Developing an effective mentoring program for early-career STEM faculty: Lessons learned from the first three years of an ADVANCE PAID program

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Abstract:

Three years ago, the WISE@OU program at Oakland University, funded by an NSF ADVANCE Partnerships for Adaptation, Implementation, and Dissemination (PAID) grant, set out to identify and implement strategies that would increase the recruitment, retention, promotion and job satisfaction of women and underrepresented faculty in STEM departments. To help identify key areas of concern among the STEM faculty, a climate survey and subsequent focus group meetings were conducted. With no formal faculty mentoring programs in place or active in any of the STEM departments, it hence came as no surprise that a majority of female and male STEM faculty indicated the need for more mentoring, particularly in the area of research. The benefits of mentoring in the workplace have long been documented in the literature, yet early and mid-career faculty at Oakland University were generally left to fend for themselves unless they were fortunate enough to identify helpful faculty in their departments on their own. The WISE@OU program has hence set out to develop a multi-faceted, effective and sustainable mentoring program for faculty in STEM. An unusually high percentage of women in the 2012 cohort of new STEM faculty (5 out of 8) presented the WISE@OU program with a unique opportunity to test out different mentoring models and have a lasting impact on this and subsequent faculty cohorts. One-on-one, peer-to-peer and group mentoring activities were organized, first for the 2012 cohort and then expanded to include the 2011, 2013 and now 2014 STEM faculty hires. Some of these activities include one-on-one review of practical grant-related information, peer-review of internal and external proposals, workshops and a luncheon series that brings together the early-career faculty in an informal setting and allows them to interact with critical university leaders, senior STEM faculty from other departments and with each other. Given the still relatively low number of women faculty, invitations to these activities have been extended to all early-career STEM faculty and attendance has been very good. WISE@OU has received enthusiastic, positive feedback from the faculty participants and has been successful at creating a comfortable cross-disciplinary network in which these critical STEM faculty can thrive. This paper describes the cohort mentoring initiatives that WISE@OU has undertaken, as well as results of subsequent satisfaction surveys administered to the faculty involved. Efforts to make the program sustainable after the NSF funding expires will also be discussed.

Introduction:

The issue of the underrepresentation of women faculty in Science, Technology, Engineering and Math (STEM) fields has been documented in numerous reports and studies[1-7]. Several reasons have been given for this underrepresentation, including a *pipeline* issue that limits the number of female candidates available for tenure track positions. Despite the fact that women now make up a majority of college students at the undergraduate level, the percentage of undergraduate and graduate degrees awarded to women in most STEM disciplines remains low[8-10] and currently hovers around 19% for undergraduate engineering bachelor's degrees and even lower for some disciplines such as mechanical or electrical engineering[8]. The situation is even worse for under-represented minorities (URMs). Yet, even when women and URMs enter the STEM academic

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workplace, several additional barriers may limit their retention, career advancement and career satisfaction. In a 2007 report by the National Academies, the underrepresentation of women in many STEM fields was correlated with gender bias and discrimination originating not only at the individual level but also through institutional-level policies and practices[1]. These findings were further supported by other research studies[11-13]. External factors such as implicit and explicit bias in the workplace, differences in the work and family demands of men and women, the low representation of women in academic decision-making positions, tenure review procedures and other constraints at the institutional level all contribute to the creation of barriers to the retention, promotion and advancement of women in academic settings.

In a recent survey study titled "Barriers for Women Scientists Survey Report" by the American Association for the Advancement of Science (AAAS), both male and female respondents cited the issue of *grants/funding* as the most significant career barrier and ranked the issue of *balancing of life and career* as the second and third most significant barrier for women and men, respectively[2]. When later asked to list resources to help them overcome these barriers, both men and women placed *grants/funding* as primary and cited *mentors* as the second most desired resource. Yet, while the ranking of these resources was the same among men and women, the relative value placed on each one by men and women was significantly different. Whereas men listed grant support as significantly more critical than mentoring (55% vs. 33%), women listed their importance as nearly equal (53% vs. 50%).

