiology of NASA Science Mission Directorate, by phone***

Dr. Mary Voytek, Senior Scientist for Astrobiology of the NASA Science Mission Directorate, provided an introduction to NASA astrobiology, including key research questions, funding priorities and interagency partnerships. Dr. Voytek presented the Origin of Life Ideas Lab partnership with NSF, describing positive impacts and limitations of the ideas lab in encouraging transdisciplinary collaboration. Dr. Charles Liarakos, Senior Advisor of BIO, noted that this type of activity was ideal for new and high risk interdisciplinary research.

### **Partnerships: RCUK-NSF/BBSRC – *Dr. Stephen Elsby, Director of the Research Councils United Kingdom (RCUK) USA team***

Dr. Stephen Elsby, Director of the RCUK office in Washington, DC, introduced RCUK, including its structure, function and impending restructuring. He described BIO and RCUK's long-standing partnership and presented a summary of the results of two models of the NSF-RCUK collaboration, as well as lessons learned from the collaborations.

### **Partnerships: NIH – NIH/FIC/EEID – *Dr. Joshua Rosenthal, Senior Scientist at the Division of International Epidemiology and Population Studies at the National Institutes of Health (NIH)Fogarty International Center (FIC)***

Dr. Joshua Rosenthal of the Fogarty International Center at the National Institutes of Health presented NSF/FIC-NSF/BIO collaborations, including the International Cooperative Biodiversity Groups (ICBG) and EEID. He described the benefits of such partnerships, including ability to expand investigator opportunity, overcome budgeting issues and learn from partner's systems and experiences.

### **Partnerships: Wrap-up discussion with guests and cognizant POs**

The AC discussed the ideas lab process and its results extensively. Dr. Liarakos briefly reiterated the process of an ideas lab, including the method in which participants are selected, the facilitator's process to prepare participants to keep an open mind and bring about new creative ideas.

Dr. Rosenthal pointed out several methods of initiating interagency contacts for potential future collaboration, including participation in an interagency working group and attendance at scientific meetings.

The AC also discussed ways to change the culture of the younger generation of scientists in order to foster acceptance of new ideas like the ideas lab. Dr. McCombie presented the NIH's K99 award – a Career/Research Transition award program supporting advanced postdoctoral research scientists – as a model. Dr. Marqusee noted that communication is a huge barrier to the formation of successful, productive collaboration, and suggested that students need to be trained to effectively communicate their research with researchers outside their field.

### **Wrap-up**

Dr. Gross acknowledged the end of Dr. Susan Marqusee's term on the AC and thanked her for her service. Dr. Olds presented Dr. Marqusee with a Certificate of Appreciation.

The Chair adjourned the meeting at 5:06PM.

### **Wednesday, April 26<sup>th</sup>, 2017**

Dr. Katherine L. Gross, Advisory Meeting Chair, reconvened the meeting at 9:30AM.

### **Visit with Dr. Joan Ferrini-Mundy, Acting Chief Operating Officer, NSF**

Dr. Gross welcomed the Chief Operating Officer and the members introduced themselves. Brian Stone, Chief of Staff of the Office of the Director, joined Dr. Ferrini-Mundy.

Dr. Ferrini-Mundy and the AC discussed: the need for the NSF to alert the community to research integrity issues, the value placed upon collaboration at the NSF, ways in which the NSF and educators at all educational levels can better communicate the Rules of Life and the value of science to the community, the need to encourage faculty in universities to discuss their students' career opportunities more broadly, and barriers to and opportunities for NSF partnership with other organizations.

### **Discussion - Moving BIO Forward**

The AC highlighted three areas that BIO should be cognizant of moving forward:

- Urgency of science communication to the public
- Training required for versatile Ph.D. students
- Effective utilization of social media.

The AC discussed training or information they believe incoming committee members would find useful based on their experiences on the AC.

### **Wrap-Up**

Dr. Gross thanked the organizers and the presenters from the AC meeting. Dr. Olds thanked Dr. Miller and the staff for organizing the meeting. Dr. Olds recognized and thanked Dr. Charles Liarakos, who was retiring in April 2017, for his dedicated service to the National Science Foundation. Dr. Olds also acknowledged that the appointments of Drs. Gross, Colón, Florant,

Goldstein, Nelson, Purugganan, Sower, Strassmann, and Turner to the AC end in April and September 2017, and thanked them for their service. Certificates of Appreciation were presented to the members by Dr. Olds.

The Chair adjourned the meeting at 11:10AM.