



# EVALUATING TWO PROGRAMS FOR ADVANCING POST-DOCTORAL AND FACULTY WOMEN IN STEM

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## ABSTRACT

In the U.S., careers in science, technology, engineering, and math (STEM) are viewed as high status, high achievement positions, yet the involvement of women across ethnicities (and some ethnic minority men) remains unusually low (Dasgupta, 2011). Women, particularly women of color, are underrepresented at all career levels including post-doctoral, associate professor, and professor ranks (NSF, 2010).

Utilizing a NSF ADVANCE PAID grant, the University of Wisconsin (UW) System Women & Science Program developed two new programs designed to target female post-doctoral fellows and senior female faculty in science and engineering across the UW system. The current study examines the effectiveness of these two programs from the first of five years.

It is anticipated that program involvement will broaden the participation of women across these two career stages. Specifically, the programs aim to increase interest in, knowledge of, and applications to academic positions for post-doctoral scholars and improve career satisfaction and professional accomplishments for senior faculty women in STEM.



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## PROGRAM 1: Post-Doctoral Fellows

### Background

The first program targets female post-doctoral scholars in the UW System who are preparing for the academic job market in science and engineering. These women tend to be isolated and lack the opportunity that graduate students hold to network through courses and assistantships. In addition, women earning PhD's are less likely to apply for tenure-track academic positions than men (NRC, 2010) and may be less familiar with the diversity of academic positions available (e.g., those at Primarily Undergraduate Institutions (PUIs)).

**Aim:** To assess the effectiveness of a post-doctoral program aimed to increase interest in, knowledge of, and applications to tenure-track academic positions at PUIs.

### Method

- **Recruitment and Selection:** Applications were solicited during the fall 2011 through listservs, direct recruitment by department chairs, and word of mouth. Applicants submitted letters of support from faculty advisers. Participants were selected by the UW Women & Science Advisory Board, consisting of representatives from each of the UW system campuses.
- **Sample:** All 10 applicants were chosen to participate in the spring 2012 program series (Tbl 1).

TABLE 1: Post-Doctoral Fellow Demographics

Ethnicity	
Asian or Asian American	6 (60%)
European or European American	3 (30%)
Middle Eastern or Asian Indian	1 (10%)
<b>Has a parent in Science or Engineering:</b>	4 (40%)
<b>Is a first generation college student:</b>	3 (30%)
<b>Can identify a female mentor in their field:</b>	6 (60%)

- **Program and Evaluation:** The seminar series includes practice “job talks” and opportunities for mentoring with current STEM faculty at PUIs. Participants fill out a preliminary survey as part of their application and a follow up survey one year later. Surveys assess participants’ interest in, knowledge of, and applications to academic positions at comprehensive institutions.

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### Results & Discussion

Data from the pre-program survey suggest scholars are interested in obtaining academic positions at PUIs:

*“I attended a PUI as an undergraduate and the relationships I was able to form with my science mentors greatly influenced my education and my decision to pursue graduate studies in microbiology. I think the relationship between faculty and undergraduates is unique to PUIs and is extremely important in the training and in the future success of the student. I am interested in pursuing a career at a PUI because I think that is the best environment to mentor young scientists.”*

However, some women question their ability to pursue such a career and/or have limited knowledge about academic careers at PUIs. Participation in the seminar program is expected to increase interest in, knowledge of, and applications to academic positions at PUIs, resulting in higher involvement and representation of female faculty in the UW System.

*“The men did not realize that the sub-master key did not open the women’s faculty bathroom. It did open the men’s faculty bathroom. So, I didn’t have a key to the faculty bathroom and couldn’t figure out why I couldn’t get in for three days.”*

## PROGRAM 2: Senior Faculty

### Background

The second program targets senior female faculty in STEM departments in the 11 UW comprehensive or primarily undergraduate institutions (PUIs). PUIs are large enough in size to employ a number of female professors in STEM fields, but small enough that a significant concentration of women scientists are hard to find. Many UW System comprehensive universities employ only a single female full professor or a single female associate professor in STEM departments (UWO OIR, 2010). Women at such universities may lack female role models for professional success. Previous research suggests that mentoring is crucial for female faculty feeling connected to their field, accessing important information such as salary, and decreasing overall isolation (Hill, 2010; NRC, 2010).

**Aim:** To assess the effectiveness of a horizontal mentoring program designed to decrease faculty isolation and increase professional accomplishments and career success of isolated women in the UW System.

### Method

- **Recruitment and Selection:** 37 isolated senior female faculty from various STEM fields were identified and contacted by UW Women & Science Program Staff during the fall 2011.
- **Sample:** 14 senior women were able to attend the initial meeting. A subset of 8 women also participated in 30-60 minute interviews with the researcher.
- **Evaluation:** Faculty fill out a preliminary survey at the beginning of the program and will fill out follow-up surveys each subsequent year (and interviews at years 1, 3, & 5).

### Results & Discussion

Participating faculty continue to struggle with **gender discrimination** within their fields. Instances of both explicit and implicit sexism were reported.

*“I can still remember, he came down the hall one time and the other two women that taught in other engineering departments, we were having a conversation in the hallway and he said, “Hey girls, how are you doing?” And, we all turned around and finally the one looked at him and said, “you know, we’re in our thirties, we’re not girls.”*

Senior women also noted **a lack of mentors**. Of the 14 participants, 8 claimed they feel at least somewhat isolated within their department and often sought mentors elsewhere.

*“I am the only female in my department... I usually end up talking to women in other departments.”*

Despite reporting negative experiences, half of the participants indicated that they were satisfied with career progression and half felt they were at least usually satisfied with the way they balance their professional and personal lives. In addition, many reported consciously working towards advocacy and **providing mentorship** to others.

*“We now have once a year, .... a women faculty and staff potluck and you can either bring a bottle of wine or a dish to pass and the place is jam packed and they walk in about 5 and [at] about 9:30, ... the last leave, and everybody kind of just gets to know one another and its really cool.”*

If effective, the horizontal mentoring program is expected to increase career success and satisfaction of senior women through decreased isolation, ultimately resulting in retention and advancement of female faculty in the UW System.

## REFERENCES

- National Research Council (2010). Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty
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