Faculty mentoring programs are a critical tool in lowering many of the institutional and campus climate barriers facing all faculty[3,4,14]. Consistent faculty mentoring and clear communication about tenure and promotion expectations are key to the successful retention and promotion of all faculty, women and URMs in particular. The literature on the benefits of mentoring in academic and non-academic workplaces is vast (see for example the extensive annotated bibliography compiled by the University of Arizona NSF-funded ADVANCE program[15]). In fact, the United States Congress, executive branch and agencies such as the National Science Foundation (NSF), have also recognized mentoring as a critical tool for fostering a vibrant and competitive workforce in STEM fields (e.g., Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring[16]). Linked with larger policy considerations reflecting civil rights concerns and the ability of the country to be competitive in a global economy, these policymakers and agencies have specifically identified the importance of mentoring in conjunction with the career development of underrepresented groups in STEM fields, including women in STEM fields.

In this paper we report on the junior faculty cohort mentoring program developed by the Women in Science and Engineering (WISE@OU) program at Oakland University, funded by an NSF ADVANCE grant. We first begin by providing background information on the WISE@OU program and then discuss the development of our mentoring initiative. Next, we describe several of the activities organized and present early assessment results of the program.

About the WISE@OU Program

The National Science Foundation (NSF) ADVANCE program was established in 2001 to "increase the representation and advancement of women in academic science and engineering careers, thereby developing a more diverse science and engineering workforce[17]." Since its inception, more than 100 institutions of higher education have been the recipients of NSF

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ADVANCE awards, including Oakland University (OU) which received a 4-year grant in 2011 under the NSF ADVANCE Partnerships for Adaptation, Implementation, and Dissemination (PAID) program. One of 15 state-supported 4-year institutions in Michigan, Oakland University is a relatively young (established in 1957), dynamically growing doctoral/research university located in the northern Detroit metropolitan area with Ph.D. and M.S. programs in STEM areas and over 20,000 undergraduate and graduate students. Anchored by a large College of Arts and Sciences (CAS), Oakland University has several professional schools: School of Engineering and Computer Science (SECS), School of Business Administration, School of Education and Human Services, School of Nursing, and School of Health Sciences, in addition to a newly established medical school which welcomed its first class in August 2011.

The WISE@OU program has been focusing its efforts on institutional analysis, recruitment, retention and promotion of women and under-represented populations in the STEM fields. At the time of the writing of the grant proposal, 18% of full-time, tenure-track STEM faculty and less than 10% of STEM full professors were women. Hence, in addition to reviewing and proposing changes to institutional policies and practices related to hiring, promotion, work-life balance, and career support, WISE@OU has sought to develop effective faculty mentoring initiatives with the potential for sustainability beyond the life of the grant.

Assessing the Need for Faculty Mentoring:

One of the first undertakings of WISE@OU was the development of a climate survey in April 2012 to gauge the current level of satisfaction of OU faculty in the College of Arts and Sciences (CAS) and the School of Engineering and Computer Science (SECS). The survey queried faculty members on a number of topics, including the hiring process, the tenure process, career growth and satisfaction, grants and research, departmental environment, and work/life balance. Follow-up focus group sessions were conducted with STEM faculty in summer 2012[18]. The focus group sessions allowed us to dig deeper into faculty thoughts and concerns about a number of topics.

