

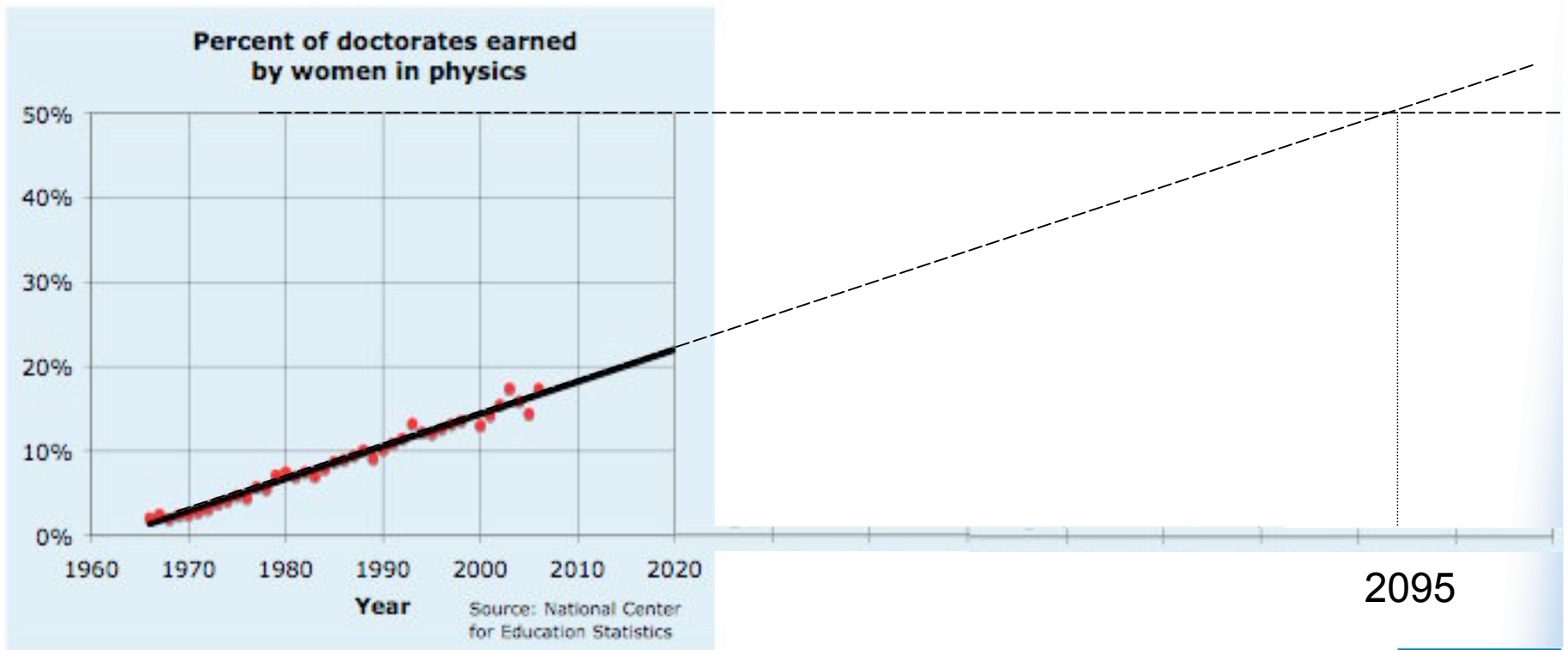
# Best Practices for Recruiting and Retaining Women in Physics

*Nora Berrah, Sherry Yennello, Margaret Murnane and many others!*

*APS Committee on the Status of Women in Physics (CSWP)*

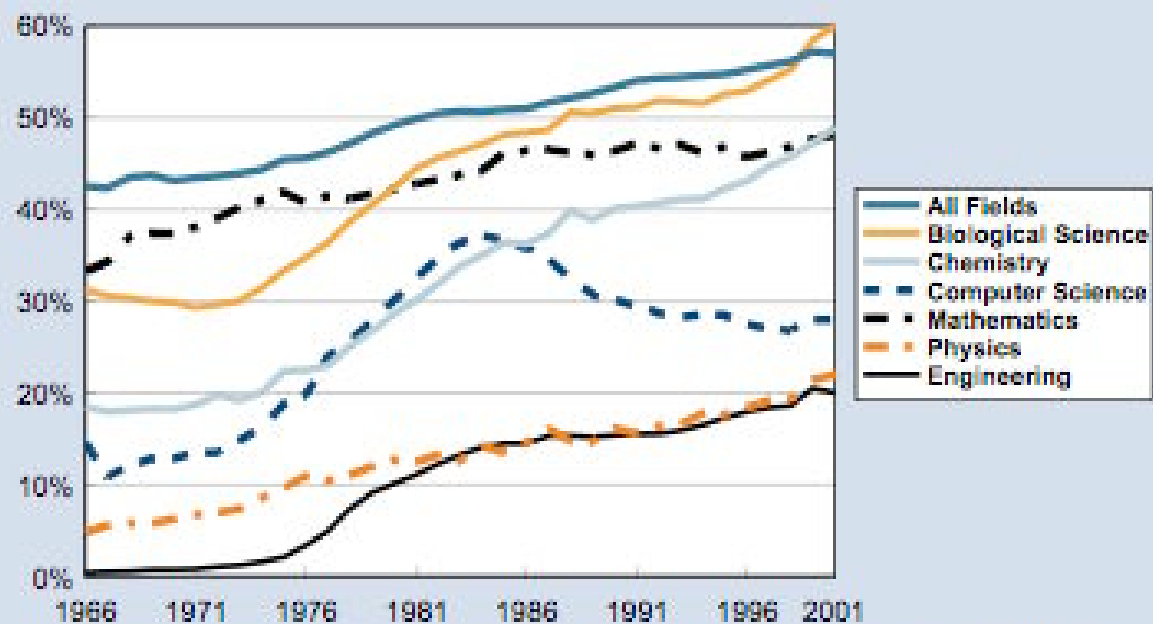


# Is there a problem?



# Why should we care about Best Practices?

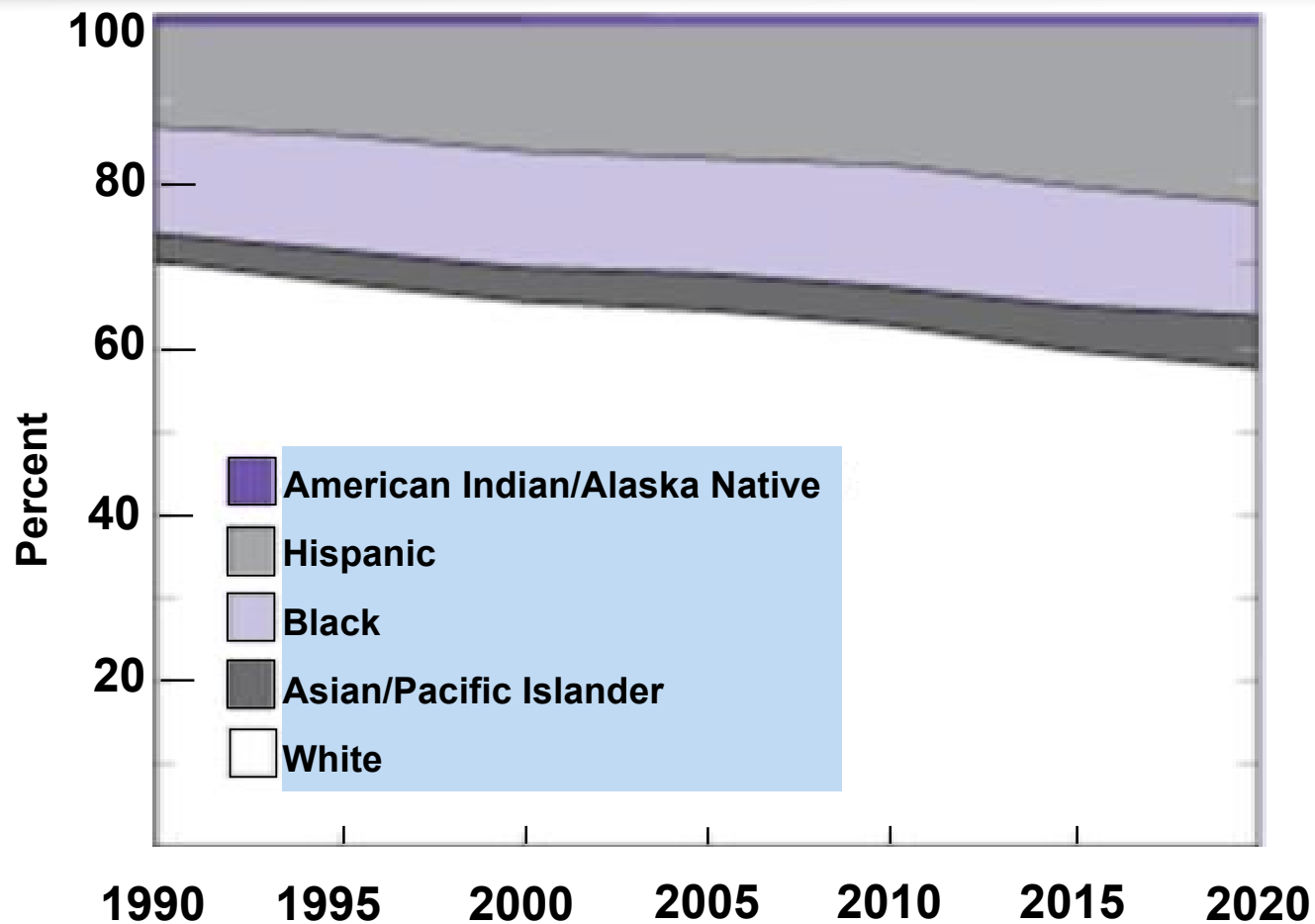
Figure 8. Percent of bachelor's degrees earned by women in selected fields, 1966-2001.



