

Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Faculty

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Harvey Mudd College

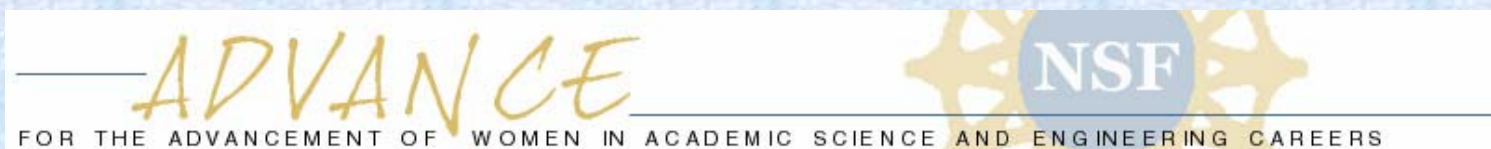


ADVANCE Auburn "Small Wins" Workshop 2010

COLLABORATIVE RESEARCH FOR HORIZONTAL MENTORING ALLIANCES

*Facilitating the advancement of senior women
chemistry and physics faculty members at liberal
arts institutions to the highest ranks of academic
leadership*

National Science Foundation ADVANCE Partnerships for
Adaptation, Implementation, and Dissemination (PAID)
Awards: NSF-HRD-061840, 0619027, 0619052, and 0619150
October 2006 - September 2010



PRINCIPAL INVESTIGATORS

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LAURA WRIGHT, FURMAN UNIVERSITY, GREENVILLE, SC

MIRIAM ROSSI, VASSAR COLLEGE, POUGHKEEPSIE, NY



Left to right:
**Miriam Rossi,
Laura Wright,
Bridget Gourley, &
Kerry Karukstis**

OUTLINE

- What are the characteristics of liberal arts colleges that influence faculty roles and responsibilities?
- What faculty recruitment and career development practices and policies currently exist at the department and institutional level?
- How can a horizontal mentoring strategy provide senior women STEM faculty at liberal arts colleges with the faculty development resources that they need?
- How has this NSF-ADVANCE-PAID project begun to impact departmental and institutional policy development?

Characteristics of Many Liberal Arts Colleges that Influence Faculty Roles & Responsibilities

- A primary emphasis on **individualized instruction** with **extensive interaction between faculty and students** and among students to foster a community of scholars
- A **broad curriculum** designed to develop knowledge and understanding of the humanities, sciences, and the arts
- A conscious decision to remain small – **low total enrollment, small class sizes, low student-faculty ratios**
- A **faculty that is dedicated to teaching undergraduates**
- A focus on **residential community**
- A commitment to faculty scholarship with the idealized model of **collaborative student-faculty research and scholarship**
- An emphasis on **faculty governance**

Common Current Faculty Recruitment and Professional Development Practices and Policies at Liberal Arts Colleges

TEACHING

- Reduced teaching load in the 1st year

SCHOLARSHIP

- Research start-up packages
- Junior faculty sabbatical – 3rd or 4th year

SERVICE

- Reduced service & advising expectations in the 1st year

FACULTY DEVELOPMENT

- New faculty orientation and mentoring programs

ADDITIONAL FACULTY BENEFITS

- Housing assistance programs
- Family/parental leave

Observation:

The majority of faculty development programs and practices on liberal arts campuses today **focus on junior faculty**.

Hypothesis:

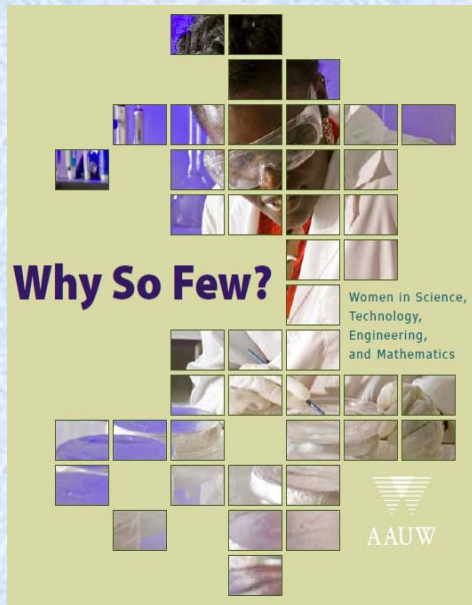
Faculty development programs that are **faculty-driven**, “bottom up” propositions rather than “top down” impositions are more consistent with the governance structure of liberal arts colleges and likely to be more effective and better received.

