

## Chapter 1

# Mutual Mentoring To Promote Success and Satisfaction of Women Faculty in STEM

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Mutual mentoring groups that have been meeting regularly for the past eight years have been supporting the success of women faculty in STEM disciplines. Participants gather to each “work” on career and life challenges they face, by exchanging ideas with faculty from different departments and career stages. The community and shared experience of the mentoring group also combats the sense of isolation women faculty face in male-dominated departments. We describe how to foster the grass-roots formation of successful mutual mentoring groups. Additional groups that have formed among female STEM faculty, female STEM graduate students, and non-white STEM faculty are providing a supportive environment for individuals from under-represented groups to thrive in STEM careers.

## Our Inspiration

This article is intended to complement scholarly work on mentoring (1–4) by providing an anecdotal account of recent mutual mentoring groups at one institution, to illustrate the ease of implementation and value of this approach. Eight years ago we became interested in mutual mentoring to support the success of women faculty in STEM disciplines. The objective was to find a way for women faculty, who were often isolated within their STEM departments, to connect across departments and help each other thrive. The challenge was to imagine what activity people would want to add to their already very busy

schedules. What would provide enough benefit to be worth the time invested? We found our inspiration in the book *Every Other Thursday: Stories and Strategies from Successful Women Scientists*, by Ellen Daniell (5). This book describes a group of highly successful female scientists who met every other Thursday for over 20 years to “work” on issues related to navigating their careers and lives. This account makes it clear that such a group can provide important support that makes it worth the time that it takes. The EOT Group described in *Every Other Thursday* included members of the National Academy of Science, demonstrating that such an activity is valuable to very busy and successful scientists. We reasoned that if it worked for female scientists of this caliber, and was valuable enough for them to spend their time on, then why not try it?

We decided to start UMass Mutual Mentoring (UMM) Groups, modeled after the EOT Group. At the time, we counted 69 women faculty in 18 UMass STEM departments, but 2/3 of these departments had 3 or fewer women. One objective of our Groups was to connect women across STEM departments, which would create a feeling of critical mass and combat a sense of isolation. We also wanted our UMM Groups to exchange ideas and best practices from participant’s experiences in different departments and at different career stages, to help ourselves navigate challenges with our careers, colleagues, and work/life balance. And we hoped that these connections and shared insights would help participants to combat additional challenges that come with being part of an under-represented group, such as dealing with implicit bias and discrimination from others, and dealing with imposter syndrome in ourselves.

The catalyst for starting these groups was the Mellon Mutual Mentoring Program at UMass Amherst, which offered small grants that fund mutual mentoring projects initiated by faculty individuals and groups (4). Our proposal was funded in 2009 and we launched two mentoring groups. Mentoring groups can be run with little or no cost, so we used the grant primarily to host a visit from Carol Gross, a member of the EOT Group, who presented both a science seminar and a mentoring talk. Her visit culminated with a wonderfully inspiring dinner with her and both UMM Groups.

## Organizing the Original Groups

Although there were at least 69 female STEM faculty on our campus when we were awarded a Mellon Mutual Mentoring Grant in spring of 2009, many STEM departments had just one or two female faculty. We invited all female tenure system faculty in departments involved in life science research to participate, which constituted 38 women in all. Initially 17 female faculty (from Chemistry, Biology, Physics, Biochemistry and Molecular Biology, Microbiology, Veterinary and Animal Sciences, Chemical Engineering, and Polymer Science & Engineering) expressed interest in joining the group. At the initial meeting in July 2009 we described the approach taken in *Every Other Thursday*, quoted excerpts from the book and laid out our vision for these mentoring groups – that they would aid advancement of female faculty, fight feelings of isolation, provide a sounding board for addressing one’s own challenges, and serve as a

clearing house of alternative approaches to solve problems that arise in academic mentoring, publishing, and grant writing. We were uniformly met with interest and excitement.