National Center for Education Statistics. Data for academic year 1999 not available  
Compiled by AIP Statistical Research Center

Most undergraduate degrees being earned by women!

# U.S. College-age Cohort



Sources: U.S. Census Bureau, Population Division, 1990 Census; Population Projections Program. Projections of the Resident Population by Age, Sex, Race, and Hispanic Origin: 1999–2100 (2000).

# Why do we need Best Practices?

“The demographic changes to occur in the U.S. over the next half century make it vital that we increase the participation of women and under-represented minorities in physics, as well as all other scientific and technological fields.”

Artie Bienenstock, Stanford University, APS President

Women and under-represented groups make up a 1/2 to 2/3 of the population of the United States and comprise the nation's New Majority.

If the US is to maintain economic leadership and be able to sustain its share of high technology jobs, it must draw on ALL of the talents in our population . . .

*Shirley Ann Jackson  
President of RPI*



# Best Practices for Recruiting and Retaining Women in Physics

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**Sources**

# SOURCE #1: CSWP Site Visits to Improve the Climate of Women in Physics - Best Practices

Indiana University	2007	UC San Diego	1998
JILA/Boulder *	2006	Princeton University	1998
Univ of Michigan	2005	Columbia University	1997
NIST/Gaithersburg *	2005	CU Boulder	1997
NIST/Boulder *	2005	Caltech	1996
Iowa State University	2005	SUNY at Stony Brook	1994
Univ of Washington	2004	Univ of Texas/Austin	1994
Colo. School of Mines	2004	Stanford University	1994
Univ of Arizona	2004	Harvard University	1994
Purdue University	2003	Univ of Rochester	1994
Univ of Minnesota	2003	North Carolina State	1994
Durke University	2003	Michigan State `	1993
Ohio State University	2003	Univ of New Mexico	1993
Argonne National Lab	2002	Kansas State	1993
Univ of Wisconsin	2002	RPI	1992
Univ of Iowa	2002	Williams College	1992
NASA/Goddard	2002	U. Illinois at Urbana	1992
Univ of Maryland	2001	U. Pennsylvania	1991
William & Mary	2000	Bryn Mawr College	1991
UCAR/NCAR *	2000	University of Virginia	1991
Penn State University	2000	University of Maryland	1990

- Team of outside senior female physicists visit department
- Students are surveyed in advance (web based thanks to AIP)
- Meet with Chair, faculty, students, postdocs, staff, Dean, other senior administrators
- Recommendations in a confidential report to the chair
- Department reports back 1 year later
- Developed Best Practices from Site Visit experiences

# Goals for Best Practices

*“The mark of a successful departmental climate for women is one in which the enthusiasm and ambition of the women undergraduates is transformed smoothly into successful and ambitious women graduate students, with dynamic, forging-ahead female postdocs, energetic junior women faculty, and productive, happy, senior women faculty who all serve as positive role models.”*



## **SOURCE #2: Gender Equity - Strengthening the Physics Enterprise in Universities and National Laboratories, May 6-8, 2007**

### **Chairs:**

- ◆ **Dr. Nora Berrah, Western Michigan University (CSWP Chair)**
- ◆ **Dr. Arthur Bienenstock, Stanford University (APS President Elect)**

### **Steering Committee:**

- ◆ Dr. Kimberly Budil, Lawrence Livermore National Laboratory
- ◆ Dr. Catherine Fiore, Massachusetts Institute of Technology
- ◆ Dr. Judy Franz, American Physical Society
- ◆ Dr. Theodore Hodapp, American Physical Society
- ◆ Dr. Mary Ann Mason, University of California Berkeley
- ◆ Ms. Sue Otwell, American Physical Society
- ◆ Dr. Patricia Rankin, University of Colorado
- ◆ Dr. Meg Urry, Yale University
- ◆ Dr. Sherry Yennello, Texas A & M University

### **Federal Advisors:**

- ◆ Dr. Joseph Dehmer, NSF MPS Physics Division
- ◆ Dr. W. Lance Haworth, NSF MPS Materials Research Division
- ◆ Dr. Eric Rohlifing, DOE BES Chemical Sciences, Geosciences, & Biosciences Division
- ◆ Dr. G. Wayne van Citters, NSF MPS Astronomical Sciences Division

### **Cosponsored by NSF and DOE**

- ◆ DOE Basic Energy Sciences, Advanced Scientific Computing Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics
- ◆ NSF Physics, Materials Research, and Mathematical and Physical Sciences

**Hosted by American Physical Society Committee on the Status of Women in Physics (CSWP), Washington DC.**

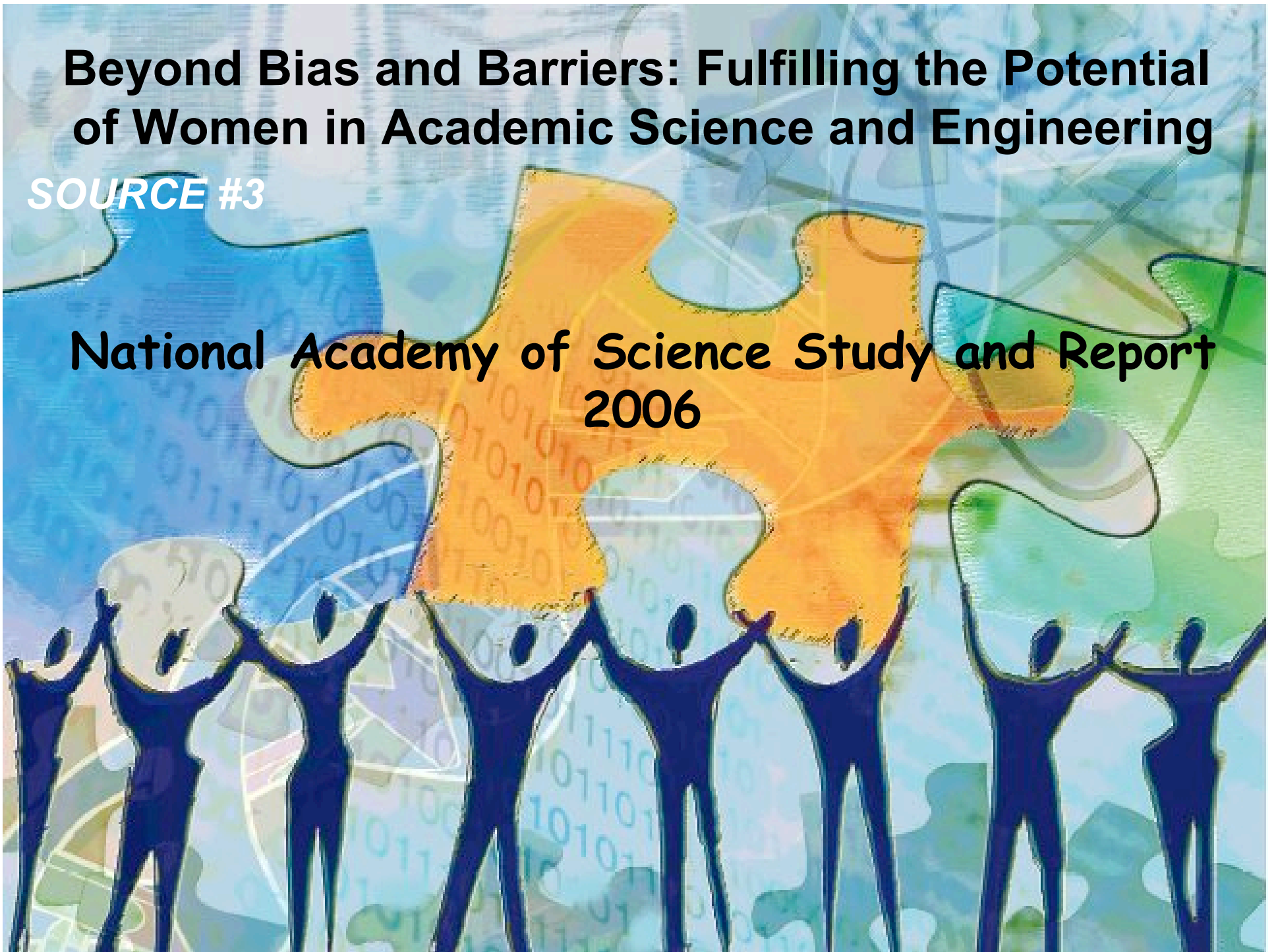


**Goals: to examine the underlying causes for the scarcity of women in physics and to formulate specific recommendations for action to improve the recruitment, retention, and promotion of women in physics.**

# Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering

*SOURCE #3*

National Academy of Science Study and Report  
2006



## ***SOURCE #4: Faculty Diversity - Too little for too long***



### **Faculty Diversity**

**Too little for too long**

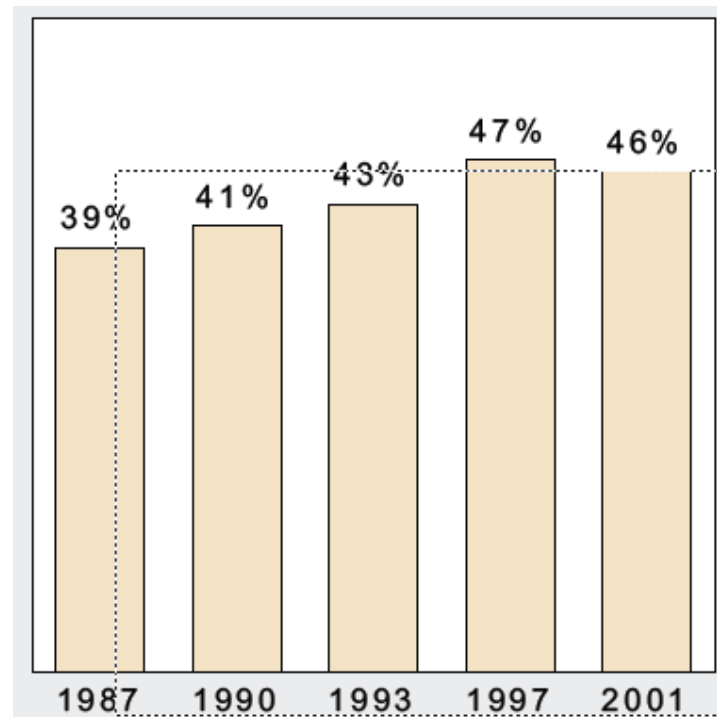
by CATHY A. TROWER and RICHARD P. CHAIT

<http://www.harvard-magazine.com/on-line/030218.html>

# Best Practices for Recruiting and Retaining Women in Physics

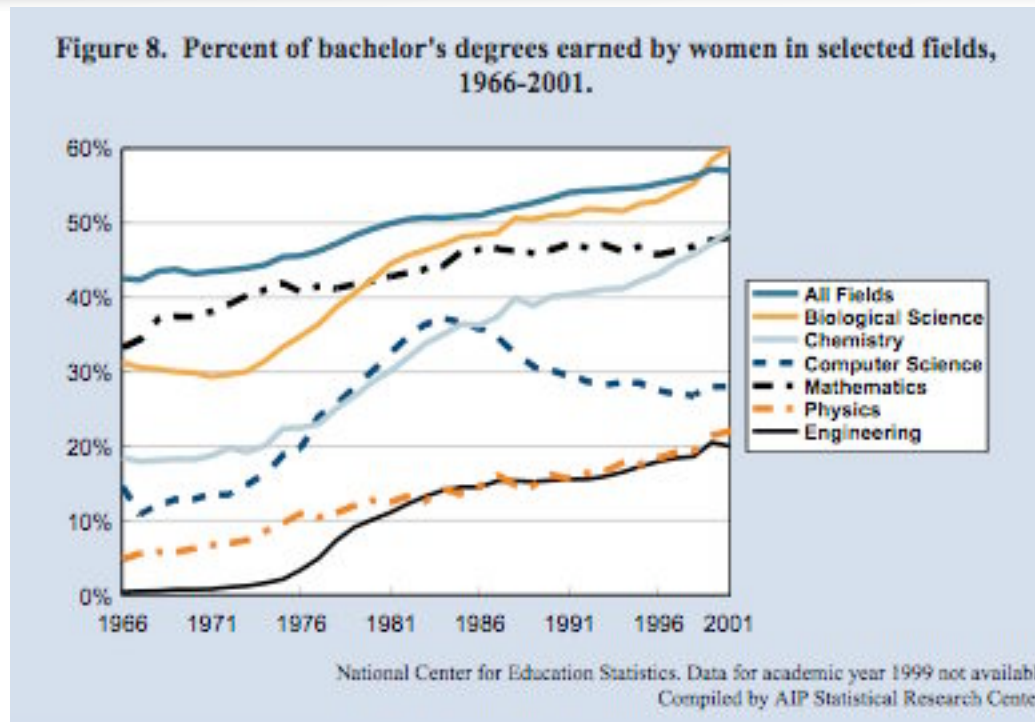
**DATA**

# Girls are enrolling in high school physics



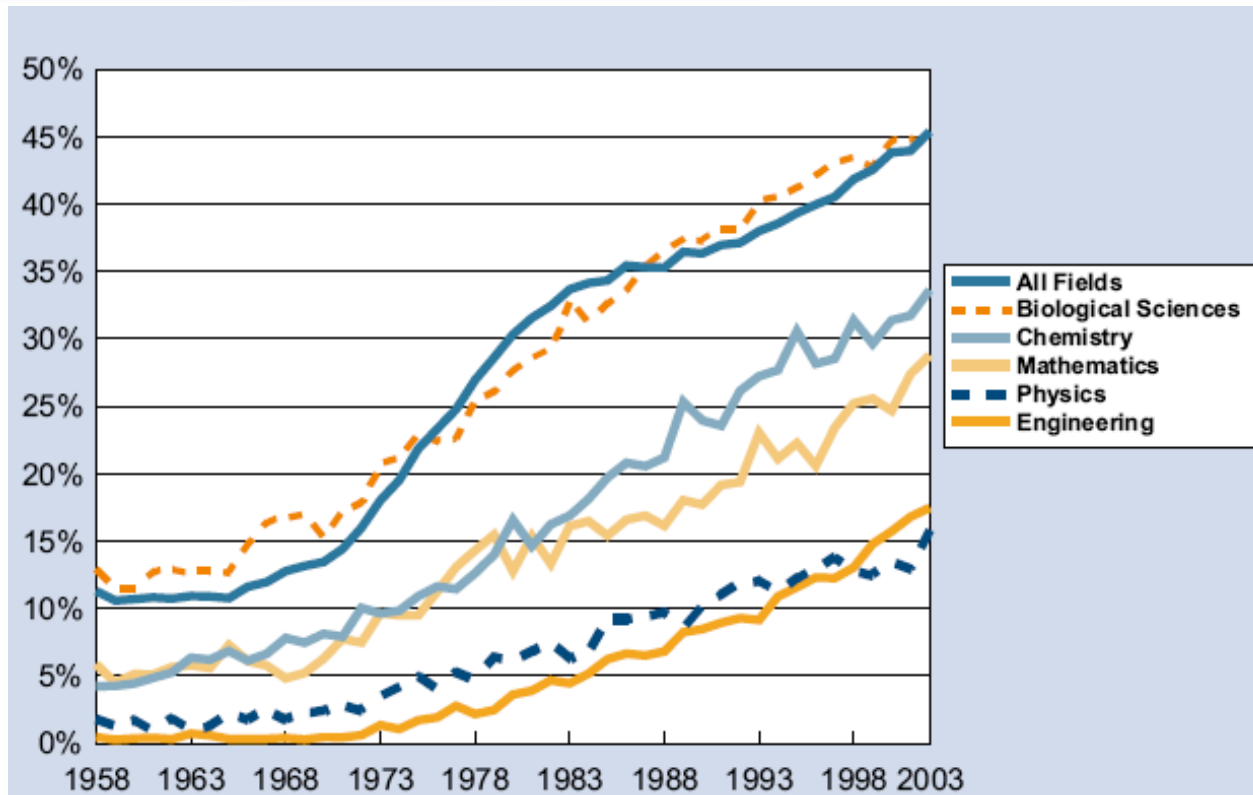
AIP Statistical Research Center: 1986-87, 1989-90, 1992-93, 1996-97 & 2000-01 High School Teacher Surveys.

# Most undergraduate degrees being earned by women!



- Maintaining technical workforce of US must involve attracting more women to physics!
- Need women to be empowered and well educated to fully achieve their dreams

## Increasing number of graduate degrees being earned by women!



*National Science Foundation. Compiled by AIP Statistical Research Center.*

- Increasing number of graduate degrees being earned by women!
- Maintaining technical workforce of US must involve attracting more women to physics!
- Need women to be empowered and well educated to fully achieve their dreams



# Progress seems to be slow but steady in physics

**Figure 18. Percent of bachelor's, master's and doctorates in physics earned by women, 1977-2006.**



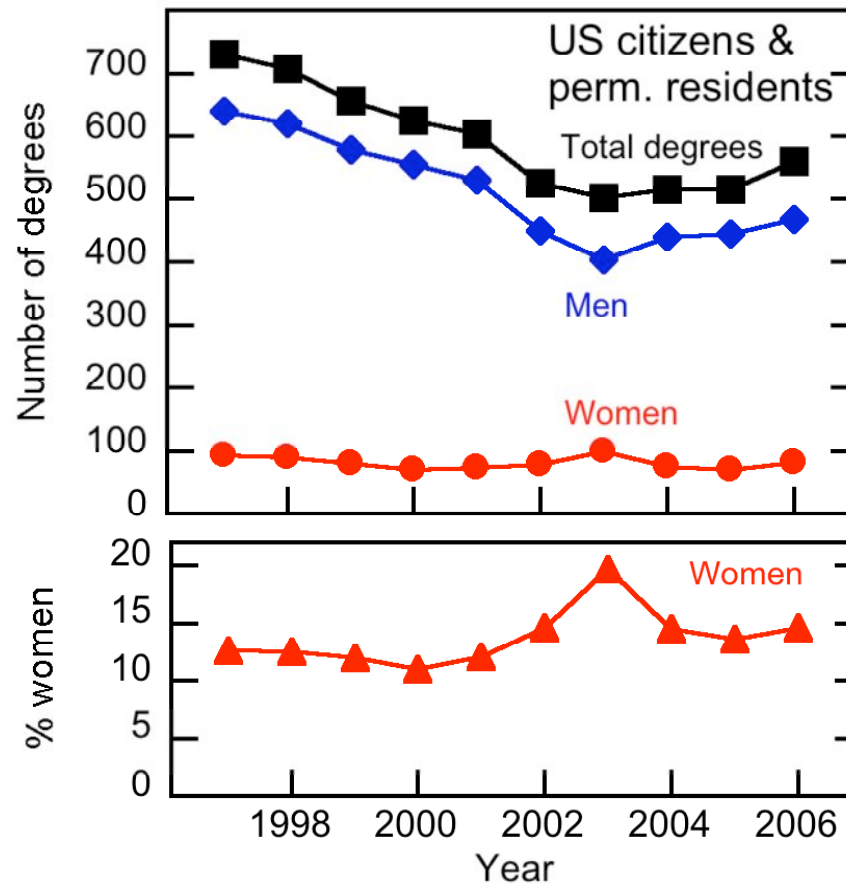
Note: A form change occurred in 1994 resulting in a more accurate representation of women among physics bachelors. Some of the increase in 1994 only, may be a result of that change.