In meetings with STEM department chairs, WISE@OU determined that not much formal mentoring was taking place at the department level, with most STEM departments reporting no active faculty mentoring programs in place. The benefits of mentoring in the workplace have long been documented in the literature, yet early and mid-career faculty at OU were generally left to fend for themselves unless they were fortunate enough to identify helpful faculty in their departments on their own. So, it was thus not surprising that most faculty members indicated that they were not receiving assistance from their colleagues or department in the forms of career advice and development opportunities and that more mentoring, particularly as it pertains to research, was needed (Figure 1). As was seen in other studies, the percentage of women faculty who agreed or strongly agreed with the need for more mentoring was higher than that of men. This was further echoed in the focus group meetings where comments such as the following were heard: *"I feel for everyone to grow in this academia… you need the person who has been there, done that, to give you advice, at least to avoid mistakes."* Not only did faculty express a wish for more mentoring, but the need was illustrated even further by the response of untenured STEM faculty to the question *"Is stopping or rolling back the tenure clock available to the untenured in your department?"* Not a single STEM male or female assistant professor knew that rolling back the tenure clock was an option under a number of circumstances!
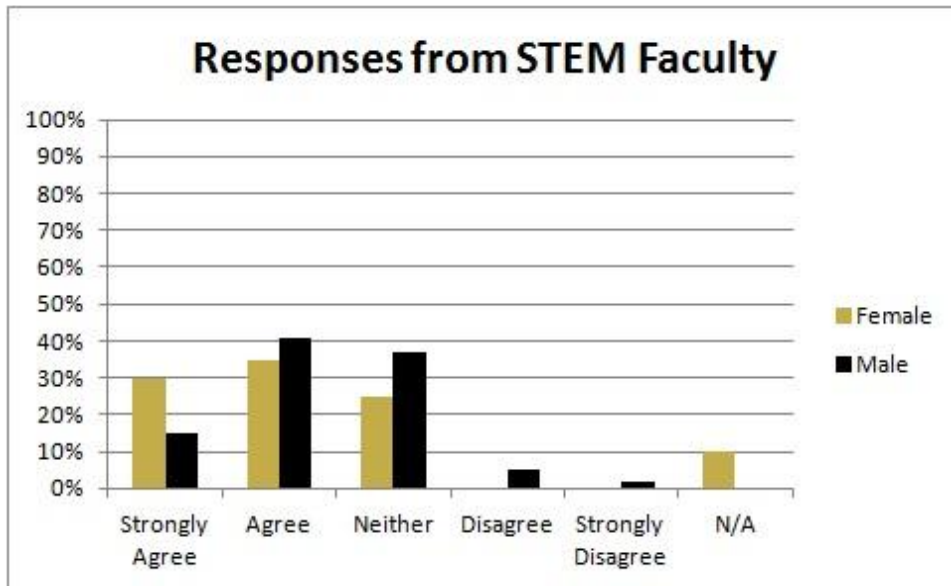
Figure 1 - Responses by STEM faculty to a question about the need for mentoring in research

While WISE@OU set out to convince deans, associate deans and department chairs of the need for and value of setting up formalized faculty mentoring programs within their department, school or college, we also worked to establish a mentoring program intended for women STEM faculty. While we had initially anticipated developing a traditional mentoring model for our female STEM faculty with careful matching of mentor and mentee, our review of the limited literature on best practices in STEM faculty mentoring seemed to point us in a different direction. An extensive study with groups of STEM faculty[19] reported that their attempt to pair senior STEM faculty with junior STEM mentees suffered from both lack of participation and lack of perceived benefit to either party. In fact, the authors concluded that "mentoring programs should serve as facilitators for individuals to meet and establish an informal or formal mentoring relationship based on their own expectations for trust and rapport, rather than being formally assigned a mentor." Chesler and Chesler[20] further suggested that good strategies for women engineering faculty include non-traditional approaches such as peer-, multiple-, and collective mentoring. We also found other ADVANCE programs that had initiated cohort or group mentoring/coaching programs with good results[21-23]. This allowed us to think more broadly about our mentoring agenda.

As we were completing the survey and focus group analysis, an unusually high percentage of women in the 2012 cohort of new STEM faculty (5 out of 8) presented the WISE@OU program with a unique opportunity to test out different mentoring models and have a lasting impact on this and subsequent faculty cohorts (Table 1). Therefore, in parallel with making plans to initiate a formal mentoring program, one-on-one, peer-to-peer and group mentoring activities were organized by the WISE@OU leadership team, first for the 2012 cohort and then expanded to include the 2011, 2013 and now 2014 STEM faculty hires. Some of these activities include one-on-one review of practical grant-related information, peer-review of internal and external proposals, workshops and a luncheon series that brings together the early-career faculty in an informal setting and allows them to interact with critical university leaders, senior STEM faculty from other departments and with each other. Given the still relatively low number of women

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faculty, invitations to these activities have been extended to all early-career STEM faculty while still emphasizing the needs of women faculty.

