

Project Summary PROMOTE: Improving promotion to full processes at western public universities.

Studies of science, engineering and technology point out the paucity of women at the full professor level (18%) in four year colleges and universities (2003 NSF Science and Engineering Indicators). This scarcity means there are few women candidates for leadership positions since department chairs, deans, provosts, and leaders of research teams are typically full professors. Because full professors carry prestige and influence, and because the number of women in those positions is lacking, we must understand and address the difficulties women face in becoming promoted to full professor to break through the glass ceiling that limits women's accessibility to administrative positions (Geisler et al., in press).

PROMOTE proposes to both increase our understanding of the transition from associate to full professor and to address the difficulties women face through an interview study and an implementation phase. In part one, we propose to study associate and full professors at seven western public research universities to better understand the factors associated with promotion -- the first cross-institutional study on this career stage. In part two, we will draw on the findings of this study to adapt, implement, and disseminate a set of four key activities identified as instrumental in increasing promotion rates. In this phase, Utah State University will partner with six western public research universities Kansas State, New Mexico State, University of Kansas, North Dakota State University, University of Idaho and Oregon State University. The activities we will implement are 1) promotion workshops held by the Provost's Offices on the various campuses, 2) development and dissemination of clear guidelines on the processes and expectations for promotion by deans and department heads (chairs), 3) development of review mechanisms for the promotion to full process and 4) coaching for interested faculty.

The partnering institutions bring a variety of experiences to this project. Three of the universities, Utah State, Kansas State and New Mexico State, have had ADVANCE-IT awards and have been working on increasing the recruitment, retention and advancement of women STEM faculty. Kansas State has developed innovative career planning and mentoring programs. New Mexico State has developed a successful mentoring program, which they are currently working to disseminate. Four of the universities have not received ADVANCE awards but are committed to increasing the representation of women among their STEM faculty. These universities are located in small cities in the western United States and face challenges in recruiting senior women. As evidenced by recruitment and promotion numbers, none of these institutions can solve the shortage of senior women faculty through recruitment—they must “grow their own” senior women.

The **intellectual merits** of PROMOTE reside in the increased understanding of the transition from associate to full professor. In order to propose effective interventions, we must understand the barriers to promotion and how best to ameliorate them. Although the recruitment of faculty and the tenure process have been the subject of numerous studies, there have been few studies of the next stage in an academic scientist's career path. The **broader impacts** of PROMOTE are several. PROMOTE will develop, test, adapt, evaluate and disseminate a set of relatively simple and inexpensive activities focusing on promotion to full that could then be adopted by universities across the country. In this way, many institutions can see the growth in senior women on campus that Utah State has experienced.

Every study of academic women in science, engineering and technology points to the paucity of women full professors, especially at doctorate granting institutions (NAS 2006; AAUP 2006). Recent research has illustrated that although the number of women obtaining PhDs has been steadily climbing in some areas for several decades, the number of women full professors has shown little change (Geisler et al., in press). Women are only half as likely as men to be promoted to full professor at doctoral granting institutions (Curtis 2005), spend more time as associate professors if they are promoted (Zakian et al. 2003) and may be held to higher standards for promotion (Ginther 2006). Indeed, the slow advancement of women from associate to full professor is one of the factors contributing to the relative scarcity of senior women in academics.

Numerical representation is an influential characteristic of an organization; demography matters in shaping the culture and structure of institutions. The scarcity of women full professors can perpetuate an already inequitable situation (Pettigrew and Martin 1987). Typically, full professors make up the candidate pool for president, provost, dean and department chair positions. They serve on university committees for promotion and tenure, head significant committees and lead large-scale research projects. The scarcity of senior women to fulfill these roles at research universities can lead to burdensome demands on individual women, reinforce gender schemas concerning academic and research leadership (Valian 1998, 2007) and limit the diversity of viewpoints among decision makers. For example, department chairs are generally key players in determining department climate and are heavily involved in faculty recruitment, evaluation and promotion. In many science and engineering departments in the US there are no senior women available to serve as department chair. We must understand and address the difficulties women face in becoming promoted to full professor to break through the glass ceiling that limits women's accessibility to administrative positions (Geisler et al. in press).

One of the barriers leading to the scarcity of women at senior ranks is the transition from associate to full professor. In recent years, many universities have worked to make the tenure process more transparent (Diamond 2000), and there are numerous online guides for untenured faculty. In contrast, the process of promotion to full has received considerably less attention. Geisler and her colleagues' research into the 13+ year club at Rensselaer Polytechnic Institute is one of the few studies investigating this important career stage. At RPI, 48 percent of women professors with 13 or more years since their highest degree had not been promoted to full professor. This statistic compared with 21 percent of men (Geisler et al., in press). One of Geisler's unanticipated findings was the prevalence of significant service responsibilities among men who were promoted early, a pattern that leads one to suspect that administrators in informal networks were identifying "leaders" at early stages in their career (Berkeley, in prep). The attention paid to associate to full promotion at RPI led to institutional changes in the promotion process, an increase in the number of women full professors (from 12 to 17) and a dramatic increase in the rate of promotion for women.