AIP Statistical Research Center, Enrollments and Degrees Report.

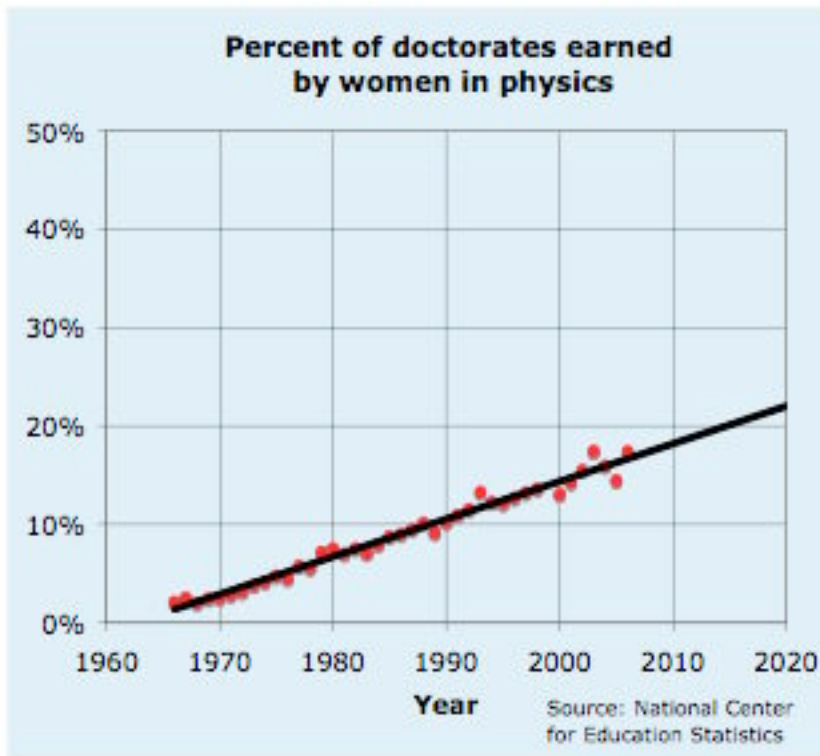


# Number of women getting Ph.D.s static

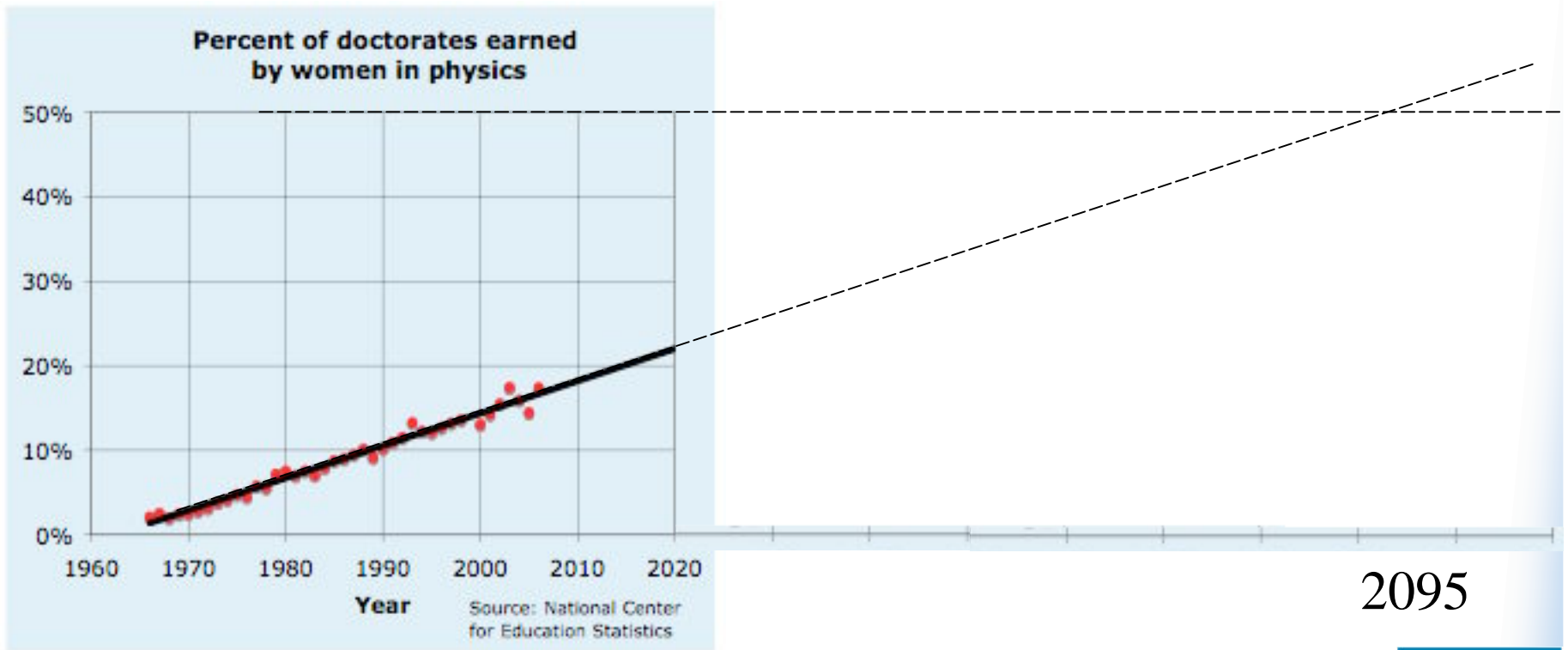
Number of Ph.D. degrees by gender  
[source: NSF SED]



# Best Practices *might* help change the slope



# Otherwise we might wait until the 22nd century!



# Other countries do better

Table 11. Percent of physics bachelor's degrees awarded to women in selected countries: 2-year averages.

	% Bachelor's to women	Avg # of Bachelor's per year, both sexes
Turkey	39	2,219
Greece	34	588
France	33	3,256
South Korea	30	2,189
Sweden	29	55
Latvia	26	12
Australia	21	182
United Kingdom	21	1,755
Norway	21	72
USA	21	3,770
Taiwan	20	825
Slovenia	19	26
Estonia	18	20
Mexico	18	162
Denmark	17	95
Japan	13	3,314
The Netherlands	12	206
Germany	9	2,173
Switzerland	9	206
19 Countries	24	21,125

1998-99 data are presented for countries in blue. For all other countries, 1999-2000 data represented. To be included, countries had to provide appropriate data from reliable statistical agencies.

Compiled by AIP Statistical Research Center.

# Other countries do better

Percentages of Physics Degrees Awarded to Women in Selected Countries, 1997 and 1998 (2-year averages).

Country	Ph.D.'s %	First-Level %
France	27	33
Poland	23	36
Norway	23	20
Ukraine	23	—
Australia	22	20
Turkey	21	37
India	20	32
Columbia	—	28
Denmark	17	19
Lithuania	17	—
United Kingdom	16	20
China-Taipei	13	19
United States	13	18
Sweden	13	17
Canada	12	22
Mexico	10	18
Germany	9	10
Switzerland	9	9
The Netherlands	9	5
South Korea	8	30
Japan	8	13



Source: 2001 International Study of Women in Physics, Statistical Research Center of the American Institute of Physics

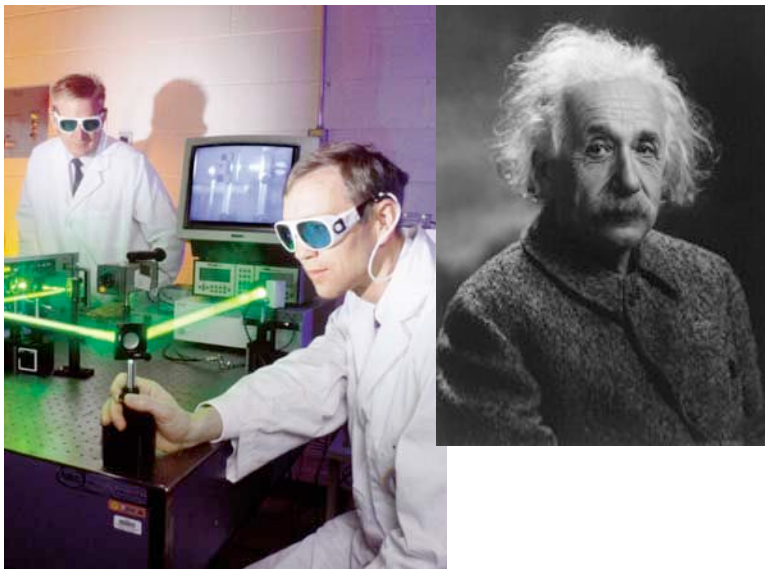
# Many challenges

The face of physics

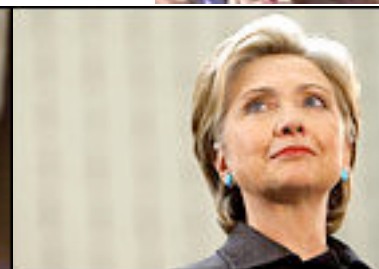
## Physicist

From Wikipedia, the free encyclopedia

A **physicist** is a scientist who studies or practices physics. Physicists study a wide range of physical phenomena spanning all length scales: from the sub-atomic particles from which all ordinary matter is made (particle physics) to the behavior of the material Universe as a whole (cosmology). There are numerous branches of physics and each has its corresponding specialists.



