

## Meeting of the Directorate for Education and Human Resources Advisory Committee

Thursday, November 30, 2017 *and* Friday, December 1, 2017

National Science Foundation, Rooms W2210/2220

2415 Eisenhower Avenue • Alexandria, VA 22314

**Advisory Committee members present:** Bruce Alberts, Hyman Bass, Liz Boylan, Rebecca Blank (11.30.17), John T. Bruer, Cathy Casserly, Carlos Castillo-Chavez, Muhammed Chaudhry, Rory A. Cooper, Margaret Honey, David H. Monk, Roy Pea (*virtual*), Debra Joy Pérez, Francisco C. Rodriguez (chair), Marilyn Strutchens, Laurel Vermillion, Lilian Wu

### Thursday, November 30<sup>th</sup>, 2017

8:30AM – 9:00AM

#### **Welcoming Remarks**

**Dr. Francisco C. Rodriguez**, *Chancellor, Los Angeles Community College District; Chair, EHR AC*

**Dr. Jim Lewis**, *Acting Assistant Director, EHR*

Dr. Rodriguez welcomed AC members to the meeting and noted his appreciation of the new NSF headquarters building. He introduced this meeting's focus on **subcommittees**. The agenda includes updates related to the long-standing *Open Education Resources* subcommittee and last summer's *Building Capacity at Hispanic-Serving Institutions* subcommittee, a report from the newly formed *Public-Private Partnerships* subcommittee, and exploration of two potential new subcommittees to focus on a *STEM Education Initiative* and *EHR's Broadening Participation Portfolio*. Dr. Rodriguez ended his remarks by highlighting recent AC member accomplishments.

Dr. Lewis shared updates regarding recent honors and awards to EHR-funded investigators; the NSF Big Ideas generally and NSF INCLUDES specifically; EHR's 2017 Federal Employee Viewpoint Survey results; and recent EHR working group reports. He announced that NSF has launched a national search for a new Assistant Director for EHR.

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9:00AM – 10:30AM

#### **Launching a STEM Education Initiative**

##### ***Education in 10 Years: Reflections by EHR Staff***

**Dr. Dean Evasius**, *Division Director, EHR/Division of Graduate Education*

**Dr. Evan Heit**, *Division Director, EHR/Division of Research on Learning*

**Dr. Jermelina Tupas**, *Division Director, EHR/Division of Human Resource Development*

**Dr. Robin Wright**, *Division Director, EHR/Division of Undergraduate Education*

Dr. Wright moderated this session, identifying issues that an AC subcommittee on the "Future of STEM Education" might tackle. She first asked AC members to envision what will be happening in STEM classrooms ten years from now. AC member responses included: hands-on scientific investigations, real-world problem solving, and increased accessibility. Dr. Wright then outlined four major societal changes that will necessitate changes to STEM education.

For each, an EHR Division Director shared brief reflections on the issue and asked AC members to brainstorm ways in which STEM education should change in response.

- The Changing Nature of Science – Science is becoming more data intensive and new, convergent fields are emerging. AC members encouraged EHR to focus on ensuring that all students have the opportunity to engage with data and new technology.
- Changing US Demographics – The US is growing increasingly diverse. AC members stressed the importance of family and community involvement in STEM education, as well as the value of an intersectionality approach to understanding cultural barriers to success in STEM careers.
- Changing STEM Workplace and Careers – As technology changes, job skills and career pathways change. AC members again expressed concern about equity and the need to continue to focus on STEM knowledge and soft skills at all levels of education (including lifelong learning and retraining).
- The Changing Nature of Educational Institutions – Financial constraints are leading to increased demand for flexibility, online delivery, and adjunct/part-time instructors. AC members pointed out that much more research is needed to fully understand and address the implications of these changes.

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10:45AM – 11:45AM      **EHR’s New Hispanic-Serving Institutions Program**

**Dr. Andrea Johnson**, Program Director, HRD; Co-lead, HSI Program

**Dr. Talitha Washington**, Program Director, DUE; Co-lead, HSI Program

**Dr. Joan Walker**, Program Director, DRL; Executive Secretary, Building Capacity at Hispanic-Serving Institutions Subcommittee

EHR will soon launch a new program targeting Hispanic-serving institutions (*update: [Solicitation released December 11, 2017](#)*). Drs. Johnson, Washington, and Walker outlined the development process, which has included gathering input from a series of virtual listening sessions with HSI faculty and staff (August 2017), and an AC subcommittee composed of HSI campus leaders ([report](#) received September 2017). The program will continue to be informed by workshops funded through a June 2017 Dear Colleague Letter ([NSF 17-092](#)). During the following discussion (*which continued from 1:15-2:00PM*), AC members stressed the importance of understanding the wide range of types of HSIs, addressing HSI students’ specific individual, family, and cultural concerns, and putting in place from the outset robust evaluation plans for this program and its funded projects.