*Every Other Thursday* suggests that the ideal size for this type of mentoring group is 8-10 participants. With 17 interested faculty, we naturally needed to organize into two independent mentoring groups. We chose what seemed at the time to be an arbitrary divisor. At the initial meeting we simply asked when women would like to meet: in the evening at the home of a group member, as had been done in *Every Other Thursday*, or on campus during lunch. Approximately half of the group preferred evenings and half preferred lunch, so we divided along those seemingly arbitrary lines. In retrospect, perhaps those dividing lines were more significant than they appeared at first glance. We (Hardy and Thompson) both participate in the evening Group. I (Hardy) feel personally like there are never enough hours in the work day, so the idea of taking time out of my work day for mentoring felt like an added stress in an already stress-filled life. Those in the lunchtime Group found it more difficult to carve time from their evening responsibilities, and were willing to prioritize mentoring as a work-day activity they could squeeze into a one-hour lunch. Perhaps this was an important distinction, indicating something about the needs and personality of the participants, which may have contributed to the longevity of our two groups. Or perhaps, any arbitrary divisor – hair length, alphabetically by last name, birth month – would have worked equally well.

At the organizational meeting we noted that the time preference divisor yielded good diversity, with Full, Associate and Assistant Professors from multiple departments in each group. We reasoned that a mix of both junior and senior faculty would add valuable perspective. As an Assistant Professor at the time, I (Hardy) was hoping to gain insights from the experience of more seasoned Group members. At the time of my tenure and promotion, the insights of one Group member who had served on the college tenure and promotion committee were incredibly helpful both in formulating my package and understanding the inner workings of that committee. In turn I (Thompson) was seeking to learn from the fresh perspectives of junior colleagues, and found that I gained valuable ideas regarding time management and lab management approaches. Our Group included more than one faculty member from some departments. Although this could have stifled some frank discussions or led to potential conflicts, for our own Group we have found that having two people from the same department can be synergistic for advancing initiatives within departments in which women are underrepresented.

It is our experience that having all members of the mentoring groups be fully invested, active participants is an important component of the success and longevity of the groups. From the beginning all members of the Group “worked” regardless of their seniority and no members of the Group were ever expected to participate as a “service project” to help junior members. As with all aspects of life, UMM Group members vote with their feet. The fact that seven of the nine original members are still active participants after eight years suggests that this model of mentoring is valuable to all of us.

## Procedure and Process of the Group

At our early meetings we selected, read and discussed chapters from *Every Other Thursday*. The first chapter we discussed was entitled “Off Balance and Out of Control: Managing Time and Establishing Equilibrium.” This theme in particular seems to resonate with academic female faculty, so even at the first meeting every member had some work they wanted to do on this theme. Having a chapter to discuss was a useful starting point to break the ice at the first meetings of our UMM Group. After three or four meetings, Group members were comfortable enough with the format that we discontinued the practice of assigning a chapter, but still find many of the themes of the original EOT Group and related themes emerging. To this day, one or two members often come to Group without a concrete idea of the work they want to do, but a theme that resonates with them often emerges, prompting a new or continued line of work.

We believe that having most of the Group members read at least some chapters of *Every Other Thursday* as we launched our UMM Groups was critical to our success. Reading this book establishes the important concept of the “work” that we do. Each member “works” by articulating a problem and participating in discussion that ultimately leads her to arrive at her own solution. Importantly, this concept prevents Group from becoming a complaint session and prevents participants from asking the Group to “tell me what to do.” Instead everyone is empowered to actively compare the ideas and experiences of others and then pursue their own strategic choices.

At the beginning of each semester our Group renegotiates the day of the week we will meet, we set up a calendar of meetings every third week, and each member selects a date to serve as host. As we arrive at the host’s home, we each sink into a couch, our feet curled beneath us, a bowl of chocolate covered almonds or sesame crackers within reach of our perch as we prepare to set to work. The host asks each Group member how much time they need. Two minutes indicates a minor issue, five minutes a substantive topic, and a request for 10 or 15 minutes suggests that the Group member has a significant issue. For a while, our Group was particularly bad at sticking to time, and each discussion lasted much longer than the requested time, but recently we have made a greater effort to stay within our stated time limits. This is important so that everyone feels they can participate without committing to a four-hour event. On average our evening meetings are about three hours long.