Table 1 – Gender distribution of tenure track faculty in STEM fields in the College of Arts and Sciences and the School of Engineering and Computer Science (SECS). Red numbers indicate percentages at the beginning of the grant.

Department	Male Faculty (% of total)	Female Faculty (% of total)	Female Assistant Professors (% of total)	Female Associate Professors (% of total)	Female Full Professors (% of total)
Biology	60%	40% **(25%)**	44%	44%	0%
Chemistry	63%	37% **(27%)**	50%	33%	29%
Math	89%	11% **(11%)**	20%	0%	13%
Physics	100%	0% **(10%)**	0%	0%	0%
SECS	80%	20% **(16%)**	25%	21%	13%

Cohort Luncheon Series:

While individual STEM departments may have a small number of new or untenured faculty members, new faculty across these departments share many of the same challenges and concerns as they work to establish their research programs, develop new courses, and learn how to navigate university services and policies. It thus became immediately clear to us that it was important for these newly hired assistant professors to meet each other and get to know key senior faculty members, staff, and administrators throughout campus. WISE@OU hence initiated a series of luncheons in partnership with the Center for Biomedical Research (CBR) –headed by one of the grant co-PIs– to promote this type of interaction. Members of the WISE@OU leadership team attend these luncheons as well and facilitate or initiate discussions, allowing the new faculty to ask questions about a variety of topics in a supportive environment. The first luncheon in April 2013 was in part a get-to-know you event, in which new faculty members introduced themselves and described their research. One key aspect of these meetings is that they allow faculty from math and science departments to intermingle with faculty from engineering and computer science departments. Few opportunities exist at OU for faculty from different units to interact, and we viewed this as not only benefiting new faculty, but also as promoting interdisciplinary activities and collaborations on campus. As a case in point, one of the new computer science assistant professors had recently visited the Washington DC area to meet with NSF program directors about grant application strategies and to attend two NSF-focused workshops; she shared her experience with the others in a textbook illustration of effective peer mentoring. One hurdle all these young faculty face is the expectation that they will apply for and receive external funding, and this was the first in a series of events to assist them in that effort. Given the success of this event, we planned to formalize the series for the subsequent academic years. While initially focused on the 2012 faculty cohort, the luncheon series has since been expanded to include the 2011, 2013 and now 2014 STEM faculty hires as well.

Another goal of these luncheons was to introduce the new faculty to campus leaders and administrators. In luncheons to which a campus leader is invited, a question and answer format is used, as it seems to be superior to a seminar format for addressing the needs of young faculty with limited time but many questions. If we notice that some important questions are not being asked by the new faculty, members of the WISE@OU leadership team make it a point to ask some of those questions as a way of prompting further discussion and reflection. As an example, one luncheon was attended by OU's Provost. This meeting served two purposes: it let the faculty meet with and hear from the Provost, and it allowed the Provost—who was in his first year at OU —to meet our new faculty. Another luncheon was attended by a vitally important grants officer from OU's Office of Research Administration who is in charge of both NSF and National Institutes of Health (NIH) grant applications, and is therefore a key person that new faculty will interact with as they apply for external funding. The invitation of the grants officer was, in fact, made in response to a request by one of the young faculty. Others invited include for example the OU vice-provost for research, the OU Chief Information Officer, and the associate deans of CAS and SECS. An overall theme of our mentoring efforts was to provide the help that the faculty themselves want and ask for.