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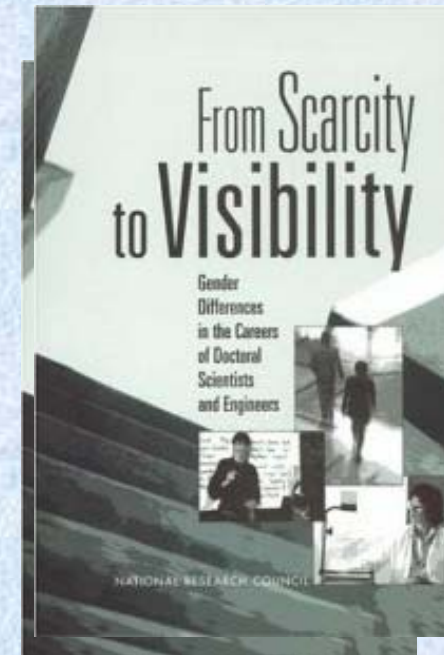
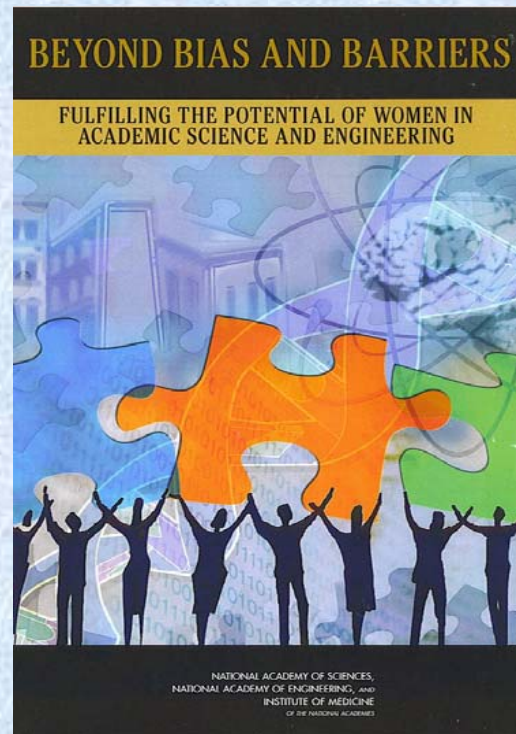
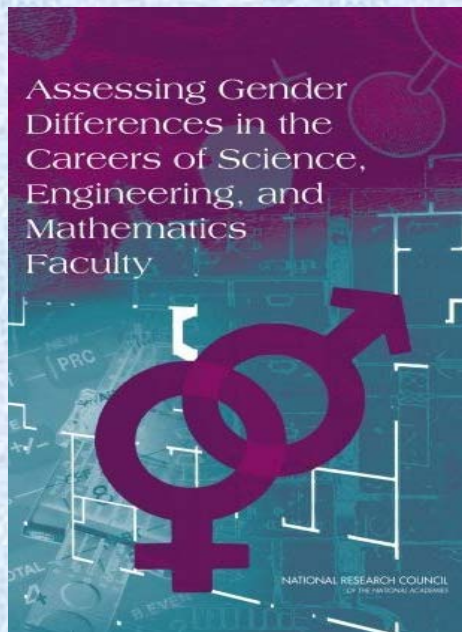
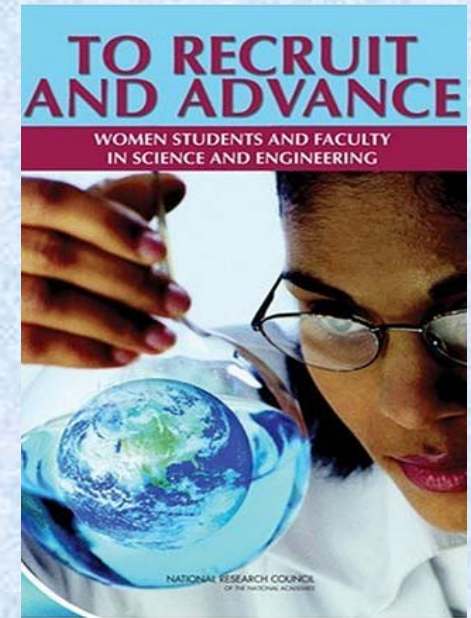
Where do senior faculty at liberal arts colleges, particularly **women full professors in STEM fields**, find the career development resources and mentors that they might seek?

Why do senior women - even successful women - seek mentoring?

- Both the professional challenges that we face as well as our career aspirations can change over time.
- New personal challenges might surface that impact our professional lives.
- Any support structure that might have existed earlier in our career may no longer be available or effective.
- Everyone benefits from the exchange of ideas and the interactions with colleagues.
- Established faculty members may neglect their own continued professional development in deference to the service needs of their department or institution.



The underrepresentation of academic women in almost all science and engineering fields is a well-documented statistic.