During Group, the major focus is the “work” of each member. We have had members work on difficult PhD student mentoring relationships, dealing with sexual innuendo in the lab, strategizing about collaborator tensions, coaxing co-authors to cooperate, responding to negative paper reviews, difficult tenure and promotion cases, challenges in obtaining grant funding, department chair interactions, less than collegial colleagues, balancing time between children and work, managing anger and frustration, motivating disillusioned lab members, negotiating for increased resources and space, managing conflict within lab teams, teaching challenges, uneven college and university policies, gender inequity in salaries and salary increases, approaches to the current political climate, balancing work and new babies (of which there have been four) and many other issues.

After the host has heard the time requests, she asks “Who would like to work first?” The first Group member to volunteer describes the issue she is working on, then states what she is hoping to get from the Group: to simply talk about the situation, to hear about relevant personal experiences, to gather ideas, opinions, and suggestions from the Group, etc. One of the central tenants of this approach to mentoring is that each member is able to find her own best plan for moving forward, and she alone is responsible for deciding what to do. While other members may provide input when asked, ultimately the plan of action is the sole of purview of the speaker. After the speaker concludes, she states that she is done and typically reports what she plans to do. Her plan may be something concrete like “buy a new laptop and software that allows efficient voice transcription” or “set up a meeting with my department head before talking to my stonewalling collaborator.” Other times, the plan may be more ethereal like “I want to try to take note of my reactions when I interact with that student.” Some of us bring a journal and write down the plan or “contract” we have formulated. Each member in attendance has the chance to speak if they like. Often there are members who don’t have a topic they want to work on at that meeting and do not speak. Typically the host is the last to “work”.

Due to its nature, the work that goes on in Group must be maintained in strict confidence. This is part of the collective agreement that allows us to work on topics from all facets of our life. We try not to disclose the identities of individuals involved, but because we are all members of the same College in allied departments, the identity is often obvious. This makes confidentiality all the more critical. We are aware of no breaches of confidentiality, underscoring the respect with which all the Group members hold the importance of being able to do the work that we do.

After each member who wishes has had a chance to “work,” we often have a drink or dessert and talk about our personal lives. It is also a time when we can give each other a “stroke”. Strokes are compliments or positive reinforcement. Praise like “I am impressed with how well you are dealing with such a difficult situation” is common. The recipient must accept the praise without demurring. Particularly early on, many of us found it hard to accept strokes. I (Hardy) remember one night when I gave a stroke to a Group member about her standing in the field. She looked startled, gulped back her reflexive desire to balk, blinked hard a few times and finally came out with “Well, thank you?” As with the original EOT Group, we find that our members don’t receive as many accolades as they deserve, so we, like many women professionals, do not have a well-developed ability to accept praise gracefully. After years of training we are all better at simply saying “Thank you.”

## Value of Groups

The value of these Groups to their members is demonstrated by their longevity: both the lunchtime and evening UMM Groups have been meeting regularly for over 7 years. What have we gained? We have forged professional connections across departments that have helped us to navigate the professional challenges of tenure, promotion, research grants, collaborations, classroom

dynamics, research group management, and more. We have formed friendships and shared insights to address personal challenges with work/life balance, the needs of our growing children and aging parents, and our own health. In each Group we have a sense of community and shared experience. Our confidential discussions make it clear that all of us face similar challenges. We draw on diverse experiences in different departments and career stages to share ideas for what works and what doesn't. As each individual faces and ultimately overcomes each challenge, it inspires everyone with confidence for meeting future challenges.

Many examples illustrate the benefits we have gained. Members sometimes end their "work" on an issue with a "contract" – a statement of the plan she will implement to address the issue. This approach, which was suggested in *Every Other Thursday*, can help drive action. The perspective and reassurance of Group has helped members allow themselves necessary time to deal with health issues for themselves or family members, and helped others not blame themselves for difficult interactions with students or collaborators. Group members have shared valuable ideas that empowered us, for example, sharing effective approaches for carving out time to efficiently complete manuscripts. Group has connected us to larger networks that have helped for navigating unusual career issues. Since most of us work in male-dominated departments, we have enjoyed having time and space to work and interact with other women who face the same challenges about career advancement, student mentoring, grant-seeking, parenting, and teaching.