The research at RPI opens up intriguing questions concerning the transition from associate to full for men and women. But this study was based on small numbers of women at a single institution. Senior women in the STEM (science, technology, engineering and math) disciplines are scarce at all research oriented universities. Thus, we propose carrying out a larger qualitative

study on the transition from associate to full. This study would involve men and women from seven research universities, would provide an adequate sample size and would allow for cross institution generalizations (PROMOTE Part 1). The results of this study will inform our efforts to facilitate the promotion of women associate professors in the STEM disciplines at these seven institutions (Utah State University, Kansas State University, New Mexico State University, University of Idaho, North Dakota State University and University of Kansas; PROMOTE Part 2) and will help to refine and facilitate interventions to increase the numbers of women full professors at other research institutions.

**PROMOTE: Part 1.**

To study the barriers to promotion from associate to full professor for women in the STEM disciplines, we will conduct a qualitative study aimed at identifying the factors that both facilitate and impede this transition. Though there is substantial research on the tenure process, little attention has been paid to the glass ceiling that may face women after receiving tenure. Because of this relative lack of attention, a qualitative study is the appropriate technique to gather detailed information about the transition from associate to full.

Sample: The interview sample will include eighty respondents in total, drawn from faculty at eight institutions. The sampling design is a 2 x 2 matrix, as below:

	A	B
	Associate	Full
1	In rank for 3 to 6 years post tenure	Promoted within 6 years or less
2	In rank for 7+ years post tenure	Promoted after 7 years or more

We will interview 10 men and 10 women STEM faculty in each category, sampling from faculty members at seven institutions: Kansas State University, Utah State University, the University of Kansas, New Mexico State University, North Dakota State University, Oregon State University, and the University of Idaho. We will attempt to distribute the sampling as equally as possible across institutions, though low numbers of women in some categories may make this difficult at some universities. Where more faculty are necessary than available to fill a particular category we will randomly sample if possible.

This design will allow us to explore the transition from associate to full in a number of ways, comparing men and women faculty at the associate level who are preparing for promotion (cell A1) to those who are likely to be stuck in rank (A2). We can also compare the experiences of faculty who negotiated the transition successfully within a relatively short time (B1) and those who did so after a longer time at the associate rank (B2). This is a robust design that should give us considerable information about these patterns across categories and between men and women across the cells of this design.

Interview schedule and procedure: Research on the tenure process and on gender inequality in organizations (Britton 2003) speaks to the necessity to consider multiple levels of explanation. Hence the interview schedule has been designed to examine factors that shape inequality at the individual, institutional, and cultural levels. There will be three sections, each of which will address these multiple levels. The first will be background information that will collect a career

history from undergraduate through graduate school, focusing on factors that led to the decision to major in a STEM field, choice of specialty, and any relevant work/family issues during this period. The second will focus on career as an assistant professor and the tenure and promotion process, both to associate and full. Here we will discuss policies and procedures as well as perceptions and experiences with the process in some depth. We will also explore availability of resources to aid in the process and factors that encouraged or impeded promotion, including work/family issues. The third section will be prospective and will examine plans beyond the current level in addition to the respondents' view of policies that would help other faculty to negotiate the process.

Interviews should last one hour and will be conducted in faculty offices or another mutually agreed upon location. With the respondent's permission, interviews will be recorded and later transcribed verbatim for analysis. Interviews will be analyzed using NVIVO 7.0, a software program that facilitates the coding and analysis of large quantities of qualitative data. Using this program, transcripts will be coded for emergent themes across interviews, which can then be compared across all of the relevant categories in the sample (e.g., men vs. women, and/or across cells in the sample). The goal of this analysis will be to identify factors that shape the careers of men and women differently, as well as those that sort faculty into different categories of the transition from associate to full. These data should allow the development of specifically targeted interventions that will help to break through the glass ceiling that blocks the progress of women faculty.

## **PROMOTE: Part 2. Utah State ADVANCE Promotion to Full Program**

One focus of the Utah State ADVANCE IT award has been the collection of exploratory data on the associate to full promotion process. In 2003, Utah State had only six women full professors across four STEM colleges (4.5% of full professors). Only five women had been promoted between 1986 and 1998 and no women had been promoted since 1999. As Virginia Valian (pers. comm.) has eloquently stated, "gender analysis provides a window into institutional effectiveness." It is not surprising that with the low numbers of women STEM full professors, we also found that Utah State overall had a lower percentage of full professors than its peer institutions. The promotion to full process was not working well for either men or women.

