Arteriosclerosis, Thrombosis, and Vascular Biology

BRIEF REVIEW

What Makes a Great Mentor

Interviews With Recipients of the ATVB Mentor of Women Award

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The American Heart Association Council on Arteriosclerosis, Thrombosis and Vascular Biology (ATVB) brings together a unique group of world-leading scientists from diverse fields within the ATVB research communities. The ATVB Council's Women's Leadership Committee aims to promote excellence among women in science and academic medicine and raise new leaders. Our goals are to encourage the advancement of women's scientific careers, promote visibility, and provide forums for professional networking to cultivate collaboration within and outside the ATVB community. Every year, the Women's Leadership Committee honors established scientists of the ATVB Council whose actions have demonstrated their exceptional service in the mentorship, support, advocacy, and sponsorship of women in the field of cardiovascular biology with the ATVB Mentor of Women Award. This year, as the Women's Leadership Committee celebrates its 20th anniversary, the members of this committee interviewed 11 past recipients of the Mentor of Women Awards: Mary Sorci-Thomas (2002), Alan Daugherty (2010), Rama Natarajan (2011), Lisa Cassis (2012), Coleen McNamara (2014), Lynn Hedrick (2015), Muredach Reilly (2016), Kerry-Anne Rye (2017), Kathryn Moore (2018), Nancy Webb (2019), and Murray Huff (2020; Figure 1). Our mentors were asked to provide answers to 11 questions that reflect their vision of outstanding mentorship. The Women's Leadership Committee is thrilled to report the insights gained from these interviews and hopes it will serve as a useful reference to both mentors and mentees.

QUESTION 1. WHICH QUALITIES ARE IMPORTANT FOR A GREAT MENTOR?

As effective mentors may share many qualities, we asked the awardees to select what they view as the most important traits for successful mentoring from our preestablished list (Figure 2). One top quality that stands out is honesty, which is also linked to authenticity and integrity. As Dr Reilly emphasized, "Honesty is critical to help the person knowing that you are authentic." Dr Daugherty also believes that an effective mentor is "not afraid to have difficult conversations if you see that a trainee is going down the wrong road." Likewise, Dr McNamara said "It is important to recognize and acknowledge trainees' strengths and weaknesses. Otherwise, they can't improve." On the other hand, sometimes it is important to acknowledge upfront that "look, I don't know what the best thing to do here is, but I am going to give the best advice," a remark from Dr Rye. Through these honest conversations, Dr Cassis summed up a mentor's role by stating "Our trainees can trust us as mentors, talk to us, and listen to us." While it is critical to be honest and firm, it "doesn't mean to be cruel, blunt, or not reflective. It comes with kindness," continued Dr Reilly. Also suggested by Dr Natarajan, "Always try to put a positive spin even in a difficult conversation," which highlights communication skills as another key element of effective mentorship.

The second most highly valued quality is flexibility, which also comes with reflectiveness as emphasized by Dr Reilly, and open-mindedness and empathy, according to Dr Webb. Dr Daugherty explained that this entails

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"the ability to tailor the mentorship to the individual, taking into consideration their background." Dr Reilly added that mentors should "really reflect upon the work and life the person is trying to build." When necessary, a mentor should "adjust your/their vision based on family/personal circumstances and provide opportunities and support for the career changes," advised Dr Natarajan. "There can't be one way to mentor everybody…mentoring needs to be flexible and should adjust to the trainee," said Dr McNamara, who believes that flexibility also relates to curiosity because "it allows you, as a mentor, to go after what your mentee needs. It is a lot about listening and discovering who they are and what their passions are and really being curious about where they want to go…(and) walking with the trainees rather than pulling or pushing them in their journey." Dr Hedrick added that effective mentors are "willing to learn from the trainees, as they are getting smarter."