Mentoring groups are not for everyone. A few people came to the first few meetings and then stopped, presumably because this type of interaction was not valuable for them. Others left after a year or two, presumably because they entered a new career/life phase with different needs. Thus we have self-selected for those who value the Group community and approach.

The value of this work has been attractive to more colleagues than we could accommodate in our original Groups. Our experience confirms that, as for the EOT Group, 8-10 members is a good size – large enough to tolerate the inevitable absence of a few people from each meeting due to scheduling conflicts, but small enough that everyone present has time to "work" on an issue in the meeting and benefit from the shared ideas of the others. In the early years, as a few people left each Group we were able to invite new faculty to join. But then our membership stabilized, and we found ourselves in the frustrating situation of telling new colleagues that this activity is extremely valuable, but that we could not include them because the Groups were already full. This was difficult, as we did not intend to be exclusive. We considered splitting the Group into new groups with additional new members, but found that we all valued our Group community too much to give it up. Luckily, the UMass College of Natural Sciences was inspired by the success of our Groups and decided to facilitate the genesis of additional UMM Groups, as described below.

## Mentoring 8 Days a Week: Expanding to All Interested Underrepresented Faculty

In 2013 we were approached by the then newly appointed Associate Dean for Faculty and Research about expanding the use of this mentoring approach more broadly for female faculty in our college. Several members of UMM Groups were involved in an organizational meeting where we shared our experiences with other STEM faculty women interested in starting new mentoring groups. Most of the more recently organized mentoring groups meet for one hour twice a month during lunch. Similar themes have emerged in these newer UMM Groups. For instance, junior faculty find it extremely valuable to have the input of senior women, particularly those in leadership positions. One colleague who participates in one of these groups has found it very helpful to get perspective from outside of her own department and college. She also notes that in the frenetic life of faculty members, having a standing commitment and setting aside protected time every other week to work on various aspects of career development in a thoughtful supportive environment has had a positive impact on her career.

The original EOT Group described in *Every Other Thursday* was predominantly female, but also had one male member. In their case the male member dropped out after a year or so, and their group continued as all women. It is clear to us that this type of mentoring does not need to be all female to succeed. In fact, a number of men have mentioned that they too would benefit from such a group. In 2016, two senior faculty from our college, Nilanjana “Buju” Dasgupta and S. “Thai” Thayumanavan (another Cottrell scholar) adopted the *Every Other Thursday* approach to create a mixed gender mentoring group of non-white faculty. The fact that this group has persisted for a year now suggests that this approach is working well in this demographic as well. We appreciate being in an environment where so many scientist are benefitting from mentoring that there must be a mentoring group meeting somewhere in or on the UMass campus eight days a week.

## Mutual Mentoring the Next Generation: STEM Graduate Women

Carol Gross, one of the members of the group described in *Every Other Thursday*, visited campus in 2010 and gave a talk entitled “Strategies for Success in Science”. During the introduction to this talk, we described how reading about Prof. Gross’ group had encouraged us to form a similar mentoring group on our campus. In the weeks following that seminar, two graduate student women, one chemist and one chemical engineer, approached us asking for advice on how to start a group. We (Hardy and Thompson) attended the initial organizational meeting of about 35 engaged and energetic graduate students from half a dozen different graduate programs. Over take-out Chinese food served on paper plates, we related our experiences of starting our mentoring group and noted specific ways that our own participation had been valuable to us. When we finished our presentation, it was tempting, as faculty members, to pass around a clip-board, organize the students and split them into groups that made sense to us. Luckily we

resisted that temptation. It has been our observation that starting a group works best when it is initiated in a grass roots manner and every member of the group is invested in the process. We left the room not knowing if anything would come of this meeting, but trusting that if something meaningful was to come out of it, the students needed to organize it for themselves. We were so pleased to hear that starting a week or two later four new groups of 6-8 female graduate students each had formed. Like us, they organized themselves based on what time of day fit best with their schedules. For example, one of these groups met in the evening over dinner in the same building as the laboratories, so that they could check an ongoing experiment if needed.

