

# **Career Advancement Program for Tenured SEM Women Faculty**

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## **Abstract**

Professional development programs at most institutions are designed primarily for new or tenure-track faculty members. Data show that such programs are beneficial in helping junior faculty members establish themselves and achieve tenure. However, few institutions provide programs that assist mid-career and senior faculty with moving to higher levels of professional achievement, for example, promotion to full professor or named chairs. At many institutions, women in all fields are underrepresented at higher faculty ranks and in administrative positions, and this is even more extreme for women in science, engineering, and mathematics (SEM). As part of the Kansas State University (K-State) ADVANCE Project, we have implemented the Career Advancement Program (CAP) for tenured women faculty in engineering and science to advance women in mid-career, senior rank, and leadership positions. This program was designed to enhance networking opportunities, research expertise and stature, and leadership skills. Awards of up to \$20,000 were made through a competitive proposal process. Award recipients identified one or more mentors with whom they consulted for advice on critical mid-career topics, e.g., promotion to full professorship, assumption of administrative responsibilities, or achieving their professional goals while maintaining an appropriate work/life balance.

Eighteen awards have been made to seventeen individuals over the last four years. Recipients have provided detailed reports of their activities and interactions with their mentors. Thirteen of the 17 were associate professors at the time of receipt of their awards. Five of the 13 have been promoted to full professor, and one of the women is currently serving as an interim associate dean. Another recipient took a position as dean at another university. Thus, this program has already led to promotion in faculty rank and selection for administrative positions. Focus groups with award recipients have been conducted to determine the most effective structure for continuation of this program in the future. This paper will provide specific details about the structure of the program and the benefits received by the participants.

## **Introduction**

It is well established that mentoring and professional networks contribute to the success of women faculty members (CAWMSET 2000; Pattatucci 1998; Sonnert 1995; Trower 2002). There are a number of programs that focus on the mentoring of tenure-track faculty members (Dyer and Montelone 2007; Montelone et. al. 2003; Montelone and Dyer 2005; Olmstead 1993;

Thomas 2005), but mentoring programs for tenured faculty members are less common. Geri Richmond, a professor of chemistry at the University of Oregon and one of the founding members of the Committee on the Advancement of Women Chemists (COACH), noted in an article in *Chemical and Engineering News* (Brennan 2000) that “For women who make it through the academic pipeline, the pressures and stresses of being a female in a male-dominated department continue. These include feelings of isolation, lack of mentoring, exclusion from informal networking, and heavier teaching loads.” Brennan (2000) observed that “even women who have achieved senior status are not immune to similar stresses.” Thus, there is recognition that mentoring is as valuable for tenured women faculty members as it is for those in tenure-track positions.

When the Kansas State University ADVANCE Project, funded by the National Science Foundation, was being developed, an initiative specifically focused on mentoring for tenured science, engineering and mathematics (SEM) women faculty members was included (Montelone and Dyer 2004). This initiative was designated as the Career Advancement Program (CAP). CAP was modeled after the successful K-State Mentoring Fellowships program for women and minorities in the sciences and engineering, which was established in 1994 with a grant from the Alfred E. Sloan Foundation and is now funded by the K-State Office of the Provost. The K-State Mentoring Fellowships are awarded on a competitive basis to tenure-track women and minority men, and this program has had a strong positive impact on extramural funding success and retention of participating faculty members at K-State (Montelone et al. 2003).

Another reason that the CAP initiative was included in the K-State ADVANCE Project was the hope that it would contribute to promotion of SEM women to full professor status. At the start of the project in 2003, there were twelve women full professors with full-time appointments (i.e. not administrators) in SEM departments, or 4.7% of full professors. In 2007, there were 17 SEM women full professors, constituting 6.9% of all full professors.

### **Career Advancement Program**

The Career Advancement Program (CAP) provided support to tenured SEM women faculty members in mid-career senior rank, or administrative positions. This program was designed to enhance networking opportunities, research expertise and stature, and development of leadership skills. Women applicants could propose specific projects that included development of new areas of research, instruction, or service that had the potential to lead to additional professional advancement. In some cases, this included positioning themselves for promotion or selection for administrative roles. Each applicant identified at least one mentor who would provide advice and guidance on one or more aspects of the proposed project. The maximum award possible from this program was \$20,000 for each one-year project.

The following describes the program that has been developed at K-State and the results and outcomes identified from surveys and focus groups.

## *Eligibility, Application Process, and Outcomes*

### *Eligibility*

Tenured women faculty members in SEM departments were eligible to apply. Women who held part-time or full-time administrative positions, but had tenure in SEM departments, also were eligible. During each of the first four years of CAP, there have been between 16 and 23 eligible women full professors and between 22 and 26 eligible women associate professors. These women were in 23 of our 27 SEM departments.