The luncheon programs were facilitated by the senior STEM faculty members from the WISE@OU leadership team. The diverse disciplines and experience of the senior STEM faculty (professor emerita of chemistry and retired associate dean; professor of physics and director of CBR; and, associate professor of mechanical engineering and campus leader) allowed for many questions to be answered quickly and completely. Beyond that, getting to know senior faculty outside of their discipline provides the new cohorts with additional sources of individual advice and counsel. Many of the new faculty have approached members of the WISE@OU leadership team soliciting help or advice and have assisted each other as well in a variety of matters. We believe the leadership of the senior STEM faculty helped build an *esprit de corps* among the members of this cohort. The following comment by one of the untenured faculty members sums it up nicely: *"I really enjoyed our conversation and exchange of ideas. We are so fortunate to have WISE@OU here at OU to reach out to us. It was a lot of fun to get to talk to everyone and learn from each other."*

Assistance with Grants:

With increasing institution expectations for research funding and given the poor funding environment in the STEM fields over the last several years, new faculty members were often anxious and concerned about obtaining grants to support their research program. To assist and mentor new faculty with this process, one of our co-PIs who happens to be the director of the Center for Biomedical Research and a former interim vice-provost for research met individually with each of the eight new faculty members in the 2012 cohort to discuss grant strategies and share some of his grant-writing experience. Some of the topics that he focused on during these one-on-one meetings include: Center for Biomedical Research resources (including internal funding); equipment inventories (compiled by WISE@OU based on focus group suggestions); WISE@OU resources and website; procedures and personnel in the Office of Research Administration; relevant compliance issues; and, sources of internal and external funding. Given the one-on-one nature of these meetings, the discussion could center around topics of interest to a particular faculty member. For example, for faculty using animals in their research, the Institutional Animal Care and Use Committee was described. If, on the other hand, a faculty

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member's research involved human subjects, then the procedures to apply for Institutional Review Board (IRB) approval were explained. Most faculty had questions about the process for applying for grants: where to get NSF Fastlane or NIH Commons accounts; what internal forms need to accompany an application; who needs to sign off on grant applications; when are the deadlines for submitting a proposal; and, how does one build a budget including correct amounts for indirect costs and fringe benefits. New faculty were also given copies of the *OU Research* magazine, which is another source of information about research projects currently underway at OU.

As new faculty work on writing research proposals, one of the ways that they can hone their proposal writing skills and build a funding record early on is to apply for internal funding opportunities. Such opportunities clearly vary from institution to institution, but at OU, one such mechnism is the University Research Committee (URC) Faculty Fellowship Program. These fellowship awards may be used in any combination of stipend and research expenses, such as supplies, minor items of equipment, summer salary support, project assistant wages, technical services, and travel expenses. New faculty need to know key facts about applying for these fellowships, such as eligibility criteria and deadlines (these applications were due early in the fall semester and were therefore at the top of the new faculty members' to-do list when they arrived at OU). Unfortunately, the success rate for junior STEM faculty in this competition was not high in recent years, so WISE@OU instituted a STEM-focused workshop for early fall 2013 at which the Vice Provost for Research and several WISE@OU faculty (who had served as former URC chairs) provided advice and tips on crafting a successful proposal. In contrast to external funding applications written for experts in a discipline, these internal proposals needed to be prepared so that committee members from throughout the institution could understand them and appreciate their importance. Using technical jargon and cutting-and-pasting from existing NIH or NSF proposals were poor strategies for winning these awards. Yet developing the ability to clearly explain the motivation, goals and importance of one's research is an important skill to have. *Anyone who has served on an NSF review panel knows how important the first few pages of narrative of a proposal are at piquing the interest of the reviewer!* In addition, the WISE@OU senior STEM faculty offered to review individual URC proposals before they were submitted and provided individualized feedback on the organization, writing and content of the proposals. Following the well-attended workshop as well as the individualized proposal peer-review, the success rate of all STEM assistant professor applicants jumped from 36% in 2012 to 67% in 2013 and to 100% in 2014. The impact on women STEM assistant professors in particular was high as a larger proportion of them had applied for the URC fellowship awards in 2012 yet had significantly lower success rates than their male counterparts. While we realize that these specific examples of internal awards may not apply to other institutions, most institutions have local sources of funding with their own quirky rules. New faculty members need guidance to the local environment and support when applying for any type of research grant no matter how small, and that is one of the key features WISE@OU provided. After all, most faculty members remember the excitement and confidence boost that they experienced when they were awarded their first research grant.