Intriguingly, the themes these women encountered were extremely similar to those discussed in *Every Other Thursday* and in our mentoring groups. Women who participated in these graduate student groups reported that feeling a sense of community and breaking the sense of isolation were important components of their mentoring work. One woman wrote “The conversations that stand out are the ones we all had about trying to balance what we wanted out of life (getting married, kids, geography) with what we wanted in our careers. Even though I don’t know if any one of us had more answers than others, it helped just to know that I wasn’t the only one thinking about it (5).” Participants reported that having protected time to interact with other individuals at a similar life stage was valuable. One participant reported “It was a stressful time for many of us, so it was good to have a specific time to get out of the lab and talk to other women about everything we had going on (5).” The graduate students found that accountability was key to making their mentoring work valuable. For example, during a period when one student participant was “working” on issues with lab mates, at the subsequent meeting she reported on the outcome of implementing the suggestions of her group mates. As was a theme for faculty women, graduate students reported that it was helpful to hear about different experiences in various graduate programs, and to get advice for dealing with difficult situations in lab with other grad students or with their research advisors. Finally, students who were close to graduating appreciated getting advice from each other on job talks and looking for post-docs/jobs. In many ways, the themes and broad topics discussed by the graduate women mirrored those of the female faculty.

A unique challenge for the long-term health of graduate student groups is that members graduate and leave campus after five years, so the groups naturally go through transitions and turn over. For this reason, having a campus culture of mentoring is critical to encourage more groups to form as new students join the campus. Our campus is fortunate to have resources from our colleges focusing on student support, diversity and faculty success, all of which recognize the important of mentoring. In addition, our campus has been the recipient of a grant from the Mellon Foundation to enable awarding of microgrants to faculty for mutual mentoring projects. Because of these resources and the programs they support, periodic mentoring events have helped to spark new groups every few years for new students, postdocs and faculty. We are aware of more recent graduate student mentoring groups organized in a grass roots manner by the GWIS (Graduate Women in Science) chapter as well as graduate women mentoring groups organized by our college. As was the case for us, normalizing the idea of



needing/wanting/valuing mentoring and talking about it openly has changed the dynamic on our campus and encouraged a great deal more mutual mentoring to occur.

## **Mentoring across the Miles: Taking Mutual Mentoring On-Line**

The *Every Other Thursday* approach to mutual mentoring has been so successful that new variations on this theme are also being implemented. Prof. Sandy Petersen has been the long-term force behind many minority support initiatives at UMass, particularly due to her work with the 22 institution Northeast Alliance for Graduate Education and the Professoriate (6). Prof. Petersen noticed that isolation is an issue for women faculty from underrepresented groups, many of whom are so rare that there are not enough peers at their home institution with whom to form a mentoring group. Prof. Petersen has initiated a project funded by the NIH National Research Mentoring Network for a Diverse Biomedical Workforce. As the abstract for her “NEAGEP Minority Mutual Mentoring Project: Amplifying Voices” describes, the new initiative “provides virtual mutual mentoring to groups of 5-8 women faculty from underrepresented groups (7). The groups meet every other week using conferencing technology with the intent of dealing with challenges they encounter in academia... The project currently has four active groups that meet virtually every other week.” This is a promising approach to combat isolation and create supportive communities for women faculty from underrepresented groups in STEM.

### **How To Start a Mutual Mentoring Group**

One of the greatest aspects of starting a mutual mentoring group is that it is free. We had money to start our groups, which did help to buy refreshments and bring in a fabulous speaker, but in reality mentoring groups can start with no additional resources whatsoever.

A reminder of some basic principles is important to anyone seeking to start a Group of their own. Mutual mentoring is self-driven: participants find their own answers among the brainstorm of ideas discussed. Mutual mentoring is bidirectional: junior and senior faculty benefit equally from the exchange of ideas. Senior faculty do not view their participation as a “service” to help junior faculty succeed, but instead believe they gain equally from the fresh ideas and energy that junior faculty bring to the discussion. Junior faculty do not participate as a means to get “answers” from senior faculty, but instead realize there are a myriad of possible strategies and solutions, and only they can choose which course of action is best for their careers and lives.