Our experience, as well as the relatively small body of existing research, hints at some barriers to promotion. First, the processes and criteria for promotion to full are often less transparent than for tenure and promotion to associate professor. Interviews at Utah State revealed that most tenured and untenured faculty members could describe the process for tenure and the general expectations in their area. In some departments these expectations were very detailed specifying grant dollars/year, publications/year and citation counts. In contrast, associate professors were often unsure of the process for promotion to full, and few associate or full professors could describe the expectations for promotion in their department. The expectations tended to be vaguely defined as "excellence" and "national reputation." In many departments it was not clear whether an associate professor needed more years with the same productivity as they had before tenure or if something qualitatively different was expected for advancement from promotion to full. The lack of transparency disadvantaged women, and similar to the observations reported

from Duke (NAS 2006), women felt less ready to apply for promotion and worried that they would be held to a higher standard if they did.

Second, in many departments official mentoring efforts ended at tenure, and faculty members learned about the promotion process and expectations for promotion through informal networks. Most of the women associate professors we interviewed indicated that no one had ever discussed promotion to full with them. Utah State had a post tenure review process Robyn A. Berkley, C. Geisler, D. A. Kaminski, and L. Layne in which a three person committee was appointed to review a tenured professor every five years. Only a few departments made use of this opportunity to provide advice for associate professors on promotion. In general, women were more likely to experience exclusionary practices by their colleagues, and their networks both within their department and beyond their department tended to be smaller (Etzkowitz et al 2000). Although it was not intended to be so, informal mentoring practices concerning promotion proved to be a barrier to promotion for women at Utah State.

Third, at Utah State, as at most universities, the promotion to full is voluntary. Unlike tenure—which is an up or out proposition—the process to be promoted to full must be initiated by an associate professor who asks his or her department head to form a promotion committee. As many individuals got no advice on promotion to full, it was not surprising that they did not request a committee be formed. In addition, department heads were frequently overworked trying to meet numerous competing deadlines. Though some women requested that a promotion committee be formed, several waited years for their committee to meet.

Overall, the uncertainty concerning promotion to full led to many otherwise successful individuals remaining as associate professors. Many individuals noted that given the prevailing climate of uncertainty, they preferred not to put their file forward. In addition, the lack of clear expectations and the absence of mentoring for associate professors led to some individuals spending significant amounts of time and energy on activities that they thought would lead to promotion, but in fact did not enhance their promotion files.

The Utah State ADVANCE team carried out five types of activities to help associate professors in the transition to full professor. The first two activities increased transparency in the promotion process. The latter three addressed facilitating the process itself.

1. Lunchtime workshops: Sponsored by the Provost's Office, these workshops provided information on the promotion process and expectations for promotion at the university level. Workshops were held in 2004 and 2006 with 13 of 17 and 14 of 20 women STEM associate professors attending. Following the success of the first workshop, the Vice Provost for Academics gave a series of promotion and tenure workshops on campus to dispel the myths he learned about at the first workshop. Nine of the 13 women who attended the first workshop have applied for promotion or are in the process of applying this year and six have been promoted.

These workshops produced a surprisingly high impact for minimal cost and effort. These were informal question and answer sessions with groups of about 14-20 faculty members. The Provost's Office learned about "promotion myths" and the widespread lack of

mentoring on promotion to full. A number of women faculty members changed their role statements and reallocated their efforts once they realized that some of their activities would not count toward promotion.

2. Published guidelines for promotion: Deans were encouraged to establish and publicize guidelines for promotion to full within their colleges. One dean developed written guidelines for promotion covering both the process and expectations. Two deans began meeting individually with all associate professors in their colleges to review CVs and discuss promotion to full. In addition, a dean from a non-target college developed college level guidelines and is now working with each department in his college on department level guidelines.
3. Regular review process for associate professors: The Faculty Code was amended to require that a promotion committee be formed and meet to discuss promotion to full with each associate professor within three years of receiving tenure. There is now a deadline of 30 days from when a faculty member requests that the department head form a committee to when the committee must meet.

Since these code changes were passed in 2005, one woman who tried for years to have a promotion committee formed has been promoted to full, and another is going forward this year.

4. Coaching on promotion file preparation: Former members of the Central Committee (university level of review for promotion and tenure) agreed to review and advise associate professors on their personal statement and promotion binder. This is not a formal mentoring program; rather, the former Central Committee member met with the associate professor a few times and provided coaching and advice.

This proved to be especially important for women who had not had linear career paths. It was necessary to explain dips in productivity, changes in research direction and activities besides teaching and research in a positive manner. The former Central Committee members provided useful advice on what committee members looked for in a file and how to package the file to show a strong career path. They also provided advice on whether an individual should go forward for promotion at that time or wait until their file was stronger.

