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Dean Evasius is a Program Director in the Division of Mathematical Sciences (DMS) at the National Science Foundation, where he currently heads the Workforce and Infrastructure programs. He was previously the Program Director for the Probability program. Prior to arriving at NSF in 2004, he was a research mathematician at the National Security Agency. He received a B.S. degree from UCLA, and a Ph.D. from Caltech.

His research interests include cryptography, harmonic analysis, applied probability, and signals processing.
Broadening Participation

Mathematical and Physical Sciences
Directorate
National Science Foundation

Dean Evasius
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What is Broadening Participation?

The NSF definition refers to:

- Individuals from underrepresented groups
- Institutions and geographic areas that do not participate in NSF research programs at rates comparable to others
Broadening Participation as a Core Value

- It is pervasive
- Both top-down and bottom-up
- An essential part of our national strategy
NSF Strategic Plan 2006-2011

• NSF is dedicated to being broadly inclusive: seeking and accommodating contributions from all sources while reaching out especially to groups that have been underrepresented; serving scientists, engineers, educators, students and the public across the nation; and exploring every opportunity for partnerships, both nationally and internationally.

NSF BP Working Group

- Formed in April 2007 with representatives from all NSF Directorates
- Expand NSF efforts to broaden participation
- Improve processes to recruit reviewers and panelists

MPS BP Working Group

- Formed in April 2008 with representatives from all MPS Divisions
- Coordinated with the NSF BP working group
- Shares best practices and explores new ideas
- Exploring the development of an MPS strategic plan
Division of Chemistry: BP Plan

- Adopted November 29, 2006
- Articulates concrete strategies and activities
- Benchmarks for reviewers, Division staff, and workshop participants
- Program solicitation changes
The Broadening Participation Portfolio

- *Focused* programs with an explicit BP program goal (ADVANCE, EPSCoR, RUI)
- *Emphasis* programs with additional BP review criteria (IGERT, PREM, PAARE)
- *Potential* programs with design features that lead to enhanced contributions to BP (REU, Workforce)

From “A Framework for Action”
MPS BP Programs

A sampling of BP programs in the MPS Directorate:

- Materials Science: PREM
- Astronomy: PAARE
- Physics: Facilities and Frontier Centers
- Chemistry: Instrumentation and Centers for Chemical Innovation
- Mathematics: Workforce and Infrastructure
Partnership for Research and Education in Materials (PREM)

....broaden participation in materials research and education by stimulating the development of long-term, collaborative partnerships between minority serving institutions and DMR-supported groups, centers and facilities.

- Competitive award to minority serving institutions
  - Interdisciplinary materials research teams at both institutions
  - Education programs to build pipeline of students interested in materials science

- Competitions in 2004 and 2006
- 10 Awards of ~ 500k/year for 5 year
- Open renewal competition for 2009
Partnerships in Astronomy and Astrophysics Research and Education (PAARE)

- Enhance diversity in astronomy and astrophysics research and education by stimulating the development long-term, collaborative research and education partnerships between minority serving institutions and AST-supported facilities, projects, or faculty members at research institutions, including private observatories.

- **New program in AST for FY2008**

- Total awards made in AST in FY 2008: 4
Physics Workforce Development

CHEPREO - Center for High-Energy Physics Research and Educational Outreach. Centered at Florida International University, the largest Hispanic serving minority institution in the continental U.S.

CHEPREO is an integrated program of research, cyber-infrastructure, and education and outreach with a focus on High Energy Physics.

FIU (CHEPREO) graduate student (Luis Lebolo) shown installing temperature and humidity sensors for CMS at CERN.
Chemistry Instrumentation

• The Division of Chemistry is committed to broadening participation of underrepresented groups within the chemical sciences.

• The CRIF:MU program requires a departmental plan for broadening participation as part of a program-specific review criterion.

• Results on how the instrumentation enhanced participation of underrepresented groups are required in future proposals under Results of Prior Support.
EDGE: A Mathematics Program for Women

- Enhancing Diversity in Graduate Education: Launched in 1998 at Bryn Mawr and Spelman Colleges by Rhonda Hughes and Sylvia Bozeman.

- EDGE creates and disseminates programs and strategies to improve the persistence of women and minority graduate students in mathematics.

- Funded through the Infrastructure Program in the Division of Mathematical Sciences.

- www.edgeforwomen.org
MPS Sponsorship of Workshops for Department Chairs

- Chemistry Workshop on Gender Equity
- Physics Workshop on Gender Equity
- Materials Science and Engineering Workshop on Gender Equity
- Chemistry Workshop on Under-represented Minorities
Workshops for Department Chairs

Purpose:

1. To make department chairs more aware of inequities that their underrepresented students and faculty face.

2. To have department chairs develop action plans and report progress towards increasing the number of faculty from underrepresented groups in their departments, addressing underrepresented group-based inequities, and improving the departmental climate.

Research on Impact: COACH (www.coach.uoregon.edu)
Workshop on Building Strong Academic Chemistry Departments Through Gender Equity

January 29-31, 2006
Arlington, VA

Workshop Goals

1. To educate the chemistry departments about the value of diversity in their departments, the importance of aggressively pursuing gender diversity in appointments and the need to eliminate gender related barriers and biases that impair the appointment and advancement of women chemists.

2. To establish a set of goals for achieving gender equity in research active chemistry departments and report annual progress towards these goals.