The third top-ranked quality is the ability to inspire. Dr Huff reflected that "enthusiasm, good ideas, and using the most novel technologies and models" were some of the more notable traits of the mentors that impacted him, and he recommends "build your trainees' confidence and scientific creativity, by encouraging them to take ownership of their projects." Dr Moore feels "it's all about finding out how to motivate people…and it's important to note that it's not about motivating them to get more for yourself…but to motivate them so that they are happy doing the work and they get curious and interested." As Dr Hedrick put it, effective mentors "should have a strong ability to think outside the box and make the topic fun!"

Most of these key qualities come with additional interconnected traits (Figure 3). To have an honest and inspiring conversation, mentors need to have a concrete vision of their trainees' career development to help them weigh the pros and cons, an open mind to listen and to reflect with the trainee, and excellent communication skills to convey messages with empathy and optimism. As trainees often look up to mentors and observe mentors as their references, mentors should also serve as strong role models who are honest, flexible, inspiring, and committed, as well as action- and solution-oriented.

QUESTION 2. WHAT IS THE BEST MENTORSHIP ADVICE YOU WOULD GIVE TO THOSE HONING THEIR MENTORING SKILLS?

There is no simple answer when asked about the best mentorship advice, but a poignant message was raised by Dr Webb, suggesting that one must first recognize the true value of mentoring. "Oftentimes, mentoring is low on the list of priorities in academia (but) the satisfaction you get is rewarding…it's a personal reward."

Highlights

- To celebrate the 20th anniversary of the Mentor of Women Award sponsored by the Arteriosclerosis, Thrombosis and Vascular Biology Women's Leadership Committee, members of the Women's Leadership Committee have interviewed past recipients of the award to capture their vision on inspiring mentorship.
- The mentors have provided their insights into qualities important for great mentors, skills for effective mentorship, strategies to prioritize and balance, management of mentor-mentee relationship, mentoring during challenging times, and vision to promote women in science and medicine, diversity and inclusion.
- This report will serve as a useful reference to both mentors and mentees of the Arteriosclerosis, Thrombosis and Vascular Biology research community and beyond.

Our mentors also each stated clearly their belief that mentoring is a true partnership. "The best mentorship relations spring out of a real and often earned connection felt by both sides," said Dr Sorci-Thomas. Nearly all mentors noted a need for personalized mentorship. "Your mentorship style needs to change with every trainee. You can't use the same mold," said Dr Moore. Dr McNamara suggested that a great mentor should not assume that their mentees want to have the same career trajectory. Dr Reilly noted that a successful mentor-mentee partnership requires that both parties listen, reflect, and evolve in their professional relationship. Indeed, the foundation of a strong mentor-mentee relationship is the passion for research and the commitment to learn and excel. "It is important to keep the interactions with mentees professional," Dr Cassis added. Lastly, numerous interviewees concurred that it is important to lead by example. "If you want your trainees to adopt certain guidelines, then you must also exhibit these traits," said Dr Daugherty.

QUESTION 3. MENTORSHIP OFTEN INVOLVES EXTRA TIME AND EFFORT. HOW DO YOU PRIORITIZE AND BALANCE MENTORSHIP WITH YOUR OTHER OBLIGATIONS?

All mentors have highlighted that mentorship is about commitment and dedication. Dr Hedrick affirms that her "primary job is mentoring as a faculty member," and Dr Moore commented that she makes it a priority because she wants to see her trainees succeed. Dr Cassis commented, "Trainees have been the highest priority, because, after all, how well the lab can do

Figure 1. Awardees of the Arteriosclerosis, Thrombosis and Vascular Biology (ATVB) Mentor of Women Award (2001–2020) and the first ATVB Women's Leadership Committee Award for Outstanding Mentorship of Women.
This project interviewed 11 prior recipients of the Mentor of Women Award, highlighted here.

largely depends on how well our trainees can do." Our mentors also provided insightful comments about how to align the goals of both the mentor and mentee to avoid challenging situations. "The key is strategically trying to set up synergy and alignment, while avoiding setting up conflict. It is important for both the mentor and the mentee to plan ahead, to have honest conversations on expectations… and to seek the way both can benefit," said Dr Reilly. Dr Sorci-Thomas also cautions young mentors not to overcommit. If a mentor's overcommitment negatively impacts his or her own career by allowing less time to develop as an independent investigator, then it will not benefit the mentee in the long term. Drs Webb and McNamara highlighted that mentors need to communicate clearly about their availability. Dr Sorci-Thomas further suggested that mentors "learn to effectively juggle activities rather than choosing one over the other."