5. Transition to full awards. The ADVANCE team made 10 awards ranging from \$1,000 to \$8,000 to associate professors from 2004 to 2007. Successful applicants provided the team with their plan for going forward toward full, described how the funded activity would enhance their promotion file and provided letters of support from their department head and chair of their promotion committee. Three of nine (one received two awards) of the funded faculty members have applied for promotion or are in the process of applying this year. These relatively modest awards allowed faculty members to complete projects, strengthen their promotion files and revitalize their research programs. In addition, by requiring letters of support from the department head and promotion committee chair, both the department head and the promotion committee had to meet with the faculty

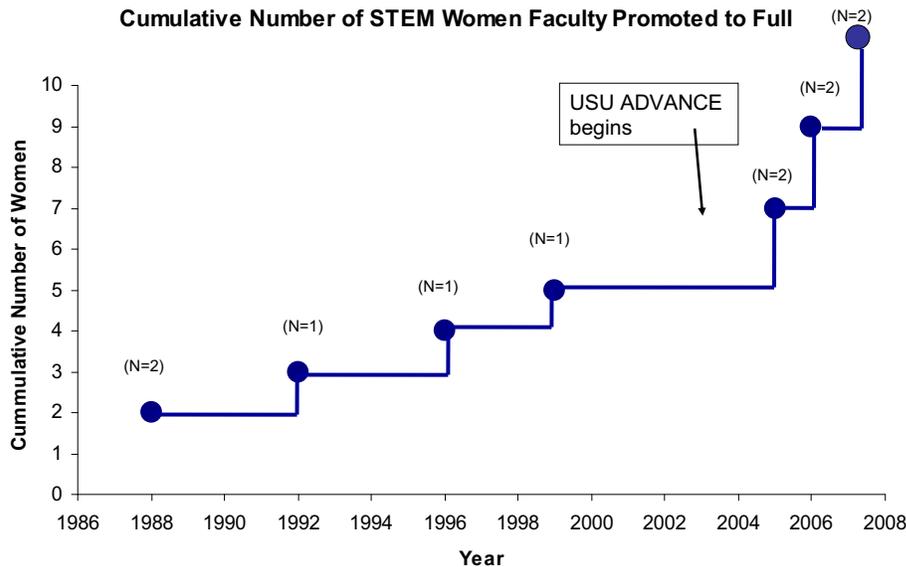
member and discuss expectations for promotion to full. Thus, some level of mentoring took place. Several women who had previously received very little guidance about promotion told the ADVANCE team that these awards indicated that the university believed in them, which motivated them to strengthen their research program to be eligible for promotion.

The Utah State ADVANCE team feels that internal mid career awards are an important component of promotion to full programs at any university. While each award has a large impact on the recipient, the number of recipients is small, and the time from award to promotion is at least two to three years. Given the size and length of the PAID awards, we did not feel that this was the best use of NSF funding. Three years is not long enough to establish a program, evaluate the success and demonstrate the cost effectiveness of these awards. We will encourage all of the participating institutions to establish an internal, mid career funding program of a size that they will be able to sustain after the PAID award.

### **Utah State results**

The Utah State ADVANCE program has demonstrated remarkable success in facilitating the promotion of women from associate to full professor. We realize that our interviews and efforts are exploratory and based on a small set of women at one institution. We propose to partner with researchers and administrators at six public universities in the west to conduct a larger, more comprehensive study of the transition to full professor and use these data to design activities to facilitate the promotion to full across a range of institutions. Part of this study will focus on whether variations on four relatively simple and inexpensive activities can increase promotion rates among women STEM faculty. The activities proposed here are only a small part of effective institutional transformation and will not replace efforts to improve recruitment, retention, department climate, mentoring and leadership development. Nonetheless, for institutions with very few women full professors, increasing the number of women full professors can lead to significant changes. Even a few promotions can dramatically affect the candidate pool for department chairs and key committee chairs as well as increase the range of life experiences among members of promotion committees.

In 2003 Utah State had six women STEM full professors in the Colleges of Agriculture, Engineering, Natural Resources and Science, representing 4.5% of STEM full professors. Since 2005, six women have been promoted to full and two more are applying this year. During this time one woman full professor left for another university and two retired. Although Utah State aggressively recruited senior women, they were only able to hire one woman full professor. Currently, Utah State has 10 women full professors in the four STEM colleges, a 66% increase since 2003.



The data from Utah State on promotion versus recruitment of senior women does not appear to be unusual. The two other ADVANCE IT institutions involved in this proposal have similar data. New Mexico State promoted six women during their IT award but was unable to recruit any senior women, and Kansas State promoted 11 women and recruited one senior woman. For these and other similar institutions, the problems associated with few senior women can not be solved through recruitment. They must “grow their own” senior women.