Is not the face of America





# Many challenges

The face of physics

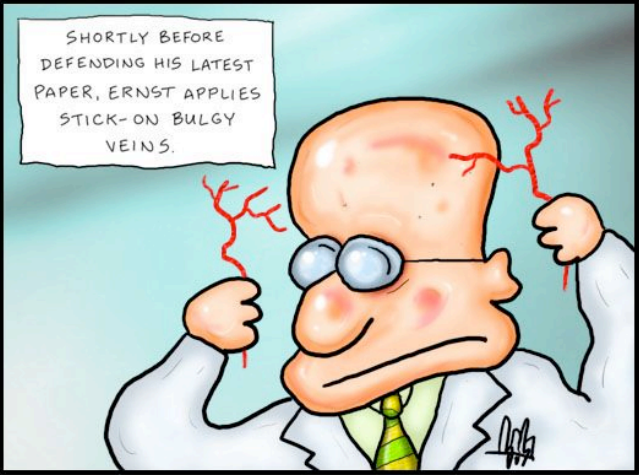


Is not the face of America



## DOCTOR FUN

13 Oct 2005



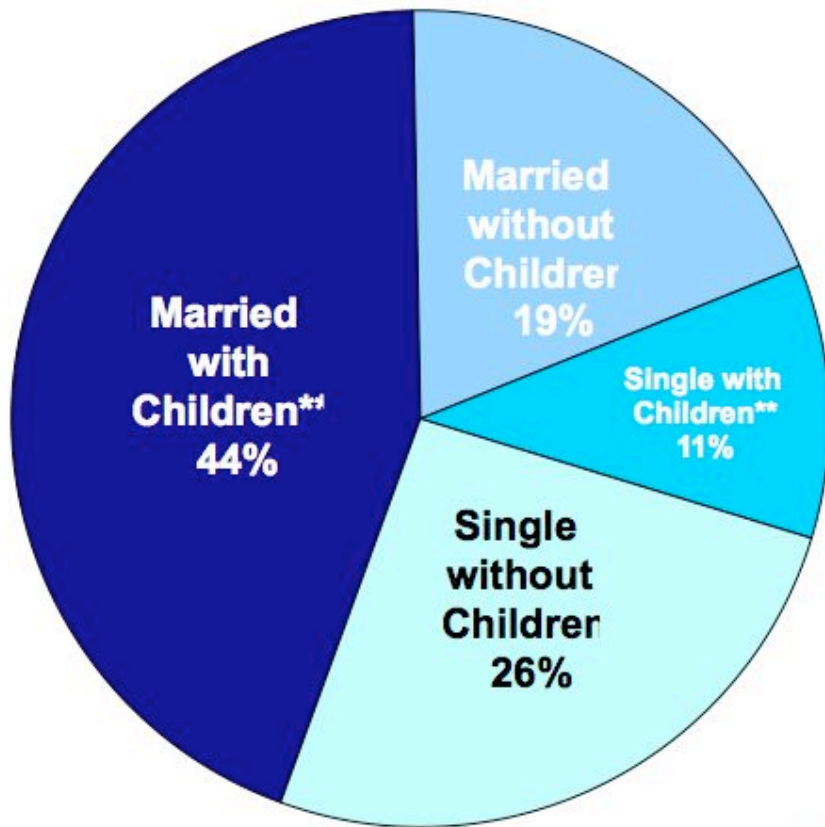
Copyright © 2005 David Farley, d-farley@ibiblio.org  
<http://ibiblio.org/Dave/drfun.html>  
This cartoon is made available on the Internet for personal viewing only. Opinions expressed herein are solely those of the author.

Things theoretical physicists do



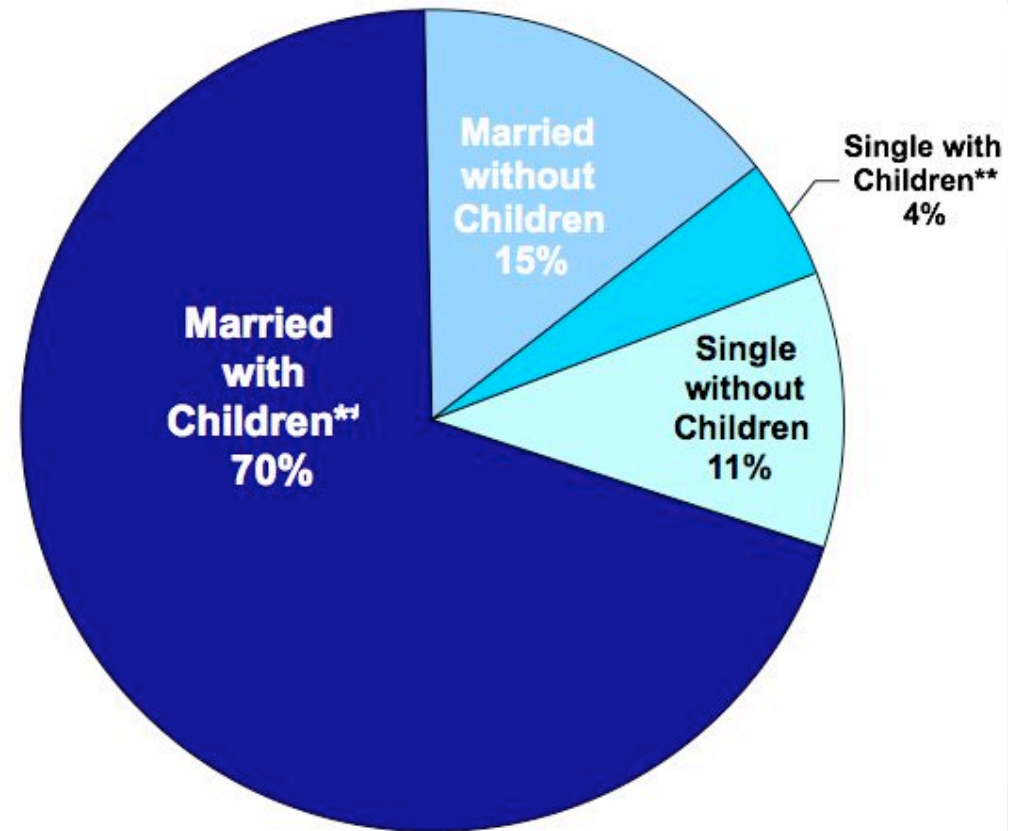
# Family Status of Tenured Faculty, All Fields\*

## Women



N=10,652

## Men



N=32,234

\*PhDs from 1978-1984 Who Are Tenured 12 Years out from PhD.

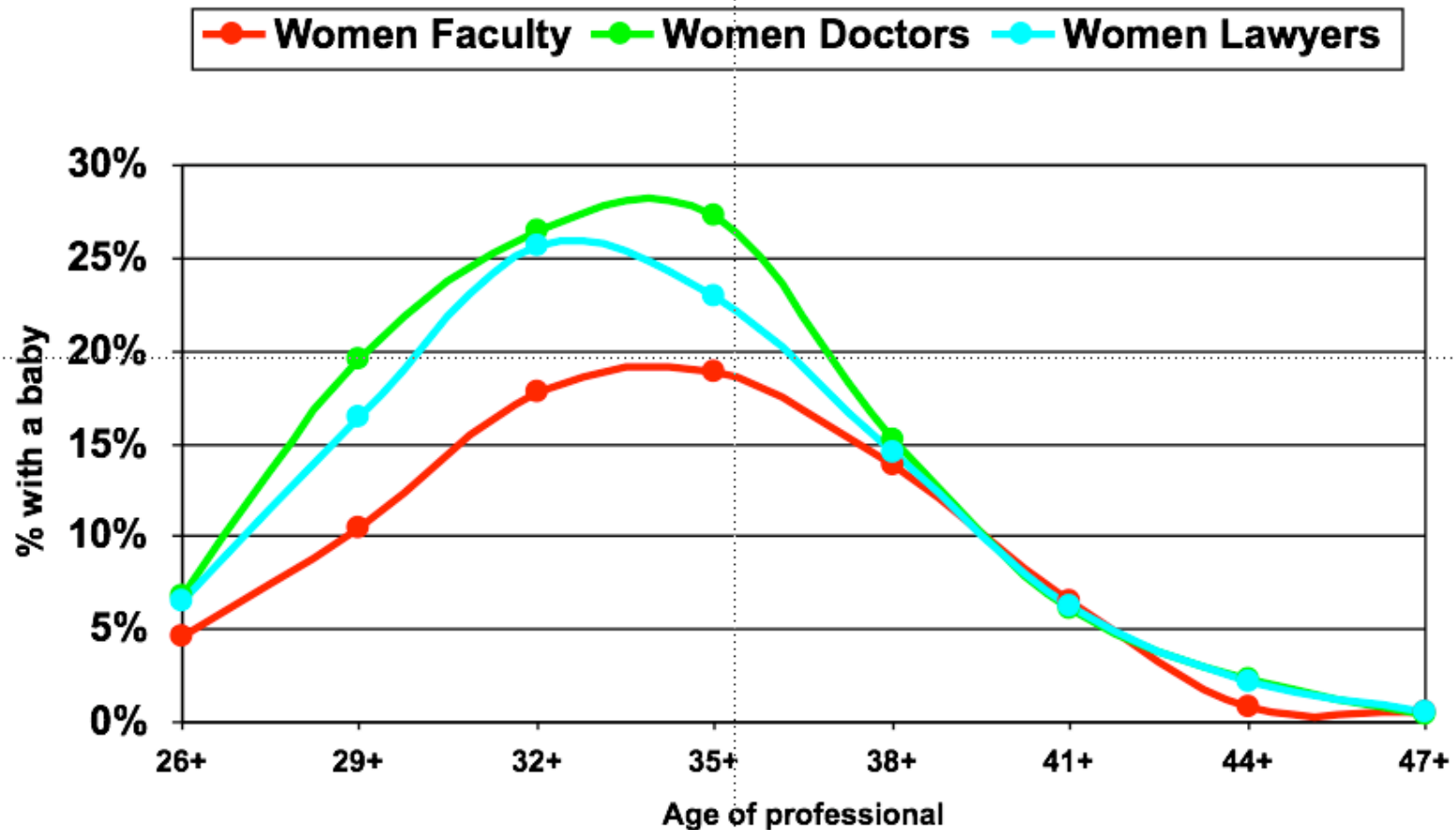
\*\*Had a child in the household at any point post PhD to 12 years out.