3. To make recommendations to funding agencies for how to assist in this effort.

Attendees

Department chairs from the top 50 research depts; funding agency representatives, advocates.
Gender Equity in Materials Science and Engineering

University of Maryland
Adelphi, Maryland
May 2008

• **Attendees:** ~ 50 Chairs from Materials Science academic departments and government laboratories.

• **Format and Goals:** Similar to previous chemistry and physics chairs workshops.

http://www.mse.uiuc.edu/gender/index.htm
Sponsored by NSF and DOE
Common Agenda for Gender-Equity Workshops

Pre-workshop Survey

Opening Evening Session:

Defining the issues; data on demographics; theatre group to illustrate issues.

Next 1.5 days:

• Presentations from experts on issues impacting the careers of women in STEM fields: Implicit bias, gender schemas, family issues.

• Presentations highlighting best practices and challenges in academic institutions, national laboratories and departments.

• Presentations from federal funding representatives on their current challenges and activities on gender equity issues.

• Break-out sessions to identify issues and set of best practices for departments, research centers and institutions.

• Develop goals for department chairs to implement.

Evaluation Survey

Post-workshop Survey

Presentation developed by Geri Richmond, U of Oregon
**COACH Research**

**CHANGES in Perceived Factors that Slow Progress of Women Faculty**

1. Women do less self-promoting and marketing of themselves.
2. Balancing professional and family obligations.
3. Women’s lack of success in obtaining funding.
4. Women’s inability to compete for best graduate students.
5. Few female colleagues.

- Not an issue
- Not Important
- Somewhat Important
- Moderately Important
- Very Important

- Shift in Chem Chairs Opinions
- Shift in Phys Chairs Opinions
- Shift in MSE Chairs Opinions

Women Chemistry Faculty
Workshop Lessons Learned

1. A strong and devoted steering committee of both male and female leaders in the community.

2. At least a 6-8 month planning period with frequent conference calls.

3. Commitment by funding agencies of the money and program staff time.

4. A combination of social scientists and experts in your field speaking at the workshop.

5. Presence of federal agency representatives at the workshop.


7. A website that will be maintained from the initial planning stages to 4-5 years (at least) after the workshop.

8. Research personnel to monitor the impact of the workshop on participants and the field, with the intent of publishing the results in peer reviewed journals.

9. Individuals willing to harass department chairs to commit to come, attend, do pre and post surveys, commit to their goals on the website and update their progress on the website on an annual basis.

Presentation given by Geri Richmond, U of Oregon
The NSF Merit Review Process

The two NSF merit review criteria:

• What is the intellectual merit of the activity?
• What are the broader impacts of the activity?
The Broader Impacts Criterion

NSF will give careful consideration to the following when making funding decisions:

- Integration of research and education
- Integrating diversity into NSF activities

Representative activities document:
Dear Colleague Letters on Broader Impacts

- Three of the five MPS Divisions have released Dear Colleague Letters on Broader Impacts: CHE, DMR, DMS

- They reiterate that Broadening Participation is part of the Broader Impacts review criterion

- They articulate the expectation that proposed broader impacts activities be of the same caliber as those addressing the intellectual merit criterion
BP Training for NSF Staff and Panelists

- Educate program officers, investigators, and panelists about Broadening Participation and its role at NSF.

- Send clear messages about BP to the community: Program Solicitations, Dear Colleague Letters, Grant Proposal Guide.

- Provide panelists and reviewers with information about implicit bias and other factors that influence proposal reviews.

- Develop tools that help Program Officers select a diverse set of panelists: Merging reviewer and investigator databases.
The NSF ADVANCE Program

- Program Goal: Increase the participation and advancement of women at all levels in academic science and engineering careers.
  - Creative strategies to realize this goal should involve and are sought from both men and women

- There are three program components;
  - Institutional Transformation: 5 yr comprehensive institution-wide projects
  - IT-Catalyst: 2 yr institutional self-assessment projects
  - Partnerships for Adaptation, Implementation, and Diffusion (PAID): Projects to adapt proven strategies, perform research on gender in academics, and diffuse proven information, tools, and materials to appropriate audiences
ADVANCE Lessons for Chairs

• Implement standardized and transparent departmental policies and procedures
• Collect departmental data and relevant national data and share it with the department
• Support formal mentoring inside and outside the department
• Establish a culture and develop programs supportive of work-life balance
• Focus on changing the department to achieve equity, not “changing the individuals” to suit the department
ADVANCE Lessons for Chairs

- Recruitment
  - Establish departmental expectations for diversity
  - Require candidate pools that reflect the available pool
  - Create broader position announcements to widen the pool of qualified candidates
  - Purposefully select diverse and knowledgeable search committee
  - Train search committee chairs and members on implicit bias, etc.
  - Require documentation be reported on each search (e.g., committee composition, demographics of candidates interviewed, reasons for hire decision, etc.)
  - Highlight work-life balance programs and policies to all candidates
ADVANCE Lessons for Chairs

• Promotion and Tenure
  – Publish tenure and promotion requirements
  – Mentor junior faculty (Include mentoring by department chair and faculty inside and outside of the department)
  – Develop multiple mentors for faculty, a mentoring circle
  – Implement pre-tenure review
  – Actively encourage faculty to pursue promotion
  – Thoughtfully select P&T committee
  – Train P&T Committee on implicit bias, etc.
  – Assign service and teaching demands equitably
  – Encourage all faculty to take advantage of available work-life balance programs (stop the clock policies, etc.) and ensure P&T decisions are not negatively influenced as a result
Thank you.

• Questions?
• Suggestions for how we can better work together?