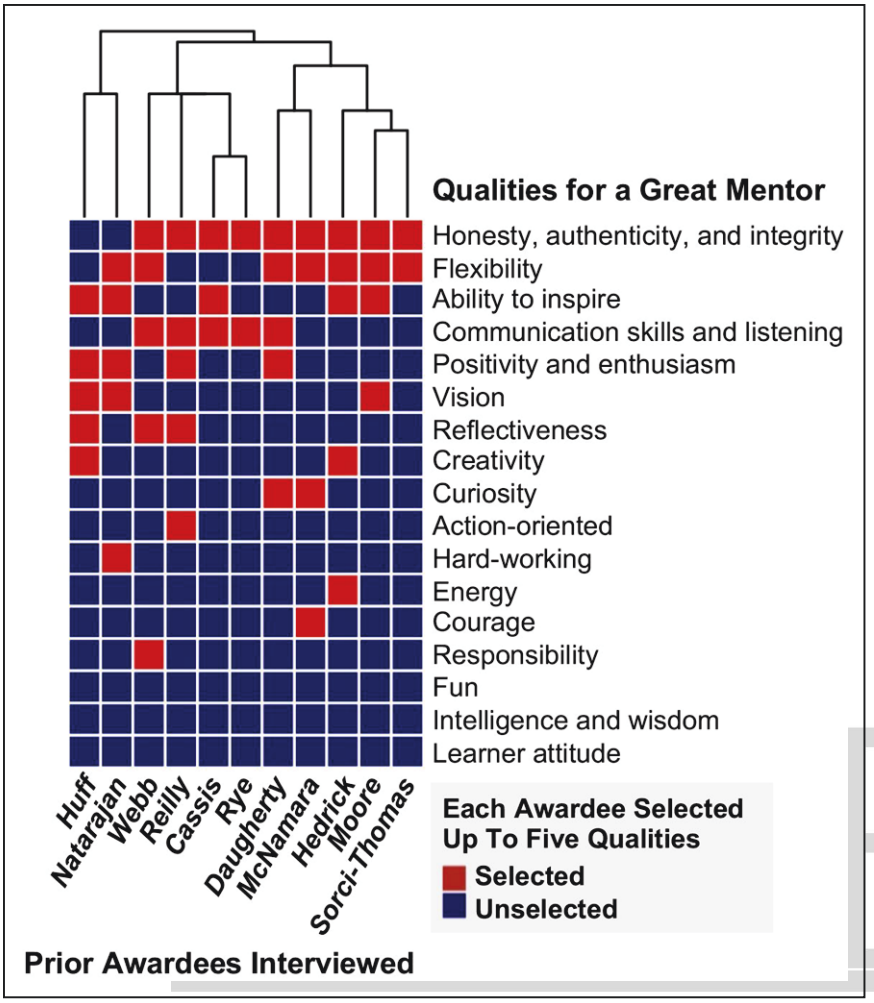

Figure 2. Clustering heat map of top qualities for a great mentor as selected by our interviewed mentors. Each mentor was asked to select up to 5 qualities that make a great mentor from a list of traits provided (shown as the row labels). A selected quality was scored as 1 (red), while an unselected quality was scored as 0 (blue). Clustering heat map was generated using the score matrix by R package pheatmap 1.0.12.

