

National Science Foundation
Directorate for Biological Sciences

**Advisory Committee Meeting
September 19-20, 2019
Room W2210/20**

Summary Minutes

BIO Advisory Committee Members in Attendance:

Dr. Carla Cáceres (Chair)

Dr. Thomas Daniel

Dr. Michael Ibba

Dr. Richard Kuhn

Dr. Lucinda McDade

Dr. Gretchen North

Dr. Paul Turner

Dr. Maria Pelligrini

BIO Advisory Committee Members Attending via Teleconference:

Dr. Barbara Beltz

Dr. Suzanne Barbour

Dr. Benjamin Garcia

Dr. Susan Gregurick

Dr. Diane Pataki

Thursday, September 19, 2019

Dr. Joanne Tornow, National Science Foundation (NSF) Assistant Director for the Biological Sciences (BIO), convened the meeting at 9:00 AM by welcoming the Advisory Committee (AC) members, NSF staff, and guests.

Dr. Brent Miller, BIO Science Advisor, provided the AC members with an overview reminder of the Federal Advisory Committee Act (FACA) rules.

Dr. Carla Cáceres, Advisory Committee Chair, led the introduction of the AC members. Dr. Tornow led introductions of the BIO senior leadership present at the meeting.

The AC unanimously approved the May 2019 AC meeting minutes without changes.

Dr. Cáceres provided an overview of AC meeting objectives and scope, and reviewed the meeting agenda.

BIO Directorate Update – *Dr. Joanne Tornow, Assistant Director for Biological Sciences*

Dr. Joanne Tornow, Assistant Director for Biological Sciences, provided an update on the state of the BIO Directorate. Topics covered included BIO senior leadership changes; an overview of the FY 2021 Administration Research and Development Budget Priorities, an FY 2020 budget update; update on proposal submissions under the shift to no deadlines; and programmatic updates. Dr. Tornow also posed questions for the AC to consider in advance of the joint session with the Advisory Committee for Cyberinfrastructure (ACCI).

Programmatic Briefing and Discussion – *Dr. Simon Malcomber, Program Director, Division of Environmental Biology; Dr. Charles Cunningham, Program Director, Division of Molecular and Cellular Biosciences; Dr. Karen Cone, Program Director, Division of Molecular and Cellular Biosciences, Dr. Michael Ibba, AC Member*

BIO Program Directors Dr. Simon Malcomber (DEB) Dr. Charles Cunningham (MCB) and Dr. Karen Cone (MCB) provided an overview on Understanding the Rules of Life (URoL) activities in the BIO Directorate, including the URoL: Epigenetics solicitation, the URoL: Building a Synthetic Cell solicitation, and the Rules of Life track of the core programs solicitations. Dr. Malcomber also updated the AC on BIO's Reintegrating Biology activities, including the recent virtual and in-person town halls, and the reintegrating biology workshops. AC members present at the town hall described the activities from a participant's perspective, and provided BIO senior leaders with feedback.

AC member Dr. Michael Ibba led a discussion on the opportunities and challenges for reintegrating across the subdisciplines of biology. Topics highlighted by AC members included a discussion of ways in which ethicists are involved in activities, acceptance rates for RoL proposals, mechanics of how merit review occurs in URoL and reintegrating biology activities, the extent to which other NSF directorates participate in these activities, training opportunities within these activities, and opportunities for early career researchers and those at smaller and/or minority-serving institutes to participate in these activities.

NSF Advisory Committee for Cyberinfrastructure (ACCI) Joint Session – *Dr. Amy Friedlander, Deputy Office Director, Office of Advanced Cyberinfrastructure; Dr. Thomas Daniel, AC Member; Dr. Paul Turner, AC Member*

Dr. Amy Friedlander, Deputy Office Director for the NSF Office of Advanced Cyberinfrastructure began the joint session between the BIO AC and ACCI at 11:14 AM. The goal of this session was to solicit feedback on challenges of reproducibility and replicability of computational and data sciences within the biological sciences. Dr. Friedlander led introductions of both AC members and senior NSF staff present. Dr. Friedlander briefed the BIO AC and BIO staff on the ACCI and provided an overview of the National Academy of Sciences report on reproducibility and replicability to provide context for the discussion. She posed the framing questions sent in advance to members of both ACs, covering topics such as:

- Challenges to reproducibility and replicability in the biological sciences as scales of data grow;
- Major cyberinfrastructure bottlenecks to producing reproducible and replicable results in the biological sciences, and tools, resources, workforce development, or fundamental research needed to overcome them;
- The possibility of using verification of research results as an alternative to fully replicable data outputs.

The BIO AC and ACCI members identified several areas where the needs of their fields overlap, as well as several areas where there were communication breakdowns between the fields, leading to misunderstandings of what to expect from each discipline and their respective technologies and approaches. The ACs identified training and creating open lines of communication between biologists and computer scientists and engineers as two priority areas for immediate action. The ACs recommended a joint working group be formed to begin to address these challenges, continue these conversations and ensure both communities reach a common understanding of each other's fields.

Division of Environmental Biology Committee of Visitors (COV) Report – *Dr. Lucinda McDade, AC Member*

Dr. Lucinda McDade, AC Liaison to the DEB Committee of Visitors (COV) presented summary of the COV's recent report to assess the merit review processes and practices of the preceding three to four years. The AC voted unanimously in favor of approving the DEB COV report.