As would be expected, most new faculty members were extremely interested in learning about external funding opportunities and procedures, particularly from NSF and NIH. Based on their one-on-one meetings with the new STEM faculty, WISE@OU leaders were able to obtain information on specific research projects new faculty members were interested in, allowing them

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to direct grant opportunities information to individual researchers for who it is most appropriate; always a better strategy than sending email blasts of mostly irrelevant information to everyone. Another key to grant writing success is to get feedback about a grant application before it is submitted to a funding agency. Both the Center for Biomedical Research and the Office of Research Administration have pre-peer-review programs, which supply a mini-review of an application by senior colleagues experienced with that funding organization. Such grant writing assistance is critical for new faculty with little experience writing grants. In other cases, examples of successful grant proposals were obtained and shared with faculty who asked for them. One of our key goals was to avoid having the new faculty feel isolated and alone as they negotiated this unfamiliar funding environment.

Several federal funding agencies such as NSF, NIH, DOE, and DOD offer career award funding opportunities targeted at newer faculty. These prestigious awards support junior faculty in the STEM fields in their role as teacher-scholars and provide funding over a number of years. Many of the new STEM faculty at OU planned to apply for NSF CAREER awards. So, due to the high interest in these awards, WISE@OU purchased access to a webinar about CAREER proposals and hosted an event at which junior faculty could view the webinar together and discuss strategies. A previous NSF CAREER award recipient from OU attended the event, shared his experiences, and answered questions. Such sharing by established senior faculty is one of the most important benefits of cohort mentoring. The webinar format allowed for a cost-effective way of providing the information to a large number of faculty.

One of the best ways for a young faculty member to learn about how to apply for grants is to talk directly to staff at the funding agency, yet most new faculty at OU do not get to travel to Washington, DC to do that. With that goal in mind, WISE@OU helped organize a visit to the university by an NSF Program Officer. She presented a seminar about applying for NSF funds in general, and then spoke with individual faculty members about their specific needs. Serving on proposal review panels for funding agencies such as NSF and NIH is also a valuable experience for new faculty. Young faculty were hence encouraged to participate once or twice but were warned not to get bogged down in an extensive time commitment at this point in their career. Online resources such as videos prepared by NIH about the reviewing process were suggested to faculty as sources of additional information[24].

In order to consolidate much of the information that was shared one-on-one with faculty into an easily accessible document, WISE@OU created a *Guide for STEM Faculty at Oakland University* in fall 2013. Hard copies of this guide--which contains, among other things, useful information about research grant and teaching resources, administrative contacts and campus information--was presented to the 2013 and 2014 STEM faculty cohorts at the fall welcoming luncheon and is posted online on the WISE@OU website[25]. More information has been added to the guide in the new 2014 edition based on feedback provided by the new faculty, as well as to reflect changes to campus resources and contacts over time.

Workshop Series:

The climate survey and focus groups revealed a number of issues (such as lack of understanding of the OU leave policies and of the tenure and promotion process) that affect all faculty, including the 2012 cohort. To maximize information dissemination to the campus community, WISE@OU elected to address several of these issues through seminars and workshops which