A key to starting a successful group is for faculty interested in such mutual mentoring exchanges to self-select, in a grass-roots, bottom-up fashion. This will foster the self-driven, bi-directional “work” of mutual mentoring.

An important decision that the group organizer(s) need to make is the desired composition of the group. The goals for the group will determine the relative merits of including individuals with shared experiences vs diverse perspectives.

For example, restricting the group to all women would address isolation of women in STEM, but including men would promote communication and understanding of gender differences in addressing challenges. A group consisting of all tenure-system faculty would all understand the challenges of research, but a group that includes lecturers would foster understanding of the unique challenges faced by each. The EOT Group was diverse; at various stages it included university faculty, administrative assistants, and both men and women. We chose a narrower focus for the first two UMM Groups, which consist of tenure-system female faculty in UMass departments involved in laboratory life-sciences research. The newer UMass mentoring groups have included both lecturers and tenure-system faculty, but have excluded multiple members from a single department. Each of these choices has its advantages and disadvantages, which should be weighed in light of both the goals and the practical constraints for starting a mentoring group.

*Every Other Thursday* provides a great model for how to conduct a mentoring group. Reading this book will help the organizer(s) to envision their goals for the mentoring group and also to convey these to potential participants. Interested individuals can self-select by responding to an email message that explains the philosophy and benefits of mutual mentoring groups, ideally with a link to the book. The number of respondents will determine how many groups of 8-10 can be formed, and the group compositions can be determined based on practical issues such as the desired time, place, and frequency of meetings.

It will take several meetings before the new Group feels comfortable and cohesive. It is important for all participants to read *Every Other Thursday*, in order to set the appropriate tone and expectations. Group is not for complaining about problems or for asking others to fix your problems. Participants are expected to “work” on an issue in their careers and lives, by describing a challenge and then participating in a discussion of ideas and perspectives that ultimately helps her to choose her own course of action. Participants are expected to listen when others “work” and then to contribute ideas respectfully (not declare the “right” answer), and also to keep everything confidential. During the initial meetings of a new group, when participants are likely to find it hard to start discussing issues, a good alternative is to discuss chapters from *Every Other Thursday*. As time builds trust and confidence in the group, discussion of challenging topics becomes easier and participants come to value the opportunity to lay out their concerns and collect ideas that empower them to move forward and choose the best course of action.

## Summary

The number of women faculty in the UMass STEM departments we counted has grown from 69 in 2009 to 99 in 2017, which represents a 43% increase. During this time period two longstanding mutual mentoring groups have been of tremendous value to STEM women faculty, and this model has expanded to form additional groups that serve all women faculty who wish to participate. Furthermore, this mentoring climate has led to the formation of mutual mentoring groups among STEM women graduate students. We are pleased to see so many

colleagues benefitting from mutual mentoring, and optimistic that these groups are helping the growing number of women in STEM to thrive in their careers.

## References

1. Zellers, D. F.; Howard, V. M.; Barcic, M. A. *Rev. Educ. Res.* **2008**, *78*, 552.
2. Stenken, J. A.; Zajicek, A. M. *Anal. Bioanal. Chem.* **2010**, *396*, 541.
3. Feldman, M. D.; Arian, P. A.; Marshall, S. J.; Lovett, M.; O'Sullivan, P. *Med. Educ. Online* **2010**, *15*, 5063.
4. Yun, J. H.; Baldi, B.; Sorcinelli, M. D. *Innovative Higher Educ.* **2016**, *41*, 441.
5. Daniell, E. *Every Other Thursday: Stories and Strategies from Successful Women Scientists*; Yale University Press: New Haven, CT, 2006.
6. Quotes, which are used with permission but not attributed to protect confidentiality, are from an email exchange with one of the authors.
7. *NEAGEP: Northeast Alliance for Graduate Education and the Professoriate*. <http://neagep.org> (accessed March 7, 2017).