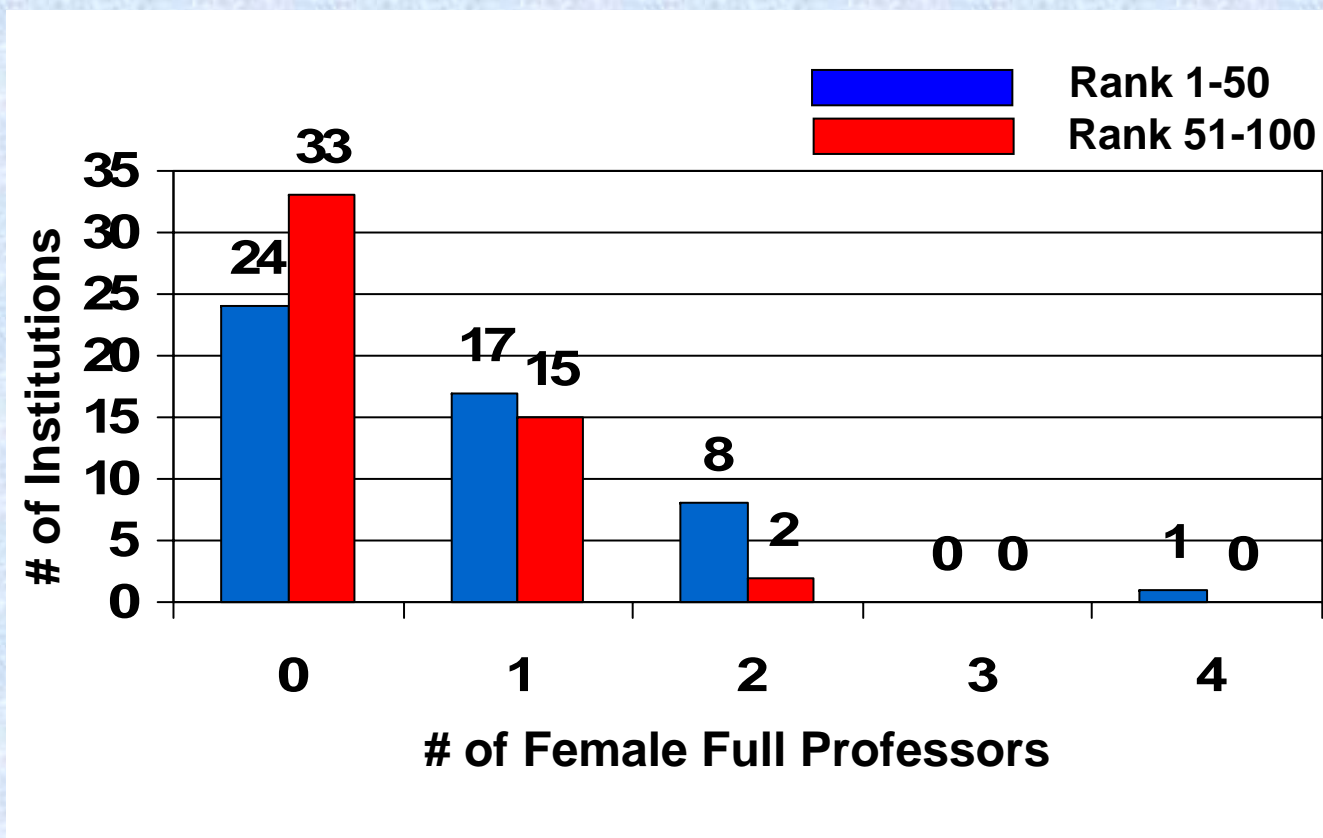


% of Female Faculty in the Top 50 Research Universities (as Ranked by the National Science Foundation According to FY2002 Research Funds Expended)

Discipline	Assistant Professor	Associate Professor	Full Professor
Chemistry	4.1%	3.0%	5.1%
Mathematics	2.8	2.4	3.1
Computer Science	10.8	14.4	8.3
Astronomy	22.0	16.5	9.5
Physics	11.2	9.8	4.6
Chemical Engineering	21.4	19.2	4.4
Civil Engineering	22.3	11.5	3.5
Electrical Engineering	10.9	9.8	7.2
Mechanical Engineering	15.7	8.9	3.2
Psychology	45.4	40.1	13.9
Biological Sciences	24.9	30.2	14.8