Source: Survey of Doctorate Recipients. Sciences, 1979-1999, Humanities, 1979-1995

Research from UC Berkeley  
(Agogino/Mason)



## Women Fast-Track Professionals with Babies\* in the Household, by Age of Professional

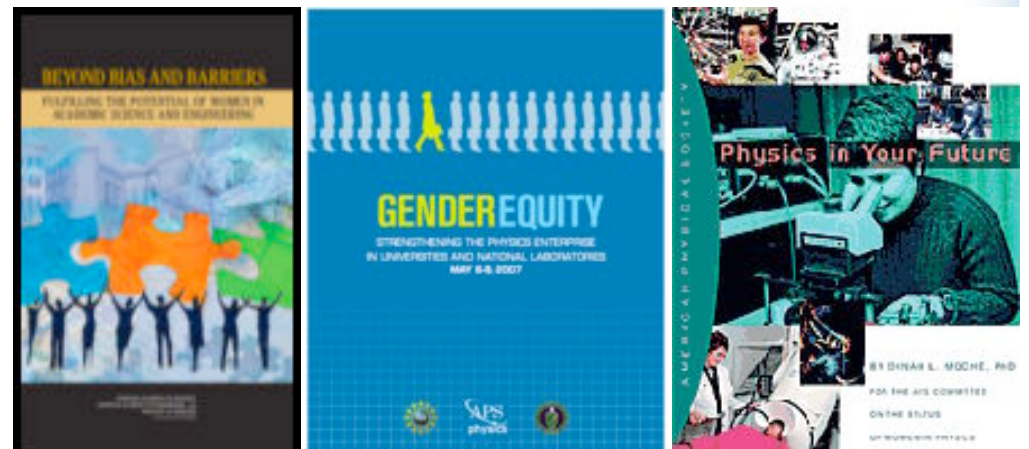


\*Children, Ages 0 or 1 in Household.

Source: Census 2000, Pums 5% sample.

# Best Practices for Recruiting and Retaining Women in Physics

## Recommendations



# Common Issues for CSWP Site Visits



## Faculty Diversity

Too little for too long

by CATHY A. TROWER and RICHARD P. CHAIT

<http://www.harvard-magazine.com/on-line/030218.html>

### OLD VIEW

Secrecy assures quality

Merit is an empirically determined, objective concept

Competition improves performance

Research should be organized around disciplines

Research is the coin of the realm

Separate work and family

Faculty thrive on autonomy

# Common Issues for CSWP Site Visits



## Faculty Diversity

Too little for too long

by CATHY A. TROWER and RICHARD P. CHAIT

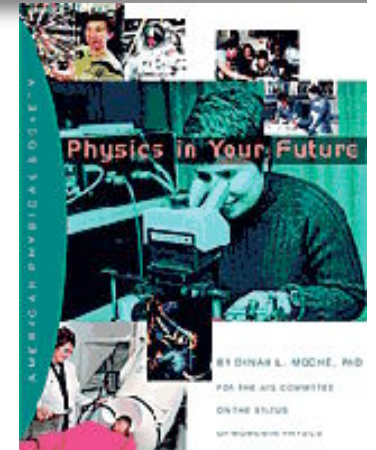
NEW VIEW	OLD VIEW
Transparency of the review process assures equity	Secrecy assures quality
Merit is a socially constructive subjective concept	Merit is an empirically determined, objective concept
Cooperation is better than competition	Competition improves performance
Research should be organized around problems	Research should be organized around disciplines
Excellent teaching and advising should pay off	Research is the coin of the realm
Personal life matters – balance is important	Separate work and family
Faculty have a collective responsibility	Faculty thrive on autonomy

# CSWP Site Visits – Best Practices

- Recruit critical mass of female students, postdocs and faculty
- Support female faculty with comparable resources (junior & senior) to ensure success, positive role models, and to avoid marginalization
- Have high expectations for everyone
- Implement good mentoring
- Family leave, childcare on campus for faculty, postdocs, students
- Cultivate a sense of community
  - Friendly informed faculty
  - Student organizations, lounge, elected reps involved in dept committees
  - Picnics, pizza, holiday party where everyone attends
  - Positive image on web page
- Respect and attention to ethics for everyone
- Charismatic and positive department chair
- Willingness to change and experiment e.g. **Modern and Flexible Curriculum**

***Modern, smart, management approach***

***Modern and Flexible Curriculum***



<http://www.aps.org/programs/women/sitevisits/index.cfm>  
<http://www.aps.org/programs/women/reports/bestpractices>



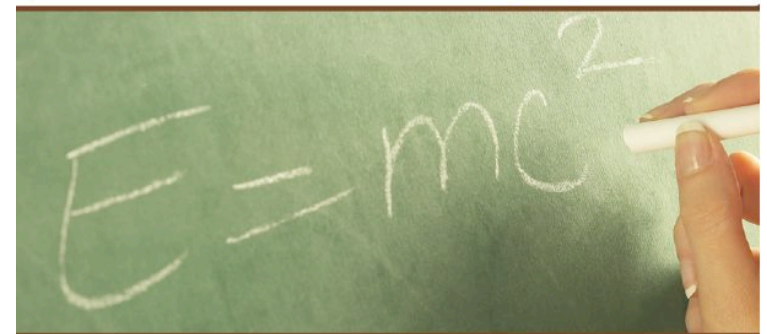
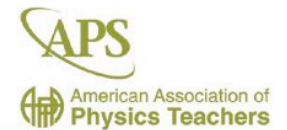
# Question function of multiple qualifying exams.....



# Task Force Report on Graduate Education in Physics

- ✓ Skills for Ph.D. students to know -
  - Technical expertise
  - Project planning
  - Communication
  - Public speaking
  - Writing
  - Teaching
  - Teamwork
  - Leadership
- ✓ Flexibility may be an increasingly important characteristic of physics Ph.D. programs.
- ✓ Keep time to Ph.D. within limits - especially important for women

Report of the  
Joint APS-AAPT  
Task Force



**GRADUATE  
EDUCATION  
IN PHYSICS**

October 5, 2005

**Committee Membership**

David Campbell, Chair  
(Boston University)

Tom Appelquist (Yale)

Renee Diehl (Penn State)

Joel Fajans (Berkeley)

J. D. Garcia (University of Arizona)

Jim Gates (University of Maryland)

Allen Goldman  
(University of Minnesota)

Peter Jung (University of Ohio)

Michael Paesler  
(North Carolina State)

## Some departments do not see connection between climate and effectiveness in educating

- Senior female faculty are marginalized, paid less, have less space, and sometimes discriminated against and therefore are not in a position to serve as good role models or promote change in department
- Students/female faculty have no recourse when faculty misbehave since there is poor accountability
- Male faculty are passive - benefit from existing system - think of physics as game
- Sometimes senior university administration are passive, unable or unwilling to help or intervene
- Students and junior male faculty learn to accept flawed system
- Lack of ethics, fairness, respect, accountability to society
- Denial of all of the above
- No pressure to change



# Laudable Strengths - Dream Dept.!

- Senior and junior female faculty are present and leading aggressive research groups
- Critical mass of female postdocs and students also present
- Female postdocs and students have high career aspirations
- Talented department chair builds trust and broad, open, hiring plan within the department
- Male faculty accept, support and mentor female students/faculty
- Senior university administration willing to fund targeted diversity hires
- Attention to ethics, respect, fairness, accountability to society
- Female faculty paid equitably, with access to same space, resources and promotion as their peer male faculty

SUMMARY

5

TABLE S-1 Evidence Refuting Commonly Held Beliefs About Women in Science and Engineering

Belief	Evidence	Where Discussed
(1) Women are not as good in mathematics as men.	Female performance in high school mathematics now matches that of males.	Chapter 2
(2) The matter of “under-representation” on faculties is only a matter of time; it is a function of how many women are qualified to enter these positions.	Women’s representation decreases with each step up the tenure-track and academic leadership hierarchy, even in fields that have had a large proportion of women doctorates for 30 years.	Chapter 3
(3) Women are not as competitive as men. Women don’t want jobs in academe.	Similar proportions of men and women science and engineering doctorates plan to enter postdoctoral study or academic employment.	Chapter 3
(4) Behavioral research is qualitative; why pay attention to the data in this report?	The data are from multiple sources, were obtained using well-recognized techniques, and have been replicated in several settings.	Chapters 2-5
(5) Women and minorities are recipients of favoritism through affirmative-action programs.	Affirmative action is meant to broaden searches to include more women and minority-group members, but not to select candidates on the basis of race or sex, which is illegal.	Chapter 4
(6) Academe is a meritocracy.	Although scientists like to believe that they “choose the best” based on objective criteria, decisions are influenced by factors—including biases about race, sex, geographic location of a university, and age—that have nothing to do with the quality of the person or work being evaluated.	Chapter 4
(7) Changing the rules means that standards of excellence will be deleteriously affected.	Throughout a scientific career, advancement depends upon judgments of one’s performance by more senior scientists and engineers. This process does not optimally select and advance the best scientists and engineers, because of implicit bias and disproportionate weighting of qualities that are stereotypically male. Reducing these sources of bias will foster excellence in science and engineering fields.	Chapter 4