QUESTION 4. IF YOU COULD GO BACK AND TELL YOURSELF ONE THING AT THE START OF YOUR CAREER BASED ON WHAT YOU NOW KNOW IN TERMS OF MENTORING AND LEADERSHIP, WHAT WOULD THAT BE?

So, you might ask, what's the best advice for new mentors? Well, "accept that there are going to be hits and misses…When it's a miss, it's worthwhile to pause for some introspection to see what you can learn from the experience—how you can turn the negative into a positive and not make that mistake again," said Dr Daugherty. Our mentors also emphasized the importance of prioritization for new mentors. For Dr Hedrick, it's "don't worry so much, learn to say no, and strike a work-life balance sooner than later." Yes, saying no is a must. "We can't do everything, and we shouldn't be ashamed of it," said Dr McNamara. Another major challenge for junior faculty is to "balance between being able to advance your own career and someone else's. Having that balance is one of the things I found really difficult," revealed Dr Rye. Another great piece of advice is to be willing to spend time communicating early and clearly. "You cannot communicate enough times or in enough different ways… to get people to work on something together and to get a group to follow a vision or plan," said Dr Reilly. Also, don't forget to have faith in yourself. "Trust your instincts," added Dr Moore.

QUESTION 5. WHAT ARE THE DIFFERENCES BETWEEN MENTORS AND SPONSORS? HOW DO YOU SUGGEST A MENTEE TURN A MENTOR INTO A SPONSOR? HOW MANY MENTORS OR SPONSORS SHOULD ONE HAVE?

In addition to having mentors, "you need sponsors to champion your career and ensure your success," said Dr Natarajan. For many mentors, mentorship and sponsorship go hand in hand. Yet it's important for mentees to understand the distinction between mentors and sponsors. According to Dr Moore, trainees often assume that their mentors will also serve as their sponsors because mentors usually see the mentee's hard work and help him/her become more visible, for

Figure 3. Interconnected traits of effective mentorship.
Dedication, commitment, and hard work provide the foundation of effective mentorship, upon which honesty, flexibility, and ability to inspire are the top 3 rated traits according to our interviewed mentors. Connections among various traits are indicated by edges. Size of bubbles reflect the number of votes from the mentors. Each trait, when mentioned by each mentor during the interview in response to question 1, was counted as 1. The total count for each trait was used to determine the size of each bubble. The connection between traits was empirically inferred based on the definition of each trait. Bubble plot was drawn using scalable vector graphics.

example, by nominating the mentee for committees or awards. However, as Dr Moore stressed, "You can't be disappointed if your mentor isn't also your sponsor. Sponsorship is actually a relationship that develops over a long period of time." Dr Webb also emphasized the importance of this long-term commitment. "You have to foster that history, and don't drop the ball." There is no limit to the number of mentors and sponsors that a trainee can have, a point that was reflected by Drs Hedrick, Cassis, and McNamara. However, "It is important to identify the specific needs and clarify roles and ownership when seeking mentorship and sponsorship to effectively engage your mentors/sponsors," said Dr Reilly.

QUESTION 6. IN YOUR CAREER AS A MENTOR, HAVE YOU NOTED ANY DIFFERENCES ON HOW WOMEN AND MEN APPROACH MENTORSHIP?

Our mentors agreed that the standards for outstanding mentorship remain the same for women and men. Although several stated that they did not think men and women mentor differently, subtle differences emerged in many responses. Dr Natarajan explained that "Women mentors tend to be less demanding and practice an approach summarized as 'I'm here for you." Similarly, Dr Sorci-Thomas stated that "Men tend to adopt and teach leadership styles that are assertive, authoritative, and dominant. This leadership style is frequently deemed less attractive in women." For many women mentors, navigating the fine line between being not aggressive enough or lacking in presence and being too aggressive or too controlling remains a challenge. Dr Sorci-Thomas also observed that "While women mentor other women very well, they may not be as comfortable mentoring in a style that is effective with men." Dr Webb added that "Women trainees are still looking for role models and are more likely to seek advice on personal life issues." This observation was shared by Dr Cassis, who remarked that "Men mentors tend to keep some boundaries more easily, for example, when difficult conversations are needed." More deeply, "The differences between men and women approaching mentorship can be further broken down to individual levels, ie, everyone should be supported and empowered as an individual," said Dr Reilly.