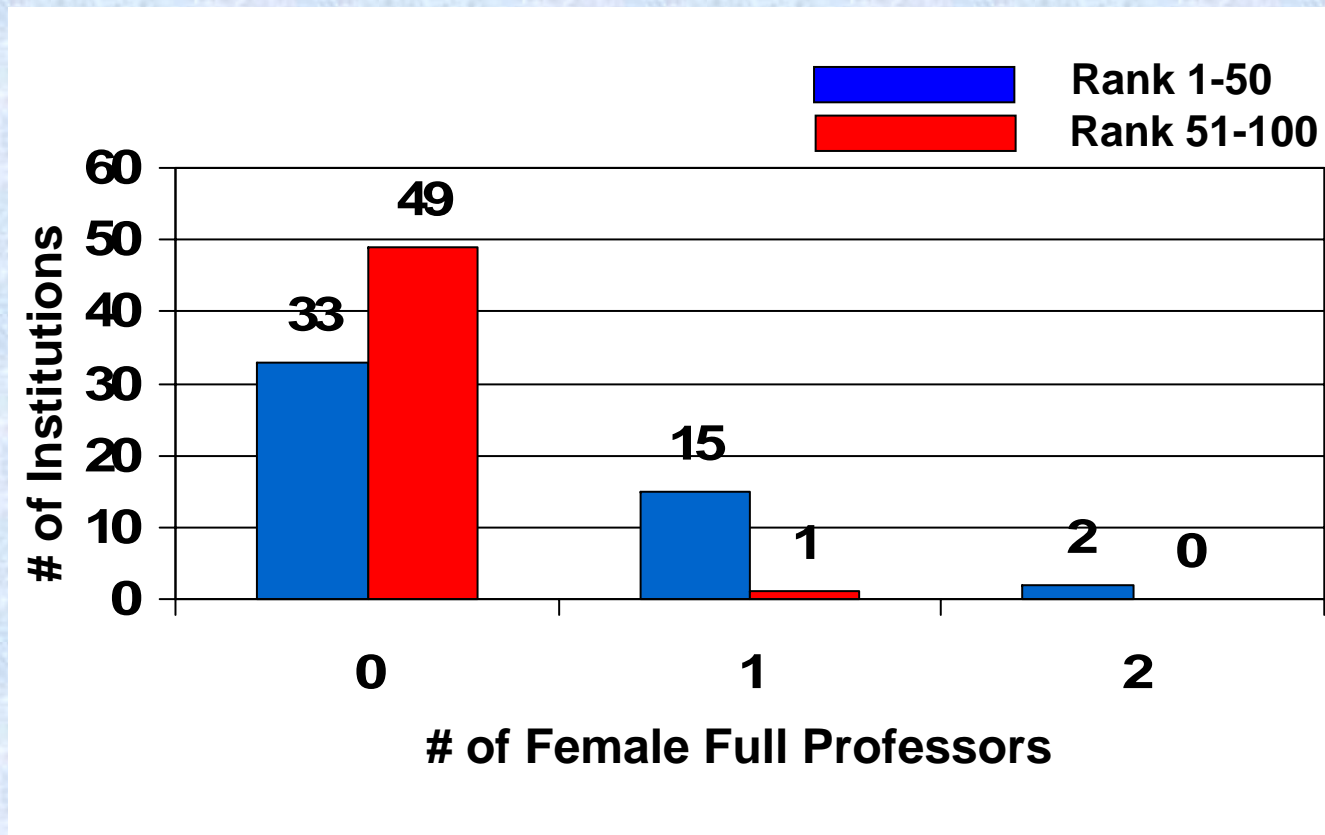
Nelson, D. and Rogers, D. (2005). *A National Analysis of Diversity in Science and Engineering Faculties at Research Universities*. University of Oklahoma, Department of Chemistry. www.now.org/issues/diverse/diversity_report.pdf

Women Full Professors in Chemistry at the US News & World Report "Top 100" Liberal Arts Colleges as of Academic Year 2006-2007



Senior women in chemistry at the top liberal arts campuses are rare: 57% of campuses have no senior women chemists; 89% of campuses have 0 or 1 female full professor in chemistry.....

Women Full Professors in Physics at the US News & World Report "Top 100" Liberal Arts Colleges as of Academic Year 2006-2007



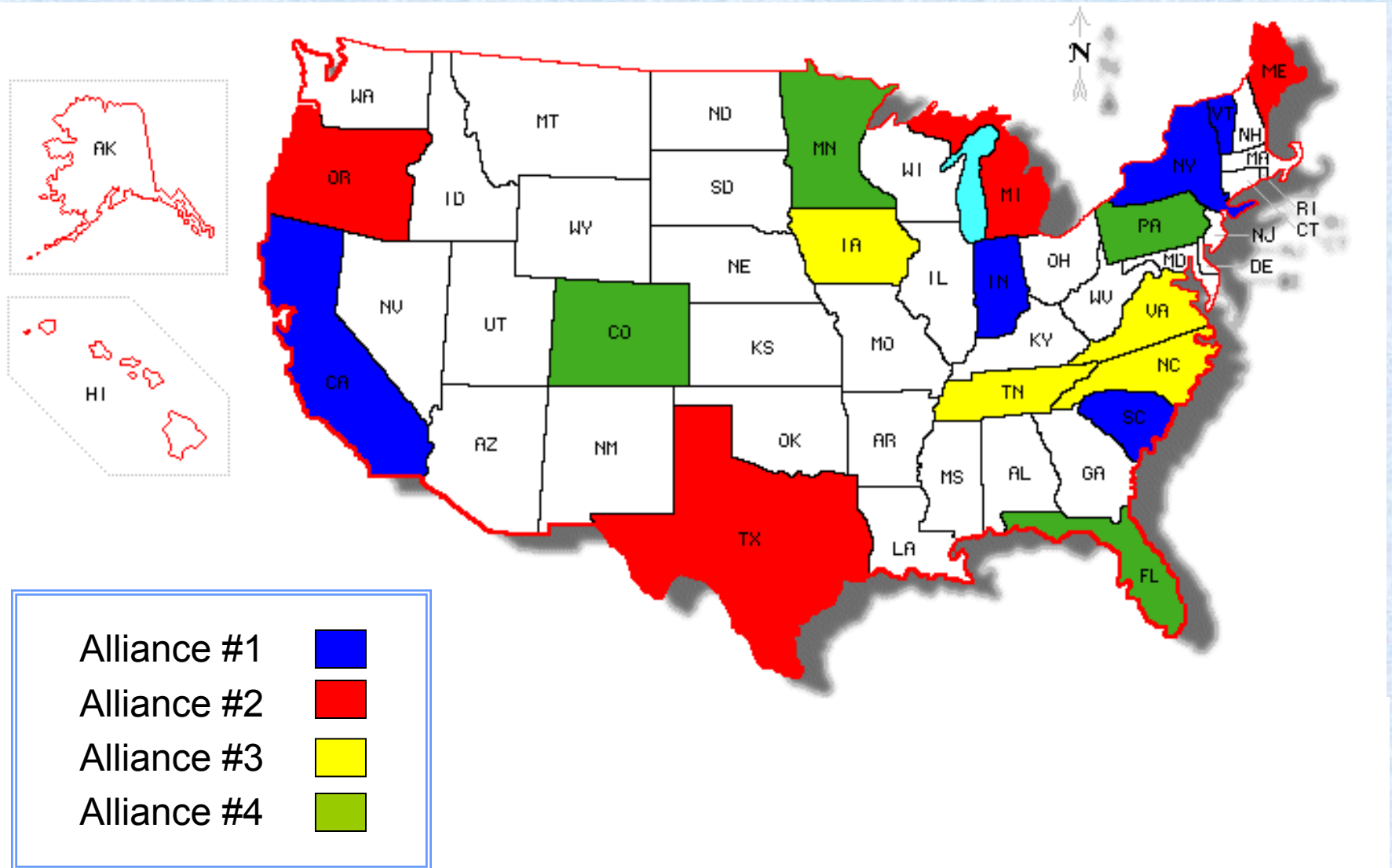
Senior women in physics at the top liberal arts campuses are extremely rare: 82% of campuses have no senior women physicists; 98% of campuses have 0 or 1 female full professor in physics.