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were open to all OU faculty. Whenever possible, WISE@OU sought to coordinate the organization of these workshops with other campus programs. This is an approach that was successfully used by several other ADVANCE programs to **"**avoid overwhelming the campus community, especially women faculty and academic administrators with too many activities,**"** [21] while also increasing the visibility of the WISE@OU program and improving buy-in by the campus administration and faculty at large. For example, WISE@OU partnered with organizations on campus, such as OU's Office of Academic Human Resources (AHR) and the OU chapter of the American Association of University Professors (AAUP), to host workshops, share information and answer questions about leave policies and the tenure review process. The lack of clarity about policies related to family issues and the tenure clock and review process was a concern that came to light through our climate survey and focus group meetings, particularly among women faculty, so top administrators from AHR were among other things asked to address commonly asked questions about pregnancy and adoption, FMLA and other leaves, stopping the tenure clock, and dual hiring. WISE@OU arranged for these workshops to be videotaped and posted on the WISE@OU website, so they are always present as a resource and add to a library of wisdom that new faculty can tap into. While videos cannot replace one-on-one mentoring, they still provide a valuable backup when new faculty members, for whatever reason, cannot participate in various workshops and events. While the impact of these workshops on faculty understanding of these various issues has not yet been assessed, we can attest to a number of very positive cases where women STEM assistant professors knew as a result of our workshops and cohort mentoring to contact AHR to figure out their maternity leave options (something that did not always happen in the past) and have been able to delay their tenure review clock. We have since developed anti-bias training materials to be shared with promotion and tenure review committees to ensure that tenure clock delays are not viewed negatively when the faculty members go up for tenure in a few years.

Obviously, research is only one aspect of a faculty member's job. In order to assist new STEM faculty with issues pertaining to teaching, service and work/life balance, WISE@OU has also partnered with OU's Center for Excellence in Teaching and Learning to present additional lunch workshops that were open to all faculty, including the new STEM cohort. These covered topics important to young faculty, such as mentoring students in research, balancing teaching and research in STEM, engaging STEM students in the classroom: practical tips for teaching, and achieving work/life balance. These events were also videotaped and are available online.

Newsletter, Website and Other Communication:

WISE@OU has adopted several approaches to ensure that lines of communication with the new faculty are kept open and that their achievements are highlighted and recognized throughout campus. First, the WISE@OU website is constantly being updated to include information about current and past events (including video recordings when applicable), funding opportunities, university policies and procedures, as well as links to useful resources for faculty. Achievements such as grants, awards and publications of new and women STEM faculty are highlighted both on the WISE@OU website, as well as on the Center for Biomedical Research website. In addition, WISE@OU publishes a quarterly newsletter containing timely information such as deadlines for internal awards and grant writing tips as well as showcasing the achievements of women STEM faculty. The main focus of the newsletters is to address issues important to new faculty.

Assessment of Activities and Conclusions:

In order to gauge the impact of some of our activities on the experience of new STEM faculty at OU, a survey was prepared asking new STEM faculty to assess their satisfaction with the activities of WISE@OU. The survey was developed with the assistance of a sociology colleague using the survey platform of qualtrics.com. A link to the survey was emailed to the faculty who were part of our cohort mentoring group. A 59% response rate was achieved despite a short turn-around time dictated by tight NSF reporting deadlines. The survey included multiple-choice questions as well as opportunities for faculty to respond to open-ended questions. Table 2 summarizes the findings of this survey and indicates overall high satisfaction with the program. We are most pleased that the faculty plan continued participation in the cohort events. Another way to judge the usefulness of these activities is to monitor attendance. No mentoring activities were mandatory, and new faculty tend to be busy establishing their research program and preparing to teach new classes. They tend to vote with their feet, attending events as long as they find them valuable. On average, 60% of the junior STEM faculty attended each cohort event. Women STEM faculty represented 55% of the attendees. Meeting scheduling tools such as doodle.com have helped us identify meeting times that suit the largest number of faculty.

Table 2 – Responses of new STEM faculty involved in mentoring cohort program to survey questions