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12:15PM – 1:15PM      **Working Lunch**

During lunch, AC members and EHR staff held small group discussions focused on: *Launching a STEM Education Initiative, Public-Private Partnerships, and EHR’s Broadening Participation Portfolio.*

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2:00PM – 3:00PM      **Public-Private Partnerships**

**Dr. Liz Boylan**, Program Director, Alfred P. Sloan Foundation; Chair, EHR AC Subcommittee on Public-Private Partnerships

The Public-Private Partnerships subcommittee met for the first time on November 29, 2017, the afternoon before the AC meeting. They discussed the draft subcommittee charge and defined three major strands of activity for their group: identify potential purposes/foci for beneficial EHR

partnerships, describe potential types of partnerships EHR might pursue, and outline the human resources required for EHR to establish and nurture successful partnerships. The goal of this session is to learn from two NSF guests with experience in these areas.

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***Industry Partnerships in NSF's Computer & Information Science & Engineering (CISE) Directorate***

**Dr. Erwin Gianchandani**, *Deputy Assistant Director, CISE*

CISE has participated in and supported many industry partnerships over the last several years, including joint research solicitations, large collaborations in support of research infrastructure, and smaller collaborations between individual PIs/universities and companies. Dr. Gianchandani explained that NSF brings to the table merit review, a large PI community, and access to graduate students, while industry brings cutting edge resources and real-world problems. But cultivating partnerships is challenging (e.g. time-intensive, involving IP and other legal issues); he recommends doing careful cost-benefit analysis.

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***Lessons from Office of International Science and Engineering (OISE) Experience with International Partnerships to Support Partnerships for International Research and Education (PIRE) Program***

**Anne Emig**, *Program Manager, OD/OISE*

Ms. Emig gave a history and overview of OISE's PIRE program, which supports the US side of international collaborations. A few years in to the PIRE program, in response to delays in funding to international collaborators, OISE approached international funding agencies about partnering *up front* to coordinate review and funding. The benefits of this approach have included not only better coordinated, timely funding, but also a better understanding of international funding agencies' review and funding processes more generally. The program is now in its third year and has been net positive in terms of leveraging NSF's resources.

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Following the two presentations, Dr. Boylan moderated a discussion that ranged from the challenges of cost-benefit analyses and evaluation of partnerships, to the identification of "logical ecosystems" for educational research partnerships.

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3:15PM – 4:00PM      **Committee Business**

Dr. Jodi Chase (Acting Deputy Division Director, HRD) and AC member Dr. Laurel Vermillion gave an update on the Tribal Colleges and Universities Program (TCUP) Symposium. AC member Dr. Rebecca Blank announced the release of a [report](#) from the Commission on the Future of Undergraduate Education of the American Academy of Arts and Sciences.

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4:00PM – 5:00PM      **NSF Director, Dr. France Córdoba**  
**NSF Chief Operating Officer, Dr. Joan Ferrini-Mundy**

Dr. Rodriguez opened the session with a short overview of the meeting topics. AC members Dr. Liz Boylan and Dr. Margaret Honey gave summaries of the discussions around *Public-Private Partnerships* and the *Future of STEM Education*. Dr. Córdoba expressed her appreciation for the exploration of partnerships by groups across the Foundation and noted that OIA is working to more centrally coordinate partnerships in communication with the senior administration. She is especially interested

in how the future of STEM education might intersect with the NSF Big Idea around the human-technology frontier. Dr. Ferrini-Mundy asked AC members to think about and provide feedback on the idea of framing the work of EHR around the NSF INCLUDES Big Idea. Much of the remaining time was spent discussing the challenges of teacher preparation and student and community engagement with STEM.