Partnerships – *Dr. Nancy Sung, Science Advisor, Office of the Assistant Director for Biological Sciences; Dr. Samuel Scheiner, Program Director, Division of Environmental Biology; Dr. Michelle Elekonich, Deputy Division Director, Division of Integrative Organismal Systems; Dr. Maria Pelligrini, AC Member*

Dr. Nancy Sung, Science Advisor in the Office of the Assistant Director for Biological Sciences, briefed the AC on the current landscape of partnerships within BIO, Renewing NSF and the NSF Partnerships Agency Priority Goal activities, the types of partnerships NSF engages in, and how strategic partnerships augment NSF program activities. Program Director Dr. Samuel Scheiner (DEB) and Deputy Division Director Michelle Elekonich (IOS) provided two case studies that exemplify BIO strategic partnerships with industry and other government agencies. Maria Pelligrini, BIO AC member, led the AC in a discussion among AC members around areas they see an opportunity for partnerships to enhance BIO programs, including seed funding, applications of NSF-funded basic research, convenings, and facilitated partnerships.

OISE Briefing on Foreign Relations – Science and Security, *Rebecca Keiser, Office Head, Office of International Science and Engineering (OISE)*

Dr. Rebecca Keiser, Head of the NSF Office of International Science and Engineering (OISE) briefed the AC on science and security, particularly ongoing conversations around foreign personnel at academic institutions. She provided an overview of risks to U.S. science and security in a global research ecosystem, as well as NSF actions to ensure the integrity of federally-funded research. The AC discussed good practices that should be followed by academic researchers and that should possibly be institutionalized by the U.S. government to balance the open environment of fundamental research with the needs for national and economic security.

Committee on Equal Opportunities in Science and Engineering Update – *Dr. Suzanne Barbour, AC Liaison to NSF CEOSE*

Dr. Suzanne Barbour, BIO AC liaison to the NSF Committee on Equal Opportunities in Science and Engineering, reminded the AC of the Committee on Equal Opportunities in Science and Engineering (CEOSE) charge, and provided an update on the CEOSE June meeting and recent CEOSE activities.

Dr. Cáceres adjourned the meeting at 4:22 PM.

Friday, September 20, 2019

Dr. Cáceres reconvened the meeting at 9:00 AM.

NEON Community Engagement – Dr. Patricia Soranno, Division Director, Division of Biological Infrastructure; Dr. Stephanie Hampton, Division Director, Division of Environmental Biology

Dr. Tornow introduced the Early National Ecological Observatory Network (NEON) Science users, including Dr. Michael Dietze, Boston University; Dr. Kyla Dahlin, Michigan State University; Dr. Naupaka Zimmerman, University of San Francisco; and Dr. Jennifer Balch, University of Colorado-Boulder. Dr. Patricia Soranno, Division Director of the BIO Division of Biological Infrastructure, provided an update on NEON, including a timeline for the upcoming competition to manage NEON and an update on the search for the observatory director. Dr. Stephanie Hampton, Division Director for the BIO Division of Environmental Biology, provided an update on NEON community engagement activities, including the researcher-led NEON Science Summit in October. The NEON users each provided the AC with an overview of how they leverage NEON data and resources in their research, training and community engagement activities. Dr. Diane Pataki, BIO AC member, facilitated a discussion with the AC and NEON user panel on ways in which BIO could further help the research community in maximizing their use of NEON in areas such as fundamental scientific research, training and place-based research.

Preparation for Director’s Visit

The BIO AC identified priority topics for discussion for the Director’s visit. Dr. Cáceres assigned AC members to lead discussions on specific topics of interest.

Director’s Visit – Dr. France Córdoba, Director, NSF; Brian Stone, Chief of Staff, NSF; Dr. Fleming Crim, Chief Operating Officer, NSF

Dr. Tornow introduced NSF Director, Dr. France Córdoba, NSF Chief of Staff, Brian Stone, and NSF Chief Operating Officer Dr. Fleming Crim. Dr. Córdoba thanked the AC for their service and updated the AC on the state of the agency. The AC updated the Director on their conversations at this meeting, including their discussions around partnerships, the joint session with the ACCI and NEON community engagement. Dr. Córdoba emphasized the importance of the AC’s work to engage with the research community and other ACs, as well as that of partnerships, and that diversity and inclusion permeate all conversation in all programs and processes at NSF. Dr. Crim also emphasized the importance to the BIO AC’s joint session with the ACCI, citing the opportunities cyberinfrastructure provides for scientific collaboration, training and broadening participation.

Wrap-up and Action Items – Dr. Carla Cáceres, BIO AC Chair

Dr. Tornow requested the AC consider topics of interest for the next AC. The AC indicated they would be interested in learning more about the other ACs at NSF, the Advancing Digitization of Biological Collections program, the intersection of mathematics and biology, and open science, as well as having an opportunity to have a more extensive conversation on partnerships. Dr. Tornow indicated that BIO would provide the BIO AC with descriptions of the other ACs before the next meeting.

Dr. Tornow adjourned the meeting at 12:06 PM.