**PAID – Partnerships for Adaptation, Implementation and Dissemination  
 PROMOTE: Improving the process of promotion to full professor at public universities in the west.**

Partnership Institutions: Utah State University, Kansas State University, New Mexico State University, University of Kansas, University of Idaho, North Dakota State University and Oregon State University.

Utah State, Kansas State and New Mexico State have had ADVANCE IT awards (round 2, round 2 and round 1 respectively). The partnership among the ADVANCE IT awardees permits these institutions to benefit from what each has learned as an ADVANCE IT institution. This also provides a relatively soft adaptation and implementation to an institution that has been working on improving recruitment, retention and promotion of women faculty in the STEM fields for at least five years.

Kansas State has developed an innovative career mapping program. Career Milestones for Academic Personal Success (CareerMAPS): A "hire-to-retire" strategy for faculty members at all ranks to develop long-term career plans. Portions of CareerMAPS may be very useful for associate professor women at this group of partnering institutions. With regards to promotion, all 27 STEM departments that are part of Kansas State’s ADVANCE project have been

encouraged to clarify the expectations in their departmental P&T documents. Kansas State's experience in clarifying expectations will provide a great start for the other institutions. During their ADVANCE IT award, Kansas State significantly increased their number of senior women, with 11 women promoted to full professor in four years (2004-07), a two-fold increase over previous average of 1.3 promotions/yr (1997-2003). This led to a two-fold increase in women in leadership positions by 2007.

New Mexico State focused much of their ADVANCE IT work on developing successful faculty mentoring programs. The mentoring program has increased the density of social networks through the mentor/mentee relationship. The current mentoring program includes 103 participants of which 62 are male (32% of male STEM faculty) and 41 females (93.2% of female STEM faculty), and has been crucial in establishing a "cadre" of faculty advancing female faculty at New Mexico State. At New Mexico State the Provost's Office partnered with the New Mexico State Hispanic Caucus to present annual workshops on P&T. In odd-numbered years, the program focused on the transition from associate to full professor. Seventy one associate professors have participated in these workshops.

In addition, New Mexico State currently has a PAID award, Partnerships for Adaptation, Implementation, and Dissemination 'Alliance for Faculty Diversity in STEM'. This award is for NMSU to share its best practices with the state's other research universities, New Mexico Tech (NMT) and the University of New Mexico (UNM), and the Environmental Science division of Los Alamos National Laboratory (LANL) to help them diversify their STEM faculty and research staff as well as create a training pipeline for students and postdoctoral fellows. By partnering with New Mexico State we hope to benefit from what they have learned about adapting programs to new institutions.

The incorporation of four institutions that have not had ADVANCE IT awards provides an opportunity to test the adaptation and implementation of PROMOTE activities at institutions that have been interested in and working on these issues but have not had funding from NSF. Since relatively few institutions receive ADVANCE IT awards, this test of adaptation and implementation presents a more realistic test than working only with ADVANCE institutions. These institutions are already developing programs on their own concerning promotion to full but feel they would benefit from a focused approach based on research and programs tested across multiple universities. For example, NDSU is revising their PT&E policy and considering adopting the following language:

*Colleges and departments shall develop specific post-tenure review policies appropriate to their faculty. Annual reviews of tenured faculty shall include an evaluation of the faculty member's performance relative to the current job description. For Associate Professors, annual reviews must include specific recommendations to strengthen the case for promotion.*

We selected a group of institutions that shared basic characteristics for this partnership. These institutions are public universities in the western United States. Each institution is in the top two research institutions in their states. Three of the institutions, University of Idaho, North Dakota State and New Mexico State, are located in EPSCOR states, but all of the institutions face challenges with funding from state legislatures. Six of the institutions are land grant universities. Thus, these institutions have Colleges of Agriculture, USDA Experiment Stations, Cooperative

Extension Services and numerous federal collaborators on their campuses. Their faculty members face similar issues with regard to funding sources, evaluation of extension activities, and the rapidly changing nature of agricultural research. All of these universities are located in small cities, far from major urban areas.

	<b>KSU</b>	<b>NDSU</b>	<b>NMSU</b>	<b>OSU</b>	<b>U of I</b>	<b>U of K</b>	<b>USU</b>	
<b>Institution characteristics</b>								
enrollment	23,151	12,026	16,428	19,153	12,824	26,980	16,130	1
Carnegie classification	RU/VH	RU/H	RU/H	RU/VH	RU/H	RU/VH	RU/H	1
research ranking in state	2	2	2	2	1	1	2	
Land grant university	Y	Y	Y	Y	Y	N	Y	
size of metropolitan area	108,999	174,367	174,682	78,153	34,935	99,962	109,666	2
num women STEM assoc prof	22	8	11	20	12	29	20	4
num women STEM full profs	16	4	17	12	12	23	10	4
% women full profs	14.2	6.7	21.7	22.8	16.1	19	11.8	3