QUESTION 7. WHAT WOULD YOU TELL MENTEES ABOUT HOW TO BE A GREAT MENTEE AND HOW TO MAKE THE MOST OF THEIR MENTORING RELATIONSHIP?

Several themes emerged when our mentors were asked how mentees could make the most of their mentoring relationship. First, one person isn't sufficient. Dr Daugherty suggested, "No mentor can cover the whole spectrum of a person's career, so getting different

points of view is a good balance." Dr Moore agreed, "You need different viewpoints, and different people can offer different advice just based on their own experience, so you need to be active in seeking out advice." Second, be proactive and open to feedback. Dr Reilly suggested that mentees "slow down, listen, be open, and reflect." Dr Huff recommended presenting at lab meetings often to learn to articulate ideas well and receive feedback. Third, value the investment your mentor is making in you. Dr Cassis advised, "Show that you are doing your best to deserve the investment of your mentor's efforts." Dr Webb added, "If you are asking your mentor to support your goal…that trainee needs to be prepared to not let that mentor down." Finally, Dr Natarajan advised that mentees should work hard and efficiently, and Dr Reilly echoed that sentiment, stating "Work smart and hard, but not hard alone."

QUESTION 8. WHAT WAS YOUR PROUDEST OR MOST MEMORABLE MENTORING MOMENT?

Many mentors profoundly shared the accomplishments of their trainees who are all over the world, many of whom hold academic positions as independent PIs, physician scientists, and clinicians, as well as leadership positions in academia, biotech, pharma, publishing, and administration. According to Dr Rye, "It's those kinds of things that you get a boost from. And you think, well, maybe I did some good somewhere." Dr Reilly also stated the importance of celebrating small wins. "Some of the most memorable moments are for things that appear to be small, like when trainees have pushed their own boundaries or taken on challenges and succeed despite challenges." Our mentors also celebrated the special bonds they share with their mentees. One of Dr McNamara's most memorable moments was when her mentee told her she had received a fundable score on her first R01 before she told her husband. Many mentors have also enjoyed seeing their mentees become collaborators and colleagues. According to Dr Sorci-Thomas, "Nothing compares to the feeling you get when the mentor-mentee relationship alters both of your lives forever!"

QUESTION 9. DO YOU STILL HAVE A MENTOR? HAVE YOU KEPT IN TOUCH WITH THOSE WHO MENTORED YOU WHEN YOU WERE AT THE EARLY CAREER STAGE?

Many of our mentors still keep in touch with their own former mentors, and most have expanded their networks and rely on colleagues for additional insight and advice. Dr Moore believes that "At every career stage, a scientist should have mentors…to get input on how to approach important new things," a statement that was echoed by several others. Dr Reilly added that he talks with several of his peers on a regular basis and seeks advice from former mentors whom he considers wise. Dr Hedrick has sought input from several very distinguished colleagues over the years on various topics, such as changing research fields, taking risks, project management, presentation skills, and networking. She also finds it very helpful "to bounce ideas with peers at various ranks and in different fields and disciplines." Not surprisingly, several of our mentors referred to other former recipients of our award as their peer mentors for guidance, such as in matters of leadership. As careers progress and evolve, so do the topics and needs for additional input. Dr Cassis currently has a mentor for her administrative role, and Dr Natarajan likes to consult with her peers on specific questions, for example, how to best support underrepresented trainees. Dr Cassis likes to tell trainees "not to hesitate to connect with their mentors after they have moved on." Dr Rye has kept in touch with some of her former trainees for over 20 years.