*continued*

## Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering



ISBN: 0-309-65454-8, 346 pages, 6 x 9, (2006) Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine

TABLE S-1 Continued

Belief	Evidence	Where Discussed
→ (8) Women faculty are less productive than men.	The publication productivity of women science and engineering faculty has increased over the last 30 years and is now comparable to men's. The critical factor affecting publication productivity is access to institutional resources; marriage, children, and elder care responsibilities have minimal effects.	Chapter 4
(9) Women are more interested in family than in careers.	Many women scientists and engineers persist in their pursuit of academic careers despite severe conflicts between their roles as parents and as scientists and engineers. These efforts, however, are often not recognized as representing the high level of dedication to their careers they represent.	Chapter 5
→ (10) Women take more time off due to childbearing, so they are a bad investment.	On the average, women take more time off during their early careers to meet their caregiving responsibilities, which fall disproportionately to women. But, by middle age, a man is likely to take more sick leave than a woman.	Chapter 5
→ (11) The system as currently configured has worked well in producing great science; why change it?	The global competitive balance has changed in ways that undermine America's traditional science and engineering advantages. Career impediments based on gender or racial or ethnic bias deprive the nation of talented and accomplished researchers.	Chapter 6

the traditional model to an inclusive model with provisions for equitable and unbiased evaluation of accomplishment, equitable allocations of support and resources, pay equity, and gender-equal family leave policies. Otherwise, a large number of the people trained in and capable of doing the very best science and engineering will not participate as they should in scientific and engineering professions.

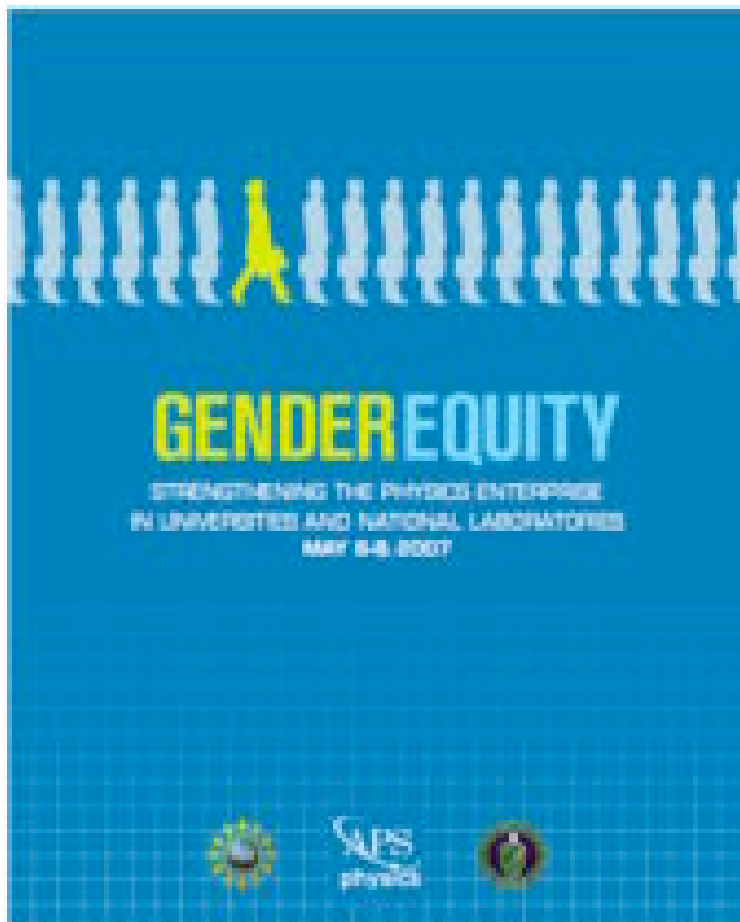
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# Gender Equity Workshop - Strengthening the Physics Enterprise in Universities and National Laboratories, May 6-8, 2007

- ◆ Dr. Nora Berrah, Western Michigan University (CSWP Chair)
- ◆ Dr. Arthur Bienenstock, Stanford University (APS President Elect)



Goals: to **examine** the underlying causes for the scarcity of women in physics and to **formulate specific recommendations** for action to improve the **recruitment, retention, and promotion of women** in physics.



## ***Gender Equity Workshop - Strengthening the Physics Enterprise in Universities and National Laboratories, May 6-8, 2007***

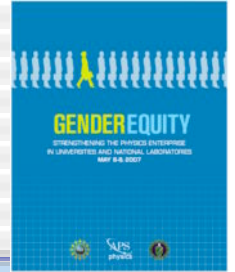
- Involved social scientists and physical scientists **focusing on data**
- CRLT Players interactive skit, speakers, panels, and breakout sessions
- Attendees
  - ◆ 50 Physics Department Chairs from major universities
  - ◆ 14 national laboratory managers or laboratory distinguished scientists (BES, NP, HEP, FES, ASCR, BER, NNSA)
  - ◆ Speakers, panelists, funding agency representatives, and physics opinion shapers
- Topics included American Competitiveness Initiative, *Beyond Bias and Barriers*, Title IX, National Labs
- **Engaged top physics leaders in identifying ways to increase, retain and promote women in physics**

<http://www.aps.org/programs/women/workshops/gender-equity.cfm>



# Action items of Gender Equity Workshop

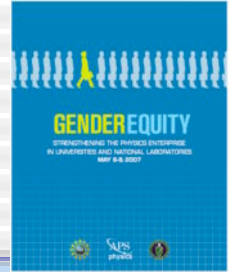
## Recruiting



- *Actively recruit women.* Keep apprised of women in the pipeline and let them know you would like them to apply for positions at your institution. Have faculty/scientists help keep a current list of up-and-coming women.
- *Advertise broadly* for positions to attract more women with different backgrounds. It has been observed that women are not likely to apply for positions that have tightly constrained qualifications unless they see a near exact fit.
- *Invite more women to interview.* It is documented that women often under-sell themselves when compared to men. Digging deeper into the candidate pool might identify an excellent fit that is not immediately apparent.
- *Mentor postdoctoral associates* (and graduate students where appropriate) into faculty or scientist positions. Advice on how to succeed in the academic or the national laboratory arena will help them better prepare themselves for hiring and for coping with the difficulties inherent to the field.

# Action items of Gender Equity Workshop

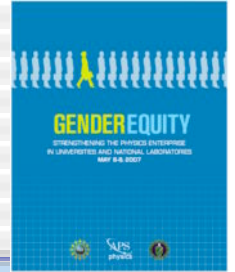
## Recruiting



- Provide *training for search committee* members in the recognition of unintended bias. It is particularly important that those reviewing applicants be aware of the role of unintended bias in the writing of letters of recommendation. Questions should focus on job-related issues, and avoid questions of a personal nature such as marital or family status.
- Have *candidates meet with a diverse group* of individuals including graduate students, postdocs, and women inside and outside the department/national laboratory unit to get a sense of the environment at the institution.
- Women physicists are much more likely than men to marry other scientists. Many universities have creative solutions for *hiring a pair of individuals*, such as upper-administration assistance in offering an additional position, or partial payment of the spouse's salary to another department or institution during some fraction of the pre-tenure period. Investigate these arrangements well in advance of hiring so that your job opening will be more attractive to woman candidates.

# *Action items of Gender Equity Workshop*

## *Ensuring success*

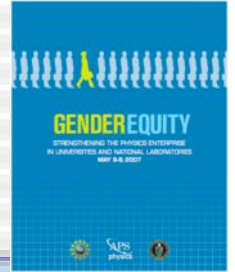


- *Stop the tenure clock* for family leave should be available at all institutions for both women and men. Although at some institutions this has been viewed as a stigma, policies should be developed and chairs/managers should make public comments to encourage all faculty/scientists to take advantage of this option. Such policies should make the extension automatic while allowing the scientist the option to be evaluated for tenure on the original schedule.
- *Nominate women* for both small and large awards, prizes, and honors to recognize their accomplishments. This will help build their reputations and enhance their chances for winning larger awards.
- *Chairs/Managers should schedule regular meetings* (at least once a year) with female students in their organizational unit to get their opinion of the environment for women in that unit. This can also be useful with postdoctoral associates or early career faculty/scientists.



# Action items of Gender Equity Workshop

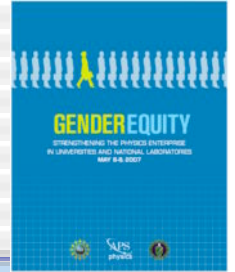
## Ensuring success - climate



- *Have a zero-tolerance policy for offensive comments.* Chairs and managers should set the example by challenging offenders, perhaps even publicly, and making it known that comments of this nature are inappropriate and will not be tolerated. Make sure harassment policies are clear, equitable, and enforced uniformly.
- Ensure that all policies (e.g., hiring, tenure, promotion, harassment, discrimination, space allocation, teaching assignments, etc.) are *transparent* and easily available to all. e.g. posted electronically for easy and anonymous access.
- Develop *policies that support a work/life balance* for all. Examples include allowing personal leave for dependent care, or setting meeting times that do not interfere with parental responsibilities.
- Ensure *meetings are run fairly* for all by providing training for faculty/scientists on meeting facilitation.
- *Publicly recognize awards and achievements* for all in an equitable manner.