1. Carnegie classification- RU = research university, VH = very high research activity, H = high research activity
2. 2000 Census data
3. AAUP 2006 Gender Equity Indicators
4. 2006/2007 data
- (5) Oregon State is collecting data

This group of seven universities faces similar challenges in recruiting and retaining faculty. The university is the major employer in the area and job opportunities for partners are frequently limited. This makes it difficult to recruit senior women. Few academics aspire to live in the relatively rural west. Thus, these institutions all realize that they need to “grow their own” full professors as well as work on recruiting senior women from other institutions. Interviews with Utah State women STEM assistant and associate professors indicated that most had grown to appreciate the lifestyle available in small, western cities. In the long run, it may be more realistic to promote from within than recruit.

Finally, as a group, these institutions tend to exchange faculty and administrators with each other. This is especially evident among the land grant universities where similar research emphases lead to collaborations among faculty at these institutions and movement between them. In much the same way, the western land grant institutions trade administrators. Land grant experience is generally regarded as preferred or even required in the job descriptions of upper administrators. This trading of administrators provides an opportunity to disseminate PROMOTE throughout the western land grant universities.

Adaptation and implementation. Dr. Dana Britton will work with all of the participating universities to refine the promotion activities based on her analysis of the faculty interviews.

Details of the promotion process, expectations for promotion and the pool of women associate professors vary among these institutions. To be successful, each activity will need to be adapted to the local setting. The advantage of working in seven institutions is that seven variations of these basic activities will be available by the end of the study for adoption at a variety of institutions.

1. Provost Office workshops. Each institution will hold workshops on promotion from associate to full. As these are informal question and answer sessions the topics will vary from workshop to workshop, but each workshop provides a window into the concerns of associate professors. Each institution will develop a workshop format appropriate to their particular promotion process and faculty needs. The PIs will share information on the workshops, faculty responses to the workshops and outcomes from the workshops and use this information to fine tune the workshops at their institution. In addition, Dr. Britton will provide advice on the issues faced by associate professors so they can be covered in the workshops.

Goal: Promotion to full workshops will be held at each institution in their first year of the award with 66% of women associate STEM professors attending a workshop. A second workshop or series of workshops will be held in the third year of the award with 66% of women associate STEM professors who did not attend the first year's workshop attending the workshops in the third year.

2. Guidelines for promotion. Each institution will work to establish guidelines for promotion in each STEM college. While promotion procedures are often consistent from department to department, expectations for promotion can vary greatly. Colleges that are relatively homogeneous in terms of faculty responsibilities and the types of materials used in faculty evaluation may be able to establish college wide expectations for promotion. In colleges where departments vary greatly in their cultural norms, promotion expectations will need to be developed at the department level. Written guidelines for promotion will lead to less ambiguity than orally propagated guidelines. Some colleges and departments, however, may resist establishing written guidelines; thus, well publicized oral guidelines can be an alternative. The PIs and key personnel will share guidelines as they are developed. Dr. Britton will provide the guidelines as they are being developed based on the interviews she conducts with faculty members.

Goal: Each STEM college will develop guidelines for promotion. These guidelines may be at the college or department level. If written, they will be distributed to all associate and full professors. If oral guidelines are developed, each department head or dean will meet with associate professors and promotion committee members to discuss the guidelines. The guidelines will be developed and distributed by year three.

3. Establishing a system of regularly reviewing associate professors and providing advice on promotion. Each institution will examine their promotion policies and procedures to identify potential barriers to promotion. Insights from Dr. Britton's study will be valuable in identifying these barriers. One issue is ensuring regular (at least every two to three years) review of associate professors with regard to progress towards promotion.

The participating universities may need to train department heads and chairs and change faculty codes. The particular process is expected to vary among institutions, but by the end of this project, there will be seven models for other institutions to consider adopting.

Goal: By the end of the award each institution will have evaluated each associate professor with respect to promotion to full and provided them with advice on promotion or will have established a mechanism to review each professor in the next three years. Each institution will be working to establish a mechanism for ongoing evaluation and advising of associate professors based on the barriers to promotion evident in Dr. Britton's study.

4. Provide coaching on when to go forward for promotion and how to prepare a promotion file. Each institution will examine their promotion process and determine which individuals are best qualified to provide this type of coaching. At Utah State, the greatest uncertainty in the promotion process concerned decisions by the central committee, and former members of this committee were the most valuable coaches. Each institution will identify potential coaches, make faculty members aware of coaching opportunities and establish a means of matching coaches with faculty members seeking assistance. Each institution will document the use of coaches, reactions of coaches and associate professors and promotion outcomes. PIs from NMSU and KSU will share the insights on coaching and mentoring from their ADVANCE IT and PAID experiences with the rest of the institutions. The PIs will share information on the development of these programs and use information from the other institutions to refine their program. By the end of the award period there will be up to seven models developed for other institutions to adopt.