QUESTION 10. WHAT WE EXPERIENCED IN THE PAST YEAR HAS MADE ALL OF US AWARE OF UNEXPECTED NATURAL AND SOCIAL DISASTERS THAT COULD HAVE A HUGE IMPACT ON OUR RESEARCH AND DAILY LIFE. WHAT IS YOUR ADVICE ON HOW TO SUPPORT TRAINEES DURING CHALLENGING TIMES?

All of our mentors showed their true mentoring dedication during the pandemic, as evidenced by their responses to this question. Deadlines were extended, accommodations were made, and encouragement and support were provided to mentees. Several mentors added that their labs used this time to reorganize and complete administrative/regulatory tasks. Our mentors acknowledged that the pandemic has been particularly hard on postdoctoral fellows. They found themselves reaching out to lab members to make sure they were coping and provided flexibility and support to their mentees. Dr Hedrick thoughtfully spoke on being "aware of your team, including each individual and their mental health." Dr Reilly thought that "reaching a little further is necessary in these circumstances. That can sometimes mean stepping beyond what you would normally do to reach and listen." Dr Cassis suggested being encouraging and supportive but allowing trainees to do it "in their own way and at their own pace during challenging times." These mentors

demonstrated leadership by being flexible and positive during this period of vulnerability.

QUESTION 11. HOW CAN WE FURTHER PROMOTE WOMEN IN SCIENCE, DIVERSITY AND INCLUSION?

"This is a critical moment in our history to promote diversity, equity, and inclusion. We should continue to be more aware of areas of race, gender and sex, and underrepresented individuals," stated Dr Reilly. Dr Daugherty pointed out that we still have gaps to bridge in terms of continuing our progress of promoting women in science and diversity in the field and resolving structural and cultural issues, including visibility, representation, and unconscious bias. "There are tangible areas where the ATVB Council can improve, for example, making everyone comfortable and better balancing presenters at scientific sessions and being more appropriate in the ways that we designate speakers." Although our mentors are always pushing for gender balance and early career representation, including underrepresented minorities, Dr Moore pointed out that part of the problem resides also in societal and structural disparities originating far from our community and direct area of influence. As she stated "It is hard to find underrepresented minorities because our pipeline needs to be improved." To do so, "we need to embrace and empower nontraditional career trajectories to success" emphasized Dr Reilly, "and create more flexible and alternative paths for all faculty, learning from the experiences of women and minorities."

Several of our mentors emphasized the pivotal and impactful role of the Women's Leadership Committee and the Mentor of Women Award in promoting women within the ATVB community. For Dr McNamara, "The Women's Leadership Committee not only helps connecting and networking, but also helps by acknowledging that we are part of a vibrant women-scientist community." Dr Moore added that "The Mentor of Women Award is still very relevant today because each person that gets it passes on really important pieces of advice and history of the ATVB community and how we've evolved to support each other." Yet efforts in promoting women's equal representation and empowerment should stay a priority. As stressed by Dr Sorci-Thomas, the newest generations of women scientists may think that, for the most part, barriers and glass ceilings have been eliminated. "This is far from true since there is still a large gap in the number of women at the top levels of academic institutions, pharma, and biotech as well as at the National Institutes of Health. I encourage all of you to actively participate in helping to make change. To change things, we must all help and be heard!"

SUMMARY

As we are reflecting on the Mentor of Women Award anniversary, we believe we have made significant progress over the last 20 years. However, there is a long way to go before women are equally represented in science and medicine. This year, to consider the nature of this honor, we have renamed the award to the ATVB Women's Leadership Committee Award for Outstanding Mentorship of Women. The award will continue to celebrate members of the ATVB Council whose actions have demonstrated her/his exceptional service in the mentorship, support, advocacy, or sponsorship of women. We are looking forward to seeing what the field will achieve in the next 20 years!

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Disclosures

None.