ALLIANCE PARTICIPANTS

Alliance #1	Chemistry	Alliance #2	Chemistry
Sunhee Choi	Middlebury College	Janis Lochner	Lewis and Clark College
Bridget Gourley	DePauw University	Julie Millard	Colby College
Kerry Karukstis	Harvey Mudd College	Nancy Mills	Trinity University
Miriam Rossi	Vassar College	Joanne Stewart	Hope College
Laura Wright	Furman University	Melissa Strait	Alma College

Alliance #3	Chemistry	Alliance #4	Physics
Ruth Beeston	Davidson College	Cindy Blaha	Carleton College
Jill Granger	Sweet Briar College	Amy Bug	Swarthmore College
Darlene Loprete	Rhodes College	Anne Cox	Eckerd College
Leslie Lyons	Grinnell College	Linda Fritz	Franklin & Marshall College
Carol Ann Miderski	Catawba College	Barbara Whitten	Colorado College

GEOGRAPHICAL DISTRIBUTION OF ALLIANCE MEMBERS



ALLIANCE ACTIVITIES

- Formulation of **personal and alliance short-term and long-term professional goals**
- Periodic **in-person gatherings** focused on one or more common personal goals or an alliance goal
 - Readings, presentations, consultant workshops
- **Regular communication** through videoconferencing, Skype, NITLE Network, etc.
- **Outreach activities** on individual campuses or in the region
- **Dissemination activities** – presentations at professional conferences

ALLIANCE MEETINGS

Alliance #	Date	Location	Campus/Meeting
1	January 12-14, 2007	Claremont, CA	Harvey Mudd College
	March 22-24, 2007	Chicago, IL	ACS Meeting
	February 29-March 2, 2008	Dallas, TX	
	October 19-20, 2008	Chicago, IL	
	May 29-June 1, 2009	Seattle, WA	
2	March 24-25, 2007	Chicago, IL	ACS Meeting
	June 22-26, 2007	Portland, OR	Lewis & Clark College
	October 19-21, 2007	San Antonio, TX	Trinity University
	June 20-22, 2008	Chicago, IL	
	July 24-26, 2009	Waterville, ME	Colby College
3	January 4-6, 2008	Davidson, NC	Davidson College
	March 20-22, 2009	Salt Lake City, UT	ACS Meeting
	June 11-13, 2009	Memphis, TN	Rhodes College
	February 26-28, 2010	Greensboro, NC	Catawba College
4	April 12-13, 2008	St. Louis, MO	APS Meeting
	June 24-26, 2008	Buena Vista, CO	
	March 13-15, 2009	Philadelphia, PA	APS Meeting
	April 12-15, 2010	Washington, D.C.	APS Meeting
Network Gathering	April 5, 2008	New Orleans, LA	ACS Meeting
	March 22, 2009	Salt Lake City, UT	ACS Meeting
	March 24, 2010	San Francisco, CA	ACS Meeting
Summit Meeting	June 2-4, 2010	Washington, D.C.	



**Alliance #1 in Chicago
October 2008**



**Alliance #2 in Portland
June 2007**



**Alliance #3 in Memphis
June 2009**

PROFESSIONAL DEVELOPMENT FOCUS OF EACH ALLIANCE

- **Alliance #1** – Leadership and Visibility on Campus and in Professional Societies
- **Alliance #2** – Creation of Career Development Resources
- **Alliance #3** – Exchange of Expertise and Best Practices
- **Alliance #4** – Career Directions at Liberal Arts Colleges

IMPACT ON PROFESSIONAL LIVES OF PROJECT PARTICIPANTS

Confidence to Seek Leadership Positions

Chair of the Faculty & Department Chairs
ACS Local Section Chair
President, Secretary, & Executive Board
Member of Professional Organizations
Chairs on leading Faculty Committees

