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

Kerry K. Karukstis
Professor of Chemistry
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

KERRY KARUKSTIS, HARVEY MUDD COLLEGE, CLAREMONT, CA

BRIDGET GOURLEY, DEPAUW UNIVERSITY, GREENCASTLE, IN

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 – 3\textsuperscript{rd} or 4\textsuperscript{th} 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.

Query:
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)

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

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.
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

<table>
<thead>
<tr>
<th>Alliance #1</th>
<th>Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunhee Choi</td>
<td>Middlebury College</td>
</tr>
<tr>
<td>Bridget Gourley</td>
<td>DePauw University</td>
</tr>
<tr>
<td>Kerry Karukstis</td>
<td>Harvey Mudd College</td>
</tr>
<tr>
<td>Miriam Rossi</td>
<td>Vassar College</td>
</tr>
<tr>
<td>Laura Wright</td>
<td>Furman University</td>
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</table>

<table>
<thead>
<tr>
<th>Alliance #2</th>
<th>Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Janis Lochner</td>
<td>Lewis and Clark College</td>
</tr>
<tr>
<td>Julie Millard</td>
<td>Colby College</td>
</tr>
<tr>
<td>Nancy Mills</td>
<td>Trinity University</td>
</tr>
<tr>
<td>Joanne Stewart</td>
<td>Hope College</td>
</tr>
<tr>
<td>Melissa Strait</td>
<td>Alma College</td>
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<table>
<thead>
<tr>
<th>Alliance #3</th>
<th>Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth Beeston</td>
<td>Davidson College</td>
</tr>
<tr>
<td>Jill Granger</td>
<td>Sweet Briar College</td>
</tr>
<tr>
<td>Darlene Loprete</td>
<td>Rhodes College</td>
</tr>
<tr>
<td>Leslie Lyons</td>
<td>Grinnell College</td>
</tr>
<tr>
<td>Carol Ann Miderski</td>
<td>Catawba College</td>
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<table>
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<tr>
<th>Alliance #4</th>
<th>Physics</th>
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</thead>
<tbody>
<tr>
<td>Cindy Blaha</td>
<td>Carleton College</td>
</tr>
<tr>
<td>Amy Bug</td>
<td>Swarthmore College</td>
</tr>
<tr>
<td>Anne Cox</td>
<td>Eckerd College</td>
</tr>
<tr>
<td>Linda Fritz</td>
<td>Franklin &amp; Marshall College</td>
</tr>
<tr>
<td>Barbara Whitten</td>
<td>Colorado College</td>
</tr>
</tbody>
</table>
GEOGRAPHICAL DISTRIBUTION OF ALLIANCE MEMBERS

Alliance #1
Alliance #2
Alliance #3
Alliance #4
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

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

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

♦♦♦

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**

<table>
<thead>
<tr>
<th></th>
<th>Full</th>
<th>Associate</th>
<th>Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Project Institutions</td>
<td>78.3 - 100.9%</td>
<td>89.7 - 107.9%</td>
<td>86.4 - 103.0%</td>
</tr>
<tr>
<td>Avg of Project Institutions</td>
<td>90.6%</td>
<td>100.0%</td>
<td>98.1%</td>
</tr>
<tr>
<td>Avg of Priv. Ind. Baccalaureate Institutions in AAUP Survey</td>
<td>95.4%</td>
<td>98.5%</td>
<td>98.1%</td>
</tr>
<tr>
<td>Project Inst. “A”</td>
<td>81.6%</td>
<td>98.7%</td>
<td>101.3%</td>
</tr>
</tbody>
</table>

**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

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

**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 Maike 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
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

Women Chemists Web: Women Helping Women Make Connections for Success

Catawba College – Carol Ann Miderski – Alliance #3

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 “loneliness” of 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 examination 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 environment.

Please contact me, Carol Ann Miderski, by e-mail "cmiderski@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


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


PRESENTATIONS


“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


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

We gratefully acknowledge the support for this project from:

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

Andrew W. Mellon Foundation Interinstitutional Initiative Grant for Faculty Career Enhancement

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