Oklahoma’s Hidden Figure
Pamela McCauley, PhD

By Maria Ibañez
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Pamela McCauley, PhD, embodies work-life integration and frequently travels to speak about her experiences as a STEM professional—innovator, educator, entrepreneur and professor at the Department of Industrial Engineering and Management Systems at the University of Central Florida. She is also the program director of NSF’s I-Corps Program™.

I-Corps™ is a National Science Foundation (NSF) initiative to increase the economic impact of research it has funded. The I-Corps™ program was created by the NSF in 2011 to help move academic research it has funded to market as useful innovations in the forms of products, technologies and services.

Soon after her small business participated in the regional I-Corps program at the University of Central Florida Dr. McCauley was immediately engaged and wanted to be more involved with the program. “It’s a powerful methodology to truly understand if you have a viable business concept that is sustainable.” Central to I-Corps is what Dr. McCauley calls “the concept of customer discovery which means requiring STEM participants to address problem solving with consistent and broad input from potential customers and requires them to focus on the market segment for their ideas.”

I-Corps offers a new approach to gain additional benefit from academic research, novel innovations and many other creative concepts to address human needs in the U.S. and the global community. As I-Corps program director, Dr. McCauley is leading much of the broadening participation efforts. “I’m passionate about this program...”
The impact of I-Corps
During her first year at NSF, she convened the I-Corps Innovation Inclusion Summit in 2018 that brought Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs) and Tribal Colleges and Universities as well as Women-Serving Institutions to Washington, DC, to engage the national I-Corps community.

“Our diversity initiatives will continue this year with many other activities including regional meetings, a messaging campaign and making sure I-Corps is a strong participant at AWIS’ upcoming ADVANCE Equity in STEM Community Convening in October, specifically focused on attracting more women to the I-Corps Program.”

I-Corps goes beyond science in a lab or classroom. According to the NSF, the program is critical to the intersection of disciplines, people, communities and professions. The work is extremely important and provides an opportunity to expand global innovation and discovery.

“The global community is desperately seeking new ideas and innovations to solve some of our national and international challenges. A program such as I-Corps that integrates...
“I learned that in the study of Industrial Engineering, there were sub-disciplines in ergonomics and Biomechanics, Studying in this area could allow me to use my interest in the human body and get an engineering degree AND I could also make a difference in people’s lives with my engineering knowledge. I found my new career area!”

customer discovery and intense teaching experiences allows STEM professionals, graduate students, researchers and even the entrepreneurial community to utilize this approach to more effectively create solutions that solve these national and global problems,” said Dr. McCauley.

**Inspiring women in STEM to forge ahead**

Having been in the STEM industry for more than 25 years, Dr. McCauley has encountered her “share of challenges that she still has to endure” as a woman and woman of color in STEM: “It is disappointing to see the challenges that women still face in their careers, particularly in the hard sciences and engineering. Some of the most important things we can do as women is to seek advice and build a network.”

To help “reduce the pressure and inspire women to continue during challenging periods Dr. McCauley shares her ‘essentials’:

1. **Know that you belong in STEM careers**
2. **Quickly establish and maintain a personal network for career support**
3. **Identify mentors and sponsors that can advocate on your behalf**
4. **Have a personal career vision and mission statement**
5. **Participate in informal and formal leadership development initiatives**
6. **Be inclusive about sharing common leadership practices with others outside your circle**
7. **Learn to see yourself as a leader**

Other challenges and barriers include resources and funding to support women in STEM as well as barriers such as sexual harassment, bias and gender and race discrimination as well as work-life integration challenges that still exist in the workplace. NSF funds considerable initiatives to address these issues including the ADVANCE designed to research and develop mitigation strategies to address the challenges women and under-represented minorities face as well as promoting sustainable and transformational change. Earlier this year, NSF funded the *National Academies of Sciences Symposium: Addressing the Underrepresentation of Women in Science, Engineering, and Medicine*. This meeting was a review of progress to date and a call to action to continue our efforts to advance women in STEM.
Dr. Pamela McCauley is an award-winning university educator and internationally recognized industrial engineering researcher in the development of mathematical models, human engineering, and engineering leadership. She was named program director for the National Science Foundation (NSF) Computer Information Science and Engineering Directorate's I-Corps Program to prepare scientists and engineers to extend their focus beyond the university laboratory and accelerate the economic and societal benefits of NSF-funded basic-research projects. An AWIS National Governing Board Member, she has been an active AWIS member since 2015, energetically motivating women around the world to pursue their STEM educational and professional goals. Over the past 20 years, Dr. McCauley has held various leadership positions and has received numerous awards in recognition of her commitment, professional accomplishments and community outreach efforts in the business, technology, and education communities.

Dr. McCauley has an extraordinary career in STEM. As a game changer not only in STEM but for women, especially women of color, she defied convention and beat the odds to pursue and achieve her goals. Early on she recognized the value of education and discovered an interest in industrial engineering. Upon completing her bachelor's degree from the University of Oklahoma, McCauley was awarded a National Science Foundation fellowship and soon after earned a graduate degree (M.S.) and in 1993 became the first African American woman to earn a Doctorate in Engineering in the state of Oklahoma. That same year Dr. McCauley was recruited to the University of Central Florida faculty in the College of Engineering and Computer Science. She is the author of over 100 technical papers, book chapters, conference proceedings and the best-selling international ergonomics textbook, Ergonomics: Foundational Principles, Applications, and Technologies. Dr. McCauley was recently named the 2019 Technologist of the Year by Women of Color Magazine.

Some companies are working to address these issues, and many smart women are beginning to “bypass” this in corporate settings by starting their own businesses. Dr. McCauley also strongly encourages women to support each other in good and tough times.

“There is power in our unity – often, it’s not realized – but I’m hopeful that we’ll see more of this organizationally and in the individual careers of women.”

Although only five percent of start-ups are created by women founders, the number of women entering the STEM entrepreneurial world is steadily increasing, and there is room for more STEM professionals to take on a start-up company.

“This represents another reason why the I-Corps program is so necessary and is committed to diversifying those who are aware of and participate in this program.”

Maria Ibañez has a background in communications/PR and has worked at national organizations with a public-policy focused mission. At AWIS she is the Chief Marketing and Communications Officer and Editor-in-Chief of the AWIS quarterly magazine. Maria is also a member of the DC Science Writers Association and serves on the Washington Women in PR Advisory Board. She holds a BA from the University of the District of Columbia and MA from American University.

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