Goal: Each institution will develop a mechanism to provide coaching on when to go forward for promotion and how to best prepare a promotion file for interested associate professors. This opportunity will be advertised to all associate professors and will be used by at least 20% of the women associate professors going forward for promotion.

Overall goals: By the end of the award, each institution 1) will have increased the number of women full professors in the STEM disciplines, 2) will have decreased the number and percentage of women associate professors seven or more years post tenure, and 3) will have increased the promotion rates among women associate STEM professors to equal promotion rates among male associate STEM professors.

In addition, the results of Dr. Britton's study will be made available through appropriate publications, and a resource website to be developed by Utah State.

Evaluation: Dr. Lisa M. Frehill will be the external evaluator for this project. She is the Executive Director of the Commission on Professionals in Science and Technology and an adjunct member of the Department of Sociology and Anthropology at New Mexico State University. Dr. Frehill has extensive evaluation experience with projects involving multiple contexts, age-groups, and goals.

Dr. Frehill has been working with many ADVANCE programs, first as the Principal Investigator and Program Director of NMSU's ADVANCE award (2002-2005), then as Program Director of the University of California at Irvine's ADVANCE Program (2005-2006). She has provided technical support related to data collection and analysis to the University of Puerto Rico at Humacao, University of Rhode Island, and the University of Colorado, Boulder ADVANCE programs. In addition, she has been an evaluator for ADVANCE programs at Utah State University, Case Western Reserve University and Virginia Tech. She is also providing technical support to the newly-funded University of Missouri and NMSU ADVANCE Partnerships for Adaptation, Implementation, and Dissemination (PAID) programs associated with sharing mentoring and data collection practices. She was the Principal Investigator for a project titled "Effective Strategies to Diversify STEM Faculty" funded by the NSF Program for Research on Gender in Science and Engineering.

Dr. Frehill's skills include strategies associated with both formative and summative evaluations. Her approach to evaluation emphasizes a participatory evaluation framework in which she works with each evaluation client to establish goals and strategies for assessing progress towards goals in order to weave evaluation into the fabric of programming to enable continuous improvement. With the access that the Commission on Professionals in Science and Technology has to large, nationally-representative datasets, Dr. Frehill and the staff of CPST are well-suited to contextualize an individual program's impact.

Dr. Frehill will attend the first and third year meetings of PROMOTE and meet with the PIs and key personnel at the annual ADVANCE PI meeting. She will assist each university in establishing the data collection protocol and assist Utah State in coordinating the data analysis. Dr. Frehill will provide annual feedback to the PIs and key personnel on the effectiveness of the project activities.

External Advisors: Dr. Jackie Litt of the University of Missouri, Columbia and Dr. Cheryl Geisler of Rensselaer Polytechnic Institute have agreed to serve as external advisors for this project and share their understanding of the transition from associate to full professor with the participating institutions. Dr. Geisler is PI of the Rensselaer RAMP-UP! award from the ADVANCE program and Dr. Litt is PI of the PAID award at University of Missouri at Columbia.

#### Logistics and Management:

Dr. Dana Britton will be responsible for Part 1 of PROMOTE—the study on the transition from associate to full professor. She will share the insights she obtains from this study with the other PIs and key personnel. Dr. Kim Sullivan will coordinate Part 2 of PROMOTE. The following individuals will coordinate activities at their institutions:

- Dr. Beth Montelone, Associate Dean College of Arts and Sciences, Kansas State University
- Dr. Tracy Sterling, Professor, Program Director and PI ADVANCE and PAID, New Mexico State University

- Dr. Ann Austin, Vice Provost for Faculty Diversity and Development, Utah State University and Dr. Christine Hult, Associate Dean of Humanities, Arts and Social Sciences and ADVANCE PI.
- Dr. Canan Bilen-Green, Associate Professor Forward Coordinator, North Dakota State University
- Dr. Donna Champeau, Director and Associate Professor Office of Women's Advancement and Gender Equity, Oregon State University
- Dr. Margrit von Braun, Dean of Graduate Studies, University of Idaho
- Dr. Donna K. Ginther Associate Professor, University of Kansas

Utah State University will be responsible for the annual report, travel arrangements and the meeting in the first and last year. Utah State University will maintain a web site dedicated to this project that will serve as a resource for the participating universities and as a general resource on the promotion from associate to full professor.

The PIs and key personnel, external evaluator and external advisors will hold a one day meeting in the first and third years of the project and will arrange to meet at the annual ADVANCE PI meeting. In addition, the PIs and key personnel will share experiences, guidelines, and outcomes in a series of email conversations and conference calls that will take place during each quarter. The first year PROMOTE meeting will allow the participants to compare progress at their institutions to date, plan the year's activities and discuss what is currently working and not working at each institution. Dr. Frehill will provide advice on data collection at this meeting. The third year meeting will be an assessment meeting where the participants will compare progress, what worked and did not work and prepare material for dissemination to other schools.