# Action items of Gender Equity Workshop

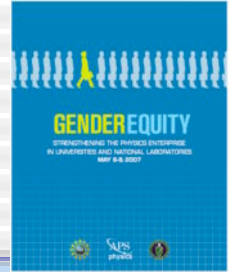
## Funding



- *All funding agencies need to collect data on gender and minority status in funding support. These data should be aggregated and made publicly available.*
- *Evaluation criteria for grant applications should be set in advance and should be clear.*
- *Important decision-making panels should have a critical mass of women, although it is important not to over-burden the women who are frequently tasked to serve on them. We encourage funding agencies to keep track of who is asked to serve on committees and make an effort to include some of the lesser-known women.*
- *Reviewers should be sensitive to the elements of hidden bias that can enter the review process. A short discussion on diversity at the beginning of all agency review panels and other meetings where decisions on resources are made is encouraged. Specific examples, both good and bad, should be given on items that could arise.*

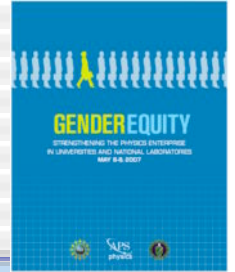
# *Action items of Gender Equity Workshop*

## *Funding*



- The funding agencies should set clear guidelines on building diversity and ensure that these values are incorporated in the award process. Awareness of diversity issues should be embedded at all decision-making levels in the funding agencies and at the national labs that they fund. For example, the National Science Foundation (NSF) Broader impacts criterion can be used to encourage diversity among grant awardees and those supported by these grants, but applicants and reviewers may not understand how this is to be interpreted. Such policies should be clearly stated and explained.
- Funding agencies should continue to support workshops and other activities to promote diversity and to monitor progress on gender equity.
- Funding agencies and institutions should brainstorm additional ways to increase the diversity of the grantees.

# Brainstorming discussions identified -



- Unexamined “assumptions” about family Life
- Bias against care-giving and other unintentional biases.....
- Outmoded institutional structures

**Hinder the Advancement of Women in Science**

# Chemistry has related but slightly different issues

- 10,000 bachelors/year; 50% female (2005)
- 2,000 Ph.D.'s/year; 35% female (2005)
- “Women are 13% of top 50 faculty (2005)”

**CHEMICAL & Engineering News**

EDUCATION  
October 31, 2005  
Volume 83, Number 44  
pp. 38-39  
ISSN 0009-2347

**WOMEN IN ACADEMIA**  
Among the top 50 universities, Rutgers has the greatest share of women chemistry professors

	FULL PROFESSOR			ASSOCIATE PROFESSOR			ASSISTANT PROFESSOR			ALL FACULTY		
	TOTAL	WOMEN	%	TOTAL	WOMEN	%	TOTAL	WOMEN	%	TOTAL	WOMEN	%
Akron, U of	11	2	18%	3	0	0%	4	0	0%	18	2	11%
Anzonia, U of	22	5	23	4	0	0	6	1	17	32	6	19
Arizona State U*	23	2	9	8	1	13	11	4	36	42	7	17
California, U of, Berkeley	34	4	12	5	1	20	9	0	0	48	5	10
California, U of, Irvine	23	1	4	2	0	0	8	3	38	33	4	12
California, U of, Los Angeles*	27	5	19	7	2	29	7	3	43	41	10	24
California, U of, San Diego*	30	5	17	5	0	0	15	1	7	50	6	12
California, U of, San Francisco*	12	0	0	2	1	50	5	1	20	19	2	11
California Inst of Technology	20	2	10	2	0	0	4	2	50	26	4	15
Colorado, U of*	22	4	18	6	1	17	9	1	11	37	6	16
Cornell U*	23	2	9	3	0	0	6	0	0	32	2	6
Delaware, U of	16	1	6	8	2	25	8	2	25	21	2	10
Emory U	15	0	0	1	0	0	5	1	20	21	1	5
Florida, U of	24	1	4	11	3	27	8	2	25	43	6	14
Florida State U*	16	2	13	9	2	22	11	2	18	36	6	17
Georgia Inst. of Technology*	22	1	5	8	0	0	8	0	0	38	1	3
Harvard U*	19	1	5	1	1	100	1	0	0	21	2	10
Illinois, U of, Urbana-Champaign	31	3	10	2	0	0	7	2	29	40	5	13
Indiana U	17	0	0	6	2	33	8	0	0	31	2	7
Johns Hopkins U	15	0	0	1	0	0	4	2	50	20	2	10
Louisiana State U	15	0	0	9	2	22	6	2	33	30	4	13
Maryland, U of, College Park*	25	5	20	7	0	0	8	1	13	40	6	15
Massachusetts, U of, Amherst	9	0	0	7	2	29	5	1	20	21	3	14
Massachusetts Inst of Technology	21	3	14	4	1	25	5	2	40	30	6	20
Michigan, U of	21	1	5	5	1	20	11	3	27	37	5	14
Michigan State U	20	2	10	10	1	10	4	0	0	34	3	9
Minnesota, U of	25	2	8	6	1	17	8	2	25	39	5	13
North Carolina, U of, Chapel Hill	24	2	8	12	4	33	2	0	0	38	6	16
Northwestern U	20	1	5	2	1	50	3	1	33	25	3	12
Notre Dame, U of*	12	0	0	4	1	25	7	2	29	23	3	13
Ohio State U	20	3	15	7	1	14	6	0	0	33	4	12
Oklahoma, U of*	14	0	0	5	2	40	7	2	29	26	4	15
Pennsylvania, U of	26	2	8	6	1	17	4	1	25	36	4	11
Pennsylvania State U	18	2	11	6	1	17	5	3	60	29	6	21
Pittsburgh, U of	11	0	0	8	2	25	7	1	14	26	3	12
Princeton U	18	0	0	2	2	100	4	0	0	24	2	8
Purdue U	36	3	8	9	4	44	8	3	38	53	10	19
Rice U	15	1	7	0	0	nm	5	1	20	20	2	10
Rutgers U*	29	6	21	7	4	57	3	0	0	39	10	26
South Carolina, U of*	17	1	6	3	1	33	10	2	20	30	4	13
Southern California, U of	18	1	6	6	1	17	4	1	25	28	3	11
Stanford U	15	1	7	4	0	0	3	1	33	22	2	9
State U of New York, Buffalo	23	1	4	3	0	0	7	2	29	33	3	9
State U of New York, Stony Brook	19	2	11	5	2	40	2	0	0	26	4	15
Texas, U of, Austin*	31	1	3	6	1	17	9	2	22	46	4	9
Texas A&M U	35	3	9	5	1	20	6	1	17	46	5	11
Utah, U of	21	2	10	3	0	0	7	2	29	31	4	13
Virginia Polytechnic Inst & State U	15	2	13	13	2	15	2	0	0	30	4	13
Washington, U of	30	2	7	4	1	25	5	0	0	39	3	8
Wisconsin, U of, Madison	27	2	7	2	0	0	10	2	20	39	4	10
<b>TOTAL</b>	<b>1,052</b>	<b>92</b>	<b>9%</b>	<b>264</b>	<b>56</b>	<b>21%</b>	<b>317</b>	<b>65</b>	<b>21%</b>	<b>1,633</b>	<b>213</b>	<b>13%</b>

NOTE: Appointments as of 2005-06 academic year. a Chemistry and biochemistry b Pharmaceutical chemistry c Chemistry and chemical biology nm - not meaningful.

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# Why should we care about Best Practices?

- Students expect good climate
- Best students will be selective - so schools have to respond to stay competitive in academic marketplace
- Better climate in physics departments will maintain excellence in physics and international competitiveness

The screenshot shows the APS website's 'Female Friendly Physics Graduate Programs' page. The header includes the APS logo and navigation links for 'American Physical Society Sites: APS, Journals, PhysicsCentral, Physical Review Focus'. A search bar and links for 'Become a Member' and 'Contact Us' are also present. The main navigation bar lists 'Publications, Meetings & Events, Programs, Membership, Policy & Advocacy, Careers in Physics, About APS'. The 'Programs' sidebar on the left includes links for Education, International Affairs, Physics for All, Women in Physics, Workshops & Meetings, Scholarships & Internships, Publications & Reports, Speakers Program, Site Visits, Female Friendly Physics Graduate Programs, Resources, Minorities in Physics, and Prizes, Awards & Fellowships. The main content area features the title 'Female Friendly Physics Graduate Programs' with 'Email | Print' links. Below this is the 'Survey by the Committee on the Status of Women in Physics' section, which explains that the APS Committee on the Status of Women in Physics (CSWP) has compiled a survey of graduate programs in physics. The survey questions are listed as follows:

1. How many tenure-track or tenured faculty -- male/female?
2. How many graduate students? -- male/female?
3. Is there a family leave policy for graduate students? If so, describe.
4. Is there family health insurance available for graduate students? Is it included in the cost of tuition?
5. In a paragraph, please describe why someone applying to graduate school should choose your institution.

The institutions listed are below. If you are a department chair, and would like to contribute, please e-mail Sue O'Neil ([women@aps.org](mailto:women@aps.org)) for the website address.

151 total surveys as of today

**Arizona State University (Physics and Astronomy)**

**Auburn University**

**Baylor University**

**Boston University**

**Brandeis University**

**Brigham Young University (Physics & Astronomy)**

**Brown University**

**Caltech**

At the bottom right, there is a red banner for the 'Institute of Physics Report: Women in University Physics Departments' with a photo of a woman looking at a microscope.



“Constant collection and monitoring of data to chart equity progress, coupled with attention to family friendly policies, subtle biases in promotion and tenure processes, and support from top leadership are needed for women to advance in academic science.”

Sue Rosser, Georgia Tech