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*The meeting adjourned for the day at 5:00PM.*

*AC members were invited to tour the new NSF headquarters building.*

### **Friday, December 1, 2017**

8:15AM – 8:45AM **Recap discussion from Day 1**

**Dr. Francisco C. Rodriguez**, *Chancellor, Los Angeles Community College District;  
Chair, EHR AC*

Dr. Rodriguez asked AC members for their reflections on the topics from Day 1. Themes that emerged included: apprenticeships and internships can give students real-world experience with real-world problems; evaluation and meta-analysis of program investments are important and should include learning from failure; equity and social justice continue to be a large part of the education discussion; and open access and dissemination of NSF-funded projects need to continue to be a priority.

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8:45AM – 9:15AM **Telling the EHR Story**

**Dr. Jim Lewis**, *Acting Assistant Director, EHR*

Dr. Lewis introduced and asked for feedback on an initiative he has launched over the past few months: “Telling the EHR Story”. He has asked EHR staff to produce a number of 1-2 page documents describing important impacts of EHR funding. He envisions posting a collection of such documents on the EHR website. AC members were supportive and had a number of suggestions, including:

- consider asking people and organizations outside NSF to contribute (endorsements are valuable)
  - consider using Wikipedia and social media, but be aware of broadening participation challenges associated with those platforms
  - be sure to highlight the importance of basic research, even without short-term “payoff”
  - consider the need for additional staff with journalistic expertise, and experience with different audiences (younger demographic)
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9:15AM – 10:00AM      **Update: OER Subcommittee**

*Open Educational Resources (OER): Attitudes, Awareness, and Adoption in K-12 and Higher Education*

**Dr. Jeff Seaman**, *Co-Director, Babson Survey Research Group*

Dr. Seaman presented an overview of the results from a recent survey performed by his research group. Open access textbooks have fairly high adoption rates in higher education, and faculty report satisfaction with quality, while requesting additional supplemental materials. K-12 districts are adopting open access curricula at rates similar to commercial products. Awareness is a more important barrier to adoption than is technology. AC discussion after the presentation focused on the need for rigorous assessment of all open access products and of the financial impacts on students, districts, and the publishing industry.

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10:15AM – 10:45AM      **Update: EHR Research Roadmap**

**Dr. Evan Heit**, *Division Director, EHR/DRL*

**Discussant: Dr. Roy Pea**, *Professor, Stanford Graduate School of Education; EHR AC Member*

Dr. Heit provided a summary of the activities of a working group tasked by Jim Lewis last spring and summer to develop a plan to enhance the scope, quality, and impact of EHR's research portfolio. More than 40 EHR staff participated in the working group activities over the course of 10 meetings. Dr. Heit challenged the AC to imagine what the EHR portfolio could look like 10 years from now. He then outlined a few of the group's recommendations including:

- promote scientific transparency
- build internal research expertise by encouraging every staff member to have an Individual Development Plan, Independent Research and Development plan, or the equivalent
- engage stakeholders by encouraging more synthesis proposals and forward-looking workshops
- work with the EHR Evaluation and Monitoring Group to develop a common framework for program evaluation

AC members encouraged EHR to consider the value of broadening participation by increasing support of *potential* PIs (e.g. grant-writing "boot camps" and networked communities), and to focus on training of STEM education researchers by increasing post-doctoral opportunities both for STEM education and disciplinary STEM PhD recipients.

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10:45AM – 11:45AM      **Breakout session: Subcommittee work**

The *Open Education Resources* and *Public-Private Partnerships* subcommittees met at this time. In addition, AC members interested in serving on the new *Launching a STEM Initiative* or *EHR's Broadening Participation Portfolio* subcommittees used this time to discuss next steps.

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12:15PM – 1:15PM      **Working Lunch**

During lunch, EHR program staff presented highlights from one EHR program housed in each division.

**ADVANCE:** Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers

**Dr. Jessie DeAro**, *Program Director, HRD*

**DRK-12:** Discovery Research PreK-12

**Dr. Rob Ochsendorf**, *Program Director, DRL*

**I-USE:** Improving Undergraduate STEM Education

**Dr. Myles Boylan**, *Program Director, DUE*

**NRT:** National Science Foundation Research Traineeship Program

**Dr. Laura Regassa**, *Program Director, DGE*

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1:15PM – 2:00PM      **Recommendations to EHR, Meeting Wrap-up**

**Dr. Francisco C. Rodriguez**, *Chancellor, Los Angeles Community College District;*  
*Chair, EHR AC*

Dr. Rodriguez wrapped up the meeting by asking AC members for last thoughts and recommendations moving forward. AC members expressed appreciation for both the format and the foci of this meeting, and the ongoing work of EHR.

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*The meeting adjourned at approximately 1:45PM.*