Encouragement to Seek/ Accept External Recognition

Fulbright Fellowship
CASE State Professor of the Year
Professional Society Service Award

Visibility and Recognition on Campus

Endowed Professorships
Award for Meritorious Teaching
Distinguished Professorship in recognition of sustained excellence in teaching and service
Inaugural Award for Institutional Service

Support to Pursue New Directions

Reinvigoration for research and sabbaticals in new research fields
Search for VP academic affairs positions

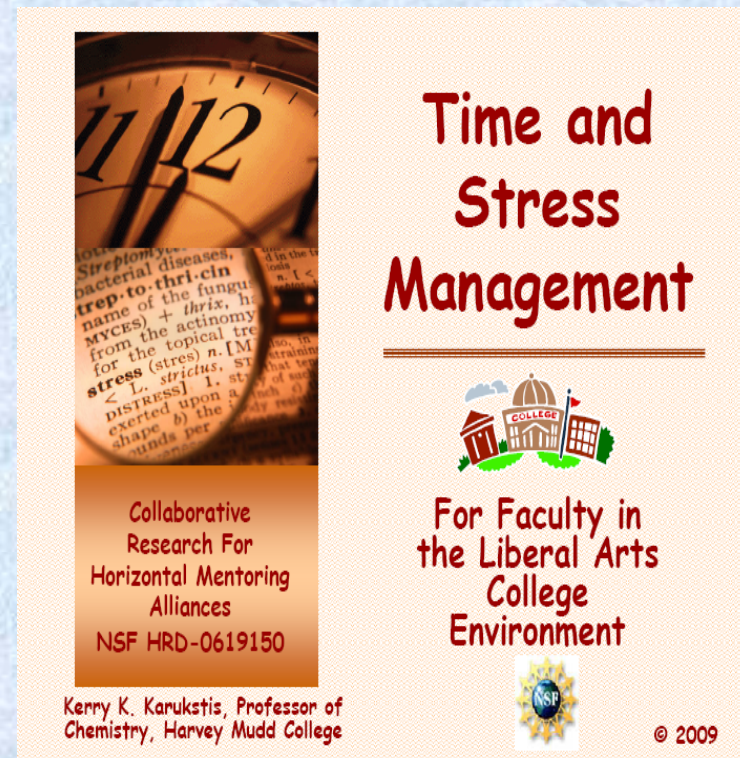
DEVELOPMENT OF CAREER RESOURCES FOR THE BROADER ACADEMIC COMMUNITY



Balancing the Personal
with the Professional

Julie T. Millard

Strategic Career
Planning
Workshop at
Colby College,
June 2009



Future monograph from summit meeting on horizontal mentoring strategies for academic women to be held in Washington, D.C. on June 3-5, 2010.



Symposium at the National Meeting of the American Chemical Society

San Francisco, March 24, 2010

Mentoring Strategies to Facilitate the Advancement of Women Faculty

- Now publishing an **ACS Symposium Volume** with the Same Title and with an Expanded List of Contributors
- Features mentoring strategies for enhancing the leadership, visibility, and recognition of academic women scientists
- Addresses broadening the participation and advancement of STEM women at all career stages and at all institutional types.

IMPACT ON CURRICULA

Catawba College – Carol Ann Miderski – Alliance #3

Carol Ann successfully uses alliance information exchange to achieve **a reduction in teaching loads for science faculty at her institution.**

Sweet Briar College- Jill Granger & Davidson College – Ruth Beeston - Alliance #3

Jill and Ruth co-teach Chemistry by Inquiry: Art and Science for high school teachers – **leads to a new Chemistry & Art course and new teacher outreach efforts at Davidson.**

Sweet Briar College- Jill Granger - Alliance #3

PAID project supports a visiting speaker to provide **professional development for faculty in the form of information about significant contemporary interdisciplinary research questions and career paths and internship opportunities for students.** Science faculty subsequently created an action plan to increase opportunities for **interdisciplinary collaboration between departments for curriculum development, faculty research, and student mentoring.**

Gender Equity Scorecard - A Database focused on Liberal Arts Institutions

Our horizontal mentoring strategy aims to advance senior women faculty members at liberal arts colleges to the highest ranks of academic leadership.



Our project is compiling data on the status of STEM women faculty at liberal arts colleges - a “**Gender Equity Scorecard**”.



The impetus for establishing this database is the 2006 AAUP publication on gender equity indicators.

AAUP Faculty Gender Equity Indicators 2006,

<http://www.aaup.org/NR/rdonlyres/63396944-44BE-4ABA-9815-5792D93856F1/0/AAUPGenderEquityIndicators2006.pdf>



This information has already been vital in conversations with administrators on several alliance members’ campuses.