A call for proposals was distributed early each spring for projects that would begin during the next fiscal year. The call for proposals was sent to eligible women faculty members and SEM department heads and was posted on the K-State ADVANCE website (<http://www.ksu.edu/advance>).

### *Application and Review Process*

Each application included the name, title, departmental affiliation, rank, years in rank, and a two-page vitae of the woman applicant. The name, affiliation, and two-page vitae of each mentor also was provided, along with a detailed letter of commitment from the mentor. The body of the application was a two to three page description of the project that contained in non-technical language (1) the project goals, (2) the project's importance to the professional development of the applicant, and (3) a detailed description of the role of each mentor and the relationship between the applicant and each mentor. Applicants also were requested to provide information on previous research support over the last five years, professional development opportunities applied for and received, and a list of significant leadership positions held in the last five years. A detailed budget, including justification, was required.

The K-State ADVANCE Steering Committee reviewed the applications and requested additional information, if necessary. The review criteria included (1) merit of the scholarly or leadership activity to be supported by the award; (2) appropriateness and design of the applicant/mentor relationship; and (3) importance of the project and specific budget request to the professional advancement of the applicant. Applicants were notified of acceptance or denial approximately six weeks after the deadline for submission of proposals.

### *Reporting Requirement*

Recipients were required to provide detailed reports of their activities and interactions with their mentors at the conclusion of their projects. These reports were part of the basis of the evaluation of the project, as described in the section on Assessment.

### *Quantitative Outcomes*

In the first four years of CAP, there were a total of 27 applications. Eighteen awards were made to 17 individuals in 11 SEM departments. One award was jointly given to two individuals working collaboratively on a project. Two individuals received more than one award. The awardees consisted of two faculty members of Asian origin, one Hispanic, and the rest White.

Thirteen of the 17 awardees were associate professors at the time of receipt of their awards. Five of the 13 have subsequently been promoted to full professor, and one of the women is

currently serving as an interim associate dean. Another recipient was selected for an associate dean position at K-State and has recently been appointed as an associate vice president at K-State. Still a third recipient took a position as dean at another university. Thus, this program has already led to promotion in faculty rank and selection for administrative positions.

### **Assessment of the CAP Initiative**

The ADVANCE Project engaged the services of the Office of Educational Innovation and Evaluation (OEIE) to provide assessment of the CAP initiative. This included both a qualitative content analysis of collected awardees' reports and a focus group with awardees. These two studies were conducted independently.

#### *Qualitative Content Analysis*

Of the 18 awards made, the qualitative content analysis was conducted on 10 reports, since eight of the projects were not yet completed at the time of the analysis.

Participants reported the following significant outcomes of their CAP sponsored activities:

- making significant and satisfactory progress on a collaborative project supported by the CAP award
- gaining increased visibility in the research community and ability to serve in leadership roles, especially as it relates to 'leading funding initiatives' and serving in various professional settings
- having the opportunity to assume a new leadership and/or administrative role without giving up research and/or laboratory and, "thereby sacrificing significant credibility'
- obtaining new knowledge and skills to utilize an important research tool (e.g., protocol)
- enriching and/or strengthening an existing research agenda or developing a new one
- expanding research networking that enhance collaborative and leadership opportunities
- having the opportunity and experience to work with a team that consists of faculty, graduate students, and residents
- achieving the rank of full professor
- making improvements in the departmental graduate curriculum

This set of activities by these ten awardees has led to the following additional outcomes. Eight awardees submitted grant proposals, with five reporting that their grants were funded. Five submitted journal articles and two individuals reported their articles were published during their year of funding. Seven made presentations at national meetings, two traveled to conduct research at other sites, three reported receiving new research knowledge and learning new skills, one expanded her professional service opportunities, and two received prestigious awards.

Reports also included information on activities that the recipients planned to pursue in the year following the completion of the CAP projects. The items are listed in the order of decreasing frequency by which they were mentioned, with the number of responses noted in parentheses.

- seeking extramural funding (mentioned in 9 of 10 reports)

- submitting manuscripts (i.e., refereed journal articles) (6)
- strengthening collaborative relations that were developed as a result of the CAP project activities (5)
- advancing a new skill gained as a result of the CAP project activities (4)
- utilizing a new research instrument (3)
- expanding activities that were initiated and supported by the CAP award (3)
- utilizing experiences to prepare for promotion to full professor (1)

Other benefits mentioned in the reports were the ability to use CAP funds to provide support for research assistants and graduate assistants or obtain release time for themselves. This provided the opportunity to spend quality time in other activities, such as preparing competitive grant applications, writing manuscripts, attending short-term courses/seminars, and expanding one's professional network by attending national and international conferences. These opportunities led to an increased visibility in the research community.

