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# Meeting of the BIO Advisory Committee Summary Minutes November 7-8, 2002

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**THURSDAY, NOVEMBER 7TH**

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**Welcome and Introduction of New Member: Dr. Mary E. Clutter, Assistant Director**

Dr. Clutter welcomed the committee and introduced new members, Dr. Susan Stafford of the University of Minnesota, Dr. Mary Lou Guerinot, Dartmouth College, and Dr. Cassandra Manuelito-Kerkvliet, Dine College (Navajo Nation). Drs . Guerinot and Manuelito-Kerkvliet were unable to attend due to previous commitments.

**Remarks, Approval of Minutes: Dr. James Collins, Chair**

The April 25-26, 2002 minutes were approved by voice vote.

**FY2003 Budget: Dr. Mary E. Clutter**

Dr. Clutter reviewed the House VA-HUD Appropriations Subcommittee reports, noting that the Senate had recommended a 15% overall increase for NSF but only a 3.4% increase for BIO. The House recommended 15% for NSF overall and 15% for BIO. The timing of a conference to reconcile the differences is unclear. She discussed the virtual division, Emerging Frontiers, being established in 2003 and noted several challenges facing BIO. AC members were enthusiastic about the creation of Emerging Frontiers, noted that the 30K/yr graduate student stipend recommended by the Senate would create significant disparity between graduate students at many colleges, and encouraged BIO to move ahead in articulating a vision for Biology at NSF and become more pro-active in public relations/outreach to the public.

**NEON Update and Video: Dr. Joann Roskoski**

Dr. Roskoski briefed the committee on the current status of the NEON MREFC request, noting that both the Senate and the House had recommended not funding NEON in 2003 but without prejudice. She summarized the workshops and community activities that occurred in FY2002 and were planned for FY2003. The NEON video was well received by the Committee. During discussion, the Committee suggested that NEON be justified as a single instrument, noting that piecemeal funding would result in a non-functional research tool, but that a proof-

of-concept activity might be worthwhile to consider for FY2003. They strongly urged that system integration and cyberinfrastructure be the first priority when NEON was funded.

**Accountability: Ms. Sonya Mallinoff**

Ms. Mallinoff presented information on the two instruments, GPRA and PART, currently being used by NSF to assess its performance. Dr. Noonan then discussed the operation and outcome of the Advisory Committee for GPRA Performance Assessment, which she co-chaired. Finally, Dr. Christina Boesz, the NSF Inspector General, described the mission and activities of the Office of the Inspector General. She noted that Congress is especially interested in the process used by federal agencies to allocate resources. Her office is also undertaking a study of the COV process. Committee members were particularly interested in how the IG handles issues of misconduct in science and later engaged in a discussion about the accountability challenges presented by collaborative research.

**Environmental Research and Education: Dr. Joann Roskoski and Dr. James Collins**

Dr. Roskoski briefed the Committee on the status of the Report being prepared by the Advisory Committee for Environmental Research and Education. The report will present and recommend a suite of activities for NSF to undertake during the next ten years. January 2003 is the expected date for the rollout of the report. Dr. Collins discussed the plans of the ERE AC for promoting the report and tentative plans for a FY2005 budget request based on recommendations in the report.

**The Changing Environment at Academic Institutions: Dr. James Collins**

Dr. Collins began a discussion of the challenges facing academic institutions as they respond to the changing needs of students and researchers.

**BIO DIVISION ISSUES and PRESENTATION OF COV REPORTS**

**Division of Biological Infrastructure: Dr. Machi Dilworth**

Dr. Dilworth described the organization, mission and activities of DBI. She stated that the major challenges facing her division were how to effectively serve the rest of the Directorate and was the current divisional structure appropriate for that mission. A BIO AC member asked about technique/method development, which had been managed as a program in DBI. The member noted that since technique/method development had been mainstreamed, it appeared to be a need that was not being adequately met in BIO. Dr. John Wooley presented the Instrument-Related Activities Cluster COV report for Committee approval. He suggested that given the nature of the activities conducted by the cluster, it might be useful to rotate program directors from other divisions through its programs. This would allow them to become familiar with cluster activities, infuse new ideas into its programs, and later integrate knowledge about the cluster into the other programs they manage.

**Division of Environmental Biology: Dr. Quentin Wheeler**

Dr. Wheeler discussed the chain of transformations that turns data into knowledge and highlighted the need for DEB to establish several mechanisms for facilitating that transformation, e.g. several new centers. Dr. James Collins presented the COV report for the Ecological Studies Cluster in DEB. He noted that the report lauded the management of the activities undertaken by the cluster despite severe limitations of time, personnel, and

resources. He also highlighted that the COV members suggested that the Cluster consider ways to collaborate with new activities in other Directorates, e.g. Geobiochemistry in GEO.