Gender Equity Indicator – Faculty Salaries

Female Avg Salary as % of Male Avg Salary 2007-2008			
	Full	Associate	Assistant
All Project Institutions	78.3 - 100.9%	89.7 - 107.9%	86.4 - 103.0%
Avg of Project Institutions	90.6%	100.%	98.1%
Avg of Priv. Ind. Baccalaureate Institutions in AAUP Survey	95.4%	98.5%	98.1%
Project Inst. “A”	81.6%	98.7%	101.3%

Project Institution “A” – Vice President of Academic Affairs is leading discussions on gender equity in full professor salaries at the Department Chairs Committee level (currently an all-male committee)

Gender Equity Indicator – % Women STEM Faculty

% of Tenured and Tenure-Track Women STEM Faculty			
	Full	Associate	Assistant
All Project Institutions	6.3 – 45.5%	25.0- 43.8%	10.0 – 63.6%
Avg of Project Institutions	22.2%	31.9%	44.4%
Project Inst. “A”	17.1%	43.8%	52.9%
Project Inst. “B”	12.1%	27.3%	10.0%

Project Institution “A” – Currently examining success in recruiting and hiring female faculty in STEM fields to address hiring practices for a more racially-diverse faculty

Project Institution “B” – Discussions of the project participant with the Vice President for Academic Affairs have raised awareness of poor representation of STEM junior women faculty. Situation highlighted in campus newspaper.

CAMPUS OUTREACH EFFORTS

Colby College

Julie Millard - Alliance #2

A **Strategic Career Planning workshop** led by Dr. Suzanna Rose of Florida International University for Alliance #2 in collaboration with Colby's Forum for Women in Science. The workshop included individual career planning meetings and sessions on negotiation and critical career issues.

Furman University

Laura Wright - Alliance #1

A **monthly book discussion group of the women STEM faculty to work on leadership development** at the University.

Eckerd College

Anne Cox - Alliance #4

Reading club of the STEM women to discuss the volume *Challenge of the Faculty Career for Women: Success and Sacrifice*.

Swarthmore College

Amy Bug - Alliance #4

Meeting of the junior and senior STEM women faculty with the Associate Provost to identify the specific needs of pre-tenure faculty that the institution or senior faculty might be able to fulfill.

Impact of a Single Campus Outreach Effort

Harvey Mudd College women faculty participate in **Inside Higher Ed Audio Conference on “Challenges of the Faculty Career for Women: Success and Sacrifice”** by Maïke Ingrid Philipsen – June 17, 2008

Questionnaire developed to explore issues cited in “Challenges of the Faculty Career for Women”

Questionnaire completed at meetings of alliances #1, 3, & 4 in 2008-09

Women faculty at 4 campuses complete questionnaire and participate in related outreach activities during 2008-09

Sweet Briar College

SMET Women design Faculty Development Workshop on Interdisciplinary Curricula

Swarthmore College

Women faculty meet with associate provost to discuss climate for women

Harvey Mudd College Eckerd College

Women faculty organize discussion group on Philipsen book

Harvey Mudd College

July 2009 - A new listserve is established to open communications among the HMC community on children and parenting

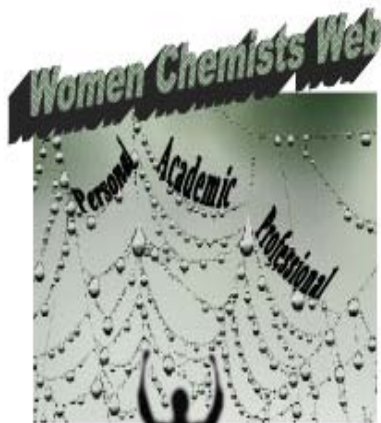
Eckerd College

July 2009 - Questionnaire results are considered in design of new faculty orientation, particularly to aid faculty in developing research plans

CAMPUS OUTREACH EFFORTS

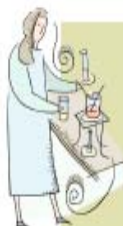
Catawba College – Carol Ann Miderski – Alliance #3

Women Chemists Web: Women Helping Women Make Connections for Success



**Building Strength
through
Connections**

**Friday, October 9
2:00—5:00 pm
Catawba College
Salisbury, NC**



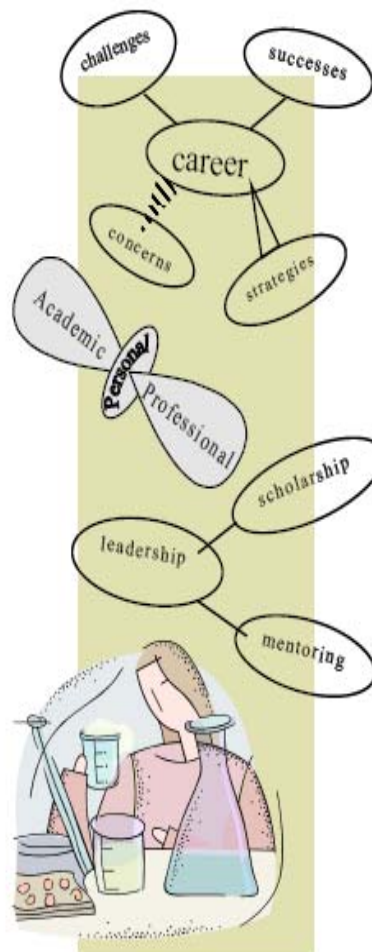
You are cordially invited to join women chemists from local four-year colleges for an afternoon of networking and discussion about career challenges and opportunities.