Further, close relationships with mentors during the course of the CAP project had a positive impact on faculty promotion to full professor, success with extramural funding, and scholarly writing and publications. Three faculty members attributed their promotion to full professor to the CAP award. In addition, faculty cited expanded research interactions and opportunities to develop mutually beneficial collaborative projects with faculty in other institutions, locally, nationally, and internationally, as being particularly useful.

### *Focus Groups*

A focus group was conducted to discover CAP awardees' overall perspectives of the CAP program and identify effective strategies that would support the continued development of tenured women in mid-career, senior rank, and leadership positions. The rationale of conducting a focus group, as opposed to utilizing other data collection activities, was to capitalize on the CAP awardees' shared experiences of participating in the program, explore the successes and challenges of the program, generate discussion to identify gaps in supporting tenured women, and articulate specific strategies to address these gaps.

Potential focus group participants included 16 of the 17 CAP awardees from the first four rounds of this competition. One of the awardees had already left K-State to assume a leadership position at another university. Twelve of the 16 invited CAP awardees attended the focus group.

The 12 attendees were provided a set of questions prior to the session. During the focus group, these questions were used to stimulate the discussion, but not to limit it. At the start of the focus group, the moderator described the agenda that would be followed (i.e., individual CAP project highlights, discussion of strengths and challenges, aspects of an ideal program and sustainability, and a short wrap-up session) and reiterated the goals of the CAP program.

Emails with questions similar to those used during the focus group were sent to the four CAP awardees who were unable to attend the focus group. Two email replies were received; these responses also were incorporated into the compiled results from the focus group.

### *CAP Project Highlights*

Focus group participants were asked to share the highlights of their CAP project, specifically how their project enhanced networking opportunities, research expertise and stature, and development of leadership skills.

Responses indicated the most frequently utilized aspects of projects from CAP funds were

- sustaining or bridging current research
- hiring of a staff person (e.g., technician, graduate student assistant)
- traveling for professional purposes
- using seed money to start research projects
- continuing their research while transitioning to an administrative position
- developing a new curriculum
- attending training programs
- bringing people to K-State
- covering summer salary
- developing collaborations

### *Strengths of CAP*

Focus group participants identified the following items as strengths of CAP: the flexibility in the use of the funds, availability of seed money for research projects, and the opportunity for networking and mentoring. Participants also commented on the ability to leverage funds, the opportunity to participate in leadership activities, the assistance CAP provided in balancing their personal and professional lives, and the formalized relationship with or commitment from mentors.

### *Challenges of CAP Project*

Focus group participants discussed the lack of flexibility in terms of the time frame of the award, specifically the predetermined beginning and ending dates of the award period. Concern was also expressed about the procedures for accounting and budgeting of the awards not being well established during the early stages of the CAP program.

Another point of discussion was related to the need for more recognition for the awardee and the mentor. Some focus group participants wanted the award to receive more publicity and more of a focus on the mentoring relationship. Others discussed the burden of educating colleagues on the purpose or intent of the award. Members of the focus group expressed concern with the way the request for proposals was delivered personally by a department head, which created the perception of the award as a “set aside” for female faculty. As one participant noted, in her department as the recipient of the CAP award, the perception was, “I got it because I’m a woman and I need it because I’m a woman.” Some participants also mentioned the perception of discrimination ADVANCE and CAP awards created in their departments due to how the awards were publicized.

An additional challenge mentioned by one participant was the definition and the requirement of a mentor in the CAP RFP. She explained that in some professions independent work is encouraged and reliance on a mentor is considered a weakness. Enforcing the accountability of

the mentor had been a challenge for one CAP awardee, while another awardee questioned how beneficial interaction with a mentor was.

### *The Ideal Program*

The focus group was asked to provide their perspectives on what would constitute an “ideal program” with the goals of CAP (i.e., supporting tenured women, enhancing research, networking, and leadership skills) and how this ideal program would be sustained.

One of the themes that emerged from the discussion was that an ideal program would have extremely flexible guidelines in terms of utilization of funds, timing of the award period, and support for research staff. In addition to flexibility, several participants mentioned the importance of including various types of training, including formalized training in the acquisition of leadership, research, technical, and advocacy skills, and formal advice on how to share one’s accomplishments. There also were suggestions that the program include a more formal process for recognition of recipients and that the number of awards per year be increased.