Dissemination is a key element of any PAID project. The proposed project is by its nature a dissemination activity. Utah State will work to disseminate the activities that appear to have contributed to their increased promotion rate among associate professors to six other institutions. Kansas State will disseminate their career planning and mentoring program as it applies to associate professors, and New Mexico State will be disseminating the insights they have gained in mentoring associate professors. Utah State will develop and maintain a web site that we hope will serve as a national resource on associate to full promotion.

In addition, the PIs and key personnel plan to disseminate the workshops, guidelines, mechanisms for review and coaching programs to other universities through a series of conference and workshop presentations. We plan to target conferences attended by department chairs, deans and upper administrators.

A panel presentation to disseminate our ideas about cost-effective ways to encourage women's promotion from associate to full to the national conference for deans: Council of Colleges of Arts & Sciences (CCAS) November 12-15, 2008, 42nd Annual Meeting, Portland Hilton & Executive Tower

Dr. Hult has had a paper accepted at the following national conference to talk about Utah State's experiences with promotion from associate to full: "Why Bother? Helping Women Achieve Full

Professor Rank." Conference on College Composition and Communication (CCCC), April 4, 2008, New Orleans, LA.

Dr. Britton will disseminate the results of the study on the transition from associate to full professor by publishing articles in journals and presenting papers at meetings in her field.

It is our experience that administrators are looking for relatively simple and inexpensive programs that will have large payoffs in faculty recruitment, retention and advancement. We believe that a set of activities that are based on research and that have been tested and shown to be successful at a group of seven institutions will be of great interest to university administrators.

*Results of Prior Support:* ADVANCE Utah State Applying a business model to support recruitment and retention of women faculty. SBE-0244922  
Christine Hult PI, co-PIs Kim Sullivan, Ann Austin, Robert Schmidt, Ronda Callister  
Oct 2003 – Oct 2008 \$ 3,000,000

The USU ADVANCE IT program has made an enormous positive impact on our campus through a variety of initiatives. We have impacted recruitment, policies and positions, faculty, departments and climate in our efforts to improve Utah State's ability to attract, retain, and promote women faculty, particularly in the STEM disciplines. The results of our data collection on recruitment, retention and advancement show a positive trend.

*Impact on Recruitment:* Through the efforts of our SERT team, as well as joint efforts with AA/EO and Human Resources, we have made huge strides in recruiting, retaining, and promoting women STEM faculty. Overall hiring for the STEM colleges was at 54% of availability during the five years prior to ADVANCE and at 92% of availability for the first three years of ADVANCE. We have also made strides in retaining the women we hire: Since ADVANCE began, non-retirement attrition rates for women STEM faculty members have dropped from 0.08% per year to 0.04% per year. We have positively affected advancement of women: Six women have been promoted to full professor during the Utah State ADVANCE project compared to 4 women in the 15 years prior to ADVANCE. In 2005-07 a greater percentage of women associate professors were promoted to full than men associate professors.

*Impact on Policy and Positions:* We now have a permanent position at the Vice Provost level filled by Vice Provost Ann Austin. She is responsible for dual career assistance, faculty development, diversity, and child care initiatives. We have been instrumental in changing university policies to assist with promotions as well as with tenure clock extensions. We also were instrumental in putting into place a permanent Faculty Senate committee to oversee diversity and equity for faculty.

*Impact on Faculty:* We have had direct positive impacts on faculty through our various faculty grants—including collaborative seed grants, transitional support, and associate to full promotion grants. We have also sponsored numerous workshops, speakers, brown bags, etc, to assist faculty. We are in the process of developing a faculty mentoring guide on our website to help new faculty negotiate the many often competing demands of their jobs.

*Impact on Departments:* Through our departmental transformation efforts, we have provided direct analysis and improvements to targeted departments in the STEM colleges. Through climate surveys and theatre performances, we have helped to heighten awareness of gender stereotypes and biases in an effort to improve fairness and equity. Our positive non-retirement retention figures since ADVANCE's onset show the success of these efforts: Based on the October 2006 faculty survey, the non-retirement attrition rate for women was lower than for men.

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IOB- 0612788 June 1, 2006- May 31, 2007 PI Kim Sullivan, co-PI Tom Sherry, Tulane University

Travel grant to the 4<sup>th</sup> North American Ornithological Conference, Veracruz, Mexico \$13,000

This award supported travel for 20 graduate students and post docs to attend the 4<sup>th</sup> North American Ornithological Conference in Veracruz, Mexico in October 2006.

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