As women faculty in small Chemistry Departments, we have many opportunities to be "only," such as the only woman in the department or the only one to teach your flavor of chemistry.

This gathering is focused on reducing the "lonely" in being "only" by getting lots of us together from across the region. During the afternoon, we will participate in small group discussions centered around an assortment of career oriented topics.

Hopefully, these conversations will help us get to know one another better and will provide a source of outside perspective, fresh ideas, and alternative strategies for facing the academic, professional and personal challenges encountered in small college environments.

Friday Oct 9, 2-5 pm



Please contact me, Carol Ann Miderski, by e-mail "cmidersk@catawba.edu" to let me know whether or not you will be able to attend.

With your help, I would like to put together a resource network of women chemists in the area with information that you are willing to share.



Catawba College is located off I-85 about halfway between Charlotte and Greensboro. For directions go to <http://www.catawba.edu/about/directions.asp>

We will be meeting in the Center for the Environment, room 300. Signs will be posted showing where to park and guiding you to the meeting room. Following the meeting, guests are welcome to tour the Chemistry Department.

PRESENTATIONS

NITLE SUMMIT - April 3-5, 2008. “**Real-Time Collaboration for the Liberal Arts Community**”, B. Gourley

Southeastern Regional Meeting of the American Chemical Society- November 14, 2008, "**Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Chemists at Liberal Arts Institutions**", K. Karukstis, L. Wright, B. Gourley, M. Rossi

Southeastern Regional Meeting of the American Chemical Society - October 22, 2009, “**Horizontal Mentoring, It's Not Just for Students Anymore**”, C. A. Miderski

NSF-ADVANCE Principal Investigators Meeting, Arlington, VA, October 2009. “**Enhancing the Visibility and Leadership of Female STEM Faculty Beyond the Research University**”, K. Karukstis.

NSF-ADVANCE Principal Investigators Meeting, Arlington, VA, October 2009. “**Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Science Faculty at Liberal Arts Institutions**”, K. Karukstis, B. Gourley, L. Wright, and M. Rossi.

PRESENTATIONS

American Chemical Society Meeting, San Francisco, CA, March 2010.

“Women chemists web: Building strength through connections”, C. A. Miderski

“Model approach for mentorship involving senior women chemistry faculty at liberal arts colleges”, C. A. Miderski, R. Beeston, L. Lyons, D. Loprete, J. Granger

“Report from Alliance #2: Building a peer mentoring group from scratch”, J. L. Stewart

American Society for Biochemists and Molecular Biologists Annual Meeting Women Scientists Panel, April 2010. “The Narrowing Gender Gap?”, K. Karukstis

Council on Undergraduate Research National Conference, Ogden, UT, June 2010. “Facilitating the advancement of senior women chemistry and physics faculty via multi-institution horizontal peer-mentoring: Transforming the professoriate for broader impacts”, B. Gourley, A.-B. Hunter.

PUBLICATIONS

K. K. Karukstis, “**Women in Science, Beyond the Research University: Overlooked and Undervalued,**” *The Chronicle of Higher Education* **55** 41 p. 23 (2009).

<http://chronicle.com/article/Women-in-Science-Beyond-th/46984/>

L. Wright, “**Strength in Numbers**”, *Furman Magazine*, Summer 2009, pp. 8-9 <http://www.furman.edu/fumag/summer09/summer2009.pdf>

Statement Submitted for the Record, House Science and Technology Committee, Subcommittee on Research and Science Education, **Hearing on Encouraging the Participation of Female Students in STEM Fields**, July 21, 2009. Contributions from K. K. Karukstis. Published in the Congressional Record.

K. K. Karukstis, B. L. Gourley, L. L. Wright, M. Rossi, “**Mentoring Strategies To Recruit and Advance Women in Science and Engineering,**” *Journal of Chemical Education*, **87**, 355-356 (2010).

UPCOMING DISSEMINATION ACTIVITY

ADVANCE Project Summit Meeting
June 2-4, 2010, Washington D.C.

Purpose: To create recommendations on enhancing the visibility and leadership of senior STEM women faculty at liberal arts institutions.

Participants: 54 full professors and senior associate professors of chemistry and physics from 26 states and 48 different institutions.

CONCLUSIONS: Impact on personal and professional lives of alliance members.

Most commonly cited benefits include:

- sharing and receiving advice and support of peers
- increased confidence to speak up for oneself and accept due recognition for professional work and contributions
- permission to focus on one's professional goals
- genuine friendships that will last beyond the initiative
- transfer of gains and lessons learned to one's own institution
- opportunities for professional collaboration
- relief of isolation
- opportunity to expand professional interests

CONCLUSIONS: Impact on departments and/or institutions.

- new leadership provided by alliance members at both department and institutional level
- reduced teaching loads at one institution
- introduction of a new interdisciplinary course at one institution

CONCLUSIONS: Impact of campus outreach efforts

- opportunities and venues for discussions on career issues and career planning
- influence on new faculty orientation
- raised awareness of equity issues in hiring and salaries

ACKNOWLEDGMENTS

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Evaluation Research, University of Colorado, Boulder**

**DePauw University, Harvey Mudd College, Furman University, and
Vassar College**

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