Responses during this session also indicated that focus group participants were interested in networking with other CAP awardees. One focus group participant suggested avenues of proactive communication (i.e., purposeful meetings), while another recommended a shared approach for mentoring, namely having previous awardees mentor new awardees (e.g., full-circle learning). Other aspects of the ideal program for tenured women should include implementing graduated funding levels, making mentoring optional, providing funds specifically for travel, maintaining a focus on faculty, and incorporating eligibility to reapply.

### *Sustainability*

The final topic of discussion for the focus group participants was sustainability. Suggestions for sustainability included reinvestment into CAP of sponsored research overhead funds from grants subsequently received by CAP awardees, as a form of return on investment. An additional recommendation to ADVANCE posited by a focus group participant was to emphasize private fund raising to support the program. Focus group participants also discussed requesting that department chairs, college deans, and university administrators provide support for programs that focus on tenured women through internal reallocation. The need to institutionalize mentoring as part of the annual merit evaluation process was also emphasized.

### **Discussion**

The importance of providing formal mentoring to underrepresented groups such as women faculty members in science and engineering has been recognized (Etzkowitz et al. 2000; Gibbons 1992; Olmstead 1993; Sonnert 1995; Trower 2002). Many universities have created mentoring programs that focus on new or tenure-track faculty members (e.g., Henry et al. 1999; Montelone et al. 2003, Thomas 2005). The K-State ADVANCE Project identified the need to also provide mentoring for tenured women faculty members in science and engineering and developed the CAP initiative described in this paper.

Assessment of reports submitted by the CAP participants suggests that the CAP initiative has been successful in assisting tenured women with obtaining professional advancement. To

understand the magnitude of the impact, we also have begun to examine outcomes for tenured women who did not participate in CAP during the first four years of the project.

In the first year the CAP competition was conducted there were 16 eligible women full professors. Five of these 16 have applied over the last four years and four have received awards. Of the other 11 eligible, two were full-time administrators, and two were in interim or part-time administrative roles. Though the guidelines of the program permitted pursuit of administrative opportunities with the assistance of a mentor, women already in administrative roles may not have considered this program relevant or applicable. Of the seven remaining eligible full professors, two were University Distinguished Professors, which is the highest designation given by the university, and two others had received the University Distinguished Graduate Faculty Award. These highly successful women may not have considered that the CAP award would be of benefit to them.

There also were 25 eligible women associate professors in the first year the CAP competition was conducted. Of these 25, eight have been promoted to full professor during the course of the project to date, and five of them had CAP funding. Three of the five have specifically identified that the CAP award was instrumental in their promotion to full professor. Of the other 17 not yet promoted, three have left the university, one is on leave, and one is inactive in research. Of the remaining 12, four have had CAP awards.

Since the first year of the competition, additional women have become eligible through promotion to associate professor, and overall there has been a total of 52 eligible SEM women over the course of the first four years of this program. Nineteen of the 52 have applied for these awards, and a total of 17 women have received awards sometime during the first four years. We will continue to monitor the impact the CAP awards have on the recipients. We recognize that this program will have differential effects on the participants, and as with any program, some of the participants will benefit more strongly than others. Likewise, for those who do not participate, some will achieve greater success than others. However, the results to date indicate that the CAP recipients have received substantial benefits from their participation.

### *Lessons Learned and Recommendations*

While the reports from the CAP awardees highlight the benefits of the program, additional nuances emerged from the conversation that was part of the focus group. The participants noted their desire to see an increase in the prominence and visibility of the CAP award and the ADVANCE program, however, there were some who expressed concern that CAP is seen as a set aside program only for women, and thus is perceived by some of their peers as less valuable than other university level awards. Thus, as the university seeks to institutionalize this program, these concerns will need to be addressed.

The current structure of the CAP award includes funding that can be applied to a variety of professional development activities that enhance aspects of the individual's teaching, research or service, and the identification of and working with one or more formal senior mentor. Some of the questions posed to the focus group were designed to elucidate the relative importance of these two components. Not surprisingly, all participants of the focus group identified the funding as a critical aspect of the program. Most awardees spoke about the positive benefits associated with collaborating with their mentors, and there were suggestions that mentors be more formally

recognized. However, there were a few participants who questioned the benefit of their individual mentoring relationship or the need for a mentor. It may be that a more flexible design that allows for a variety of mentoring models will meet the needs of most individuals.

In conclusion, the CAP initiative has been very successful in assisting the tenured women participants in advancing their careers. They have invigorated their teaching and research, found balance between research and administration, established new and beneficial professional relationships, achieved promotion and other formal recognition, been selected for administrative positions both within K-State and at other institutions, and increased their national and international visibility. This type of program can be readily implemented at most institutions and the costs are relatively modest compared to the benefits for the participants and the institution.

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