#### **Division of Integrative Biology and Neurosciences: Dr. Frank Greene**

Dr. Greene presented the structure of the division and leading edge research that it supported. Dr. Leonard Krishtalka presented the COV report for the Physiology and Ethology Cluster. He reiterated that the COV members found the cluster well managed but also understaffed and with insufficient resources to ensure the health and vitality of the science fields it supported.

#### **Division of Molecular and Cellular Biosciences: Dr. Maryanna Henkart**

Dr. Henkart described the recent reorganization of the division and highlighted the unique aspects of the research it supports, especially in the areas of non-model systems and microbiology. Dr. Vicki Chandler presented the COV Division level report and noted the COV members considered that MCB was fulfilling a vital role in the federally supported research by insuring that its projects focused on the integration of research and education.

#### **Discussion with the NSF Director, Dr. Rita Colwell**

Dr. Colwell summarized the status of the NSF FY2003 request and expressed guarded optimism that NSF will receive a significant increase. However, she also noted that a long Continuing Resolution was also possible.

**FRIDAY, NOVEMBER 8TH**

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### **SUBCOMMITTEE ACTIVITIES UPDATE**

#### **Subcommittee on the Environment: Dr. Leonard Krishtalka**

Dr. Krishtalka informed the AC that Dr. Susan Stafford agreed to co-chair the subcommittee. Subsequently, he suggested two workshops for this subcommittee and welcomed other suggestions. The suggested workshops will respectively focus on cyberinfrastructure (CI) for the environment, and long-term maintenance/sustainability of informatics products generated by NSF research. It was suggested that another workshop consider the needs of maintaining other more physical long-term resources such as living stocks. There was discussion on coordinating similar efforts within NSF, at other institutions, and other federal agencies. Drs. Mellilo, Chandler and Ensley volunteered to work on this subcommittee.

#### **BIO Education Activities Update: Drs. Penny Firth and Judy Skog**

Drs. Penny Firth and Judy Skog briefed the AC on the BIO educational budget and programs. A new educational program was proposed to foster undergraduate research experiences in integrative research. The proposal was called Year of Undergraduate Research, or YOUR Biology, and would involve undergraduates in yearlong multidisciplinary and interdisciplinary research by integrating research from a variety of disciplines, for example, coupled human and natural history. The AC was enthusiastic about the presentation and the initiative because it

integrated a variety of programs in BIO, could serve as a means for more discovery for inner city kids, and provided opportunities to link NSF supported research with local communities.

**Cyberinfrastructure and Homeland Security Activities at NSF: Dr. Peter Freeman, Assistant Director, Directorate for Computer and Information Sciences and Engineering (CISE)**

Dr. Freeman briefed the AC on the history of computing infrastructure supported by NSF, goals of CISE, and current IT trends. In particular, he commented on NSF's contribution to recent Homeland Security efforts. Discussion following his opening remarks focused on the challenges and resources for long-term maintenance of environmental data, how NSF supported research that complemented or duplicated other CI research, and the most salient issues for BIO in terms of CI. The committee was concerned that any CI effort such as NEON would be outmoded by the time it was established. Dr. Freeman acknowledged the speed at which innovation was moving and the challenges that presents, yet he expressed encouragement that systems could be designed with sufficient flexibility especially by forming computational communities centered on scientific disciplines. When questioned on the CISE portfolio of research, Dr. Freeman noted that CISE attempts to push the envelope of research and not duplicate efforts in the private sector. On a more general topic the AC discussed the difficulty of encouraging the next generation of researchers given the pull of more lucrative opportunities in the private sector. Lastly, Dr. Freeman suggested that BIO focus on forming a computational community with specific emphasis on establishing protocols for curating, maintaining, validating and securing data.

**Changing Environment at Universities: Dr. James Collins**

Dr. Collins and the Committee discussed whether or not there was a need to verify investigator statements with respect to criterion two, broader impacts of the research. Some on the panel were concerned that inaccurate statements were coloring that portion of some proposals. As a result, the panel considered mechanisms to validate this information and potentially suggesting courses in the ethics of research as a requirement for NSF funding. In addition, the data associated with criterion two eventually will need to be quantified for GPRA. Lastly, the panel briefly discussed some of the implications of longer time to PhD.

**Around the Table**

Several committee members commented on NEON and how it was positively affecting the research community to organize and think in different ways. They saw it as a critical step in providing good data requisite for good policy. Many saw explaining NEON as one instrument more compelling than adding observatories piecemeal. Also, presenting NEON as answering specific big science questions could facilitate excitement about the concept. Some members requested more interaction with other directorates on issues like CI, student involvement in research, and climate change research. The AC suggested that someone from OSTP speak at the next meeting. Also, some desired a presentation on NASA's thoughts regarding NEON. Lastly, the AC requested a briefing on BIO's international efforts.

**Future Meeting Dates:**

Spring 2003 - April 24-25, 2003

APPROVED

*/S James Collins*      *04/24/03*

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James Collins, Chair      Date

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