New STEM Faculty Cohort Events (Luncheon Program)	Rating*
Introduction of new STEM faculty to recent cohorts & STEM guide distribution	4.9
Informal Q&A session with critical university grants administrator	4.1
Faculty networking and interaction with senior STEM faculty	4.6
Informal meet and greet with newly appointed university provost	4.3
Value of Cohort Events to New STEM Faculty	
Opportunity to meet with new STEM faculty outside of department	4.7
Opportunity for interaction with senior STEM faculty beyond own department	4.4
Opportunity to learn about university funding programs and processes	4.4
Opportunity to raise questions in a comfortable environment	4.8
New STEM Faculty Evaluation of Other Support Opportunities	
Workshop on writing competitive proposal for internal fellowship	4.5
Importance of mentoring at the department level (beyond cohort)	4.5
Plan to continue participation in the New STEM Faculty Cohort Events	100%**
Read periodic WISE@OU newsletters about faculty info and achievement	90%
Follow up 'pre' peer review of fellowship application	80%
Participation in NSF CAREER webinar and/or discussion	80%
Use of WISE@OU generated *Guide for STEM Faculty at Oakland University*	60%
Use of WISE@OU website	60%
Receiving mentoring in department (beyond cohort efforts of WISE@OU)	40%

*Scale from Very Satisfied (5) to Very Dissatisfied (0). **Percentage responding yes.

Faculty comments provided to the open-ended questions were also very positive. When asked to comment what s/he thought was the most valuable outcome of group interaction from the lunch series, one faculty member answered *"Meeting other faculty especially from other departments. Also, the more experienced faculty have provided great support and insight into how to get things done at OU."* Other faculty members stated *"Information gathering. Resources that are already in place on campus [are] not easy to find online - therefore, the interaction makes it [an] information gathering channel"* and *"Meeting the other faculty and staff because then I had an idea of where to go if I had questions and ideas for collaboration."*

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While not initially intentional mentoring, our work with cohorts of new STEM faculty has accomplished one of our program goals: mentoring for tenure-track STEM faculty and reducing their sense of isolation. This is not our envisioned traditional matched mentoring program, but it is effective and appreciated. Our cohort work has some unique design elements including[26]: a cardinality of three mentors to many mentees; matching via mentor initiative and mentee choice; careful monitoring as an important initiative of an ADVANCE grant; and, a rolling admission of new cohorts with termination at tenure.

The WISE@OU Leadership Team realizes that no matter how useful their mentoring efforts have been for new faculty cohorts during the duration of the ADVANCE grant, one important goal is to make mentoring sustainable after the NSF funding expires. If we can establish effective mentoring programs within the STEM departments and encourage the culture of mentorship, more senior faculty will be involved and the value of mentorship both to the mentee and to the mentor will be recognized. While we remain concerned about the reported lack of mentoring at the departmental level, we have been working closely with administrators and department chairs in the College of Arts and Sciences and in the School of Engineering and Computer Science to help them establish department-level or school-level mentoring programs. The SECS dean has recently appointed a faculty member to serve as a coordinator for a school-wide faculty mentoring program and the CAS dean's office has also been working on pairing faculty up with senior faculty from other departments. We are hopeful that these programs will be in place by summer/fall 2015, in time to welcome the 2015 cohort of new STEM faculty. WISE@OU has also initiated discussions with the OU University President, the Senior Vice President for Academic Affairs and Provost, the Associate Provost, as well as other members of the administration on several issues pertaining to women STEM faculty, including mentoring, and is optimistic about future university-level changes in these areas.

So while our cohort mentoring model is not intended to replace one-on-one or group mentoring initiatives at the department level, there may be significant benefits to sustaining this cohort model including: ease of operation (it only requires a few committed mentors); interdisciplinary appeal (a plus particularly in view of the growing interest by funding agencies for multidisciplinary research); and, minimal cost (light soup and salad or sandwich lunch that can be provided by the provost, deans, or other campus partners). With a successful track record, the elements for institutionalizing this unique mentoring program are in place and could easily be implemented by other institutions to support their own faculty, both female and male. Indeed, given the large investment of time and money in recruitment and startup funds, academic institutions would be foolish to not implement these simple steps that help retain STEM faculty, particularly women faculty. A recent quip on retaining women by the Association for Women in Science blog sums it up nicely, "It's cheaper to keep her." It is cheaper, and fairer, and better to create an environment that advances and strengthens a university's most vital resource, its faculty, and promotes the advancement of STEM female faculty in particular.

Acknowledgments:

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