The Early Career Section offers information and suggestions for graduate students, job seekers, early career academics of all types, and those who mentor them. Angela Gibney serves as the editor of this section with assistance from Early Career Intern Katie Storey. Next month’s theme will be the teaching and learning of mathematics. All Early Career articles organized by topic are available at https://www.angelagibney.org/the-ec-by-topic.

Excerpts from Testimonios in Celebration of Latinx History Month


Dr. Erika Tatiana Camacho

Dr. Erika Tatiana Camacho’s testimonio is centered around the importance of paying it forward, mentorship, and changing the world through mathematics. Dr. Camacho tells us how her mentor-mentee relationship with Jaime Escalante changed her life, highlighting the importance of such relationships. She shares some of her experiences with overt discrimination. Dr. Camacho then tells us about her amazing work developing mechanistic models to aid in understanding causes of blindness, and shares with us her experiences in driving the Latinx community forward through her efforts.

Mentoring and Perseverance

I see so many things in academia and outside of it that need to change to make an equal playing field, yet it seems that most people in positions of power are not willing to risk it to make a change. I feel like there are “fights” at nearly every step that would lead in the right direction.

I am currently in my reflection stage and not sure how to best change academia and the world while not giving up all of me, especially given that there is no guarantee that what I do might make any noticeable difference. It’s tough. What often keeps me going are the many, very personal, and sincere messages I receive from former mentees of how I made a difference in their trajectory. The most touching ones are when they have told me that only after being away for a few years did they really appreciate the mentoring I

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gave them. Many will ask what they can do to become a mentor like me because they have not found people like me. I explain that I just do what I learned from my mentors who really truly cared about me—those who did not mentor me because they were trying to build an empire or check a box. I have fought many battles for my mentees when they were experiencing bias or unfair treatment by jumping in and changing the situation for them before they were completely broken. I have also fought for many who are not my mentees but who don’t have a voice or seat at the decision table or who are invisible and forgotten, often by making structural changes and creating opportunities. I sacrificed many things to give my mentees and many others equal access and opportunities. I try to do whatever I can to help my mentees realize their full potential and their dreams, in addition to listening and giving advice that I think is best for them irrespective of me. Each one of their successes gives me the motivation to continue. Each one of the mentoring awards I have won is also a validation that what I do actually makes a difference.

A lot of mentoring is first learning about the individual because so many factors influence who we are today and why we make certain choices. Then it is a time-intensive endeavor to meet them where they are and to bring them up to their full potential.

As a postdoc, I co-wrote a grant to the National Security Agency (NSA) and the National Science Foundation (NSF) to start my own REU. This led to the launch of the Applied Mathematical Sciences Summer Institute (AMSSI) the summer after my first year in my tenure-track job at Loyola Marymount University (LMU). The program was joint with Cal Poly Pomona and we split the time between the two universities, moving the students halfway through the program. Over its three years, we had 48 students, and five Teaching Assistants (TAs) participate in the program. All were either from underrepresented backgrounds or schools where research opportunities didn’t exist or were not available to them. Nearly one-third earned their PhDs, with many others earning their master’s. It was a very rewarding program and only stopped because I moved from LMU to Arizona State University (ASU).

I have given motivational talks to groups ranging from elementary school through high school students in addition to college students, professors, and high-level administrators. Each of these talks can get emotional as I’m giving examples from my life to drive home the message. One of the most emotional keynote addresses I gave was in 2009 to the recipients of the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM). It was very special to be able to thank each of them on behalf of all their mentees and tell them how their efforts are appreciated even if not all the mentees come back and say thank you. It’s also important to keep in mind that great mentors are not just the ones that have won the big awards, but most important the ones who open the doors for others by creating opportunities and fighting the tough battles to bring about change.

**Diversity and Inclusion in Mathematics**

I am an applied mathematician and thus I usually see everything as a problem to be solved. I really have come to appreciate what is now known as “team science” where multiple people come together from their varied perspectives to try to solve a previously unsolved problem. I think the most challenging problems require this approach.

We need a society that is knowledgeable about STEM or at least appreciative of it! Since math describes and underlies nearly every aspect of STEM, every issue can be helped with the presence of mathematicians. Moreover, we really need to focus on team science where multiple approaches, even beyond STEM, are used to solve the most pressing problems of today.

In higher education, we talk about changing things for marginalized communities, yet we forget to include stakeholders from these communities (we bring high-level administrators or researchers to the table as “representatives” who are employed in institutions serving these communities but who have not been raised in these communities or have not lived through the experiences of those they represent).

The mathematics students and faculty need to reflect the US population. I think one of the main barriers is a lack of understanding from the professors about what it means to be a professor. We judge people by their publications and not the impact of all their efforts (scholarly and otherwise). If we want to change academia and agree that we need all professors to be good mentors and to understand the diverse population they are working with, why should people object to requiring a Diversity/Inclusivity Statement and a

![Figure 2. Receiving the American Association for the Advancement of Science Mentor Award in 2019.](image)
Mentoring Statement in job applications and promotion documents?

From a different angle, individuals rarely solve the challenging problems of today. If we let those perpetuating the status quo also determine the research agenda, very little will change. We need to bring the richness of multiple backgrounds, including Latinx people, to be at the table and set the research agenda, yet it’s understandably hard for many of those in charge to step aside and let different perspectives weigh in.

In terms of societal/institutional structures, it’s the narrow-mindedness, micro-aggressions, and institutional racism that are the biggest obstacles to learning.

It will take many selfless and courageous people of every race, color, and way of life to eliminate these structures because there are too many vocal people (even if they are in the minority) that want to preserve the status quo or go back to how things used to be and there are too many people who don’t think it’s their problem and will stay silent. We have a generation of Latinx PhD mathematicians that wasn’t present when I started my journey and that really gives me hope that change is on its way. Some are oblivious to the Latinx situation but most are actively doing things to promote our community. Many majority mathematicians show us support too.

We need more Latinxs involved in math because of the need to approach challenging problems from different perspectives and to actually shift the focus of what problems we should be working on.

Advice

It’s great to want to change the world. But don’t lose yourself as you try to do it. There will always be detractors and haters, but ignore them as much as possible. Don’t doubt yourself and don’t let others define who you are or your path. Judge people by their actions and not just their words.

Finally, while it’s great to have a mentor that looks like you, don’t think that this is a requirement. Some of your very best and long-term mentors may be Caucasian males, and one that may do the most damage to you personally and professionally might be a Latino.

Many times I am speaking to students who have had a rough path yet they have what it takes to overcome the adversity they have experienced. I had, and still have, a rough journey many times. Sometimes they just need to realize that people have done it before, are still struggling to make it in their respective career levels, and they are not alone. The path won’t often be easy, but the rewards, in the end, are worth it.

I have had some terrific and some very hurtful and toxic mentors who are mathematicians. But I have also had great mentors that are not in math and some are not even in STEM, but they are very perceptive, understand things, and can give relevant advice. It’s them needing to realize who I am as a person and what may be best for me. Many people from all walks of life will share and support your goals and dreams. Perhaps there is a correlation between those supporters and people with your characteristics, but by no means should you limit your mentors and advocates to just those with certain characteristics (such as being Latinx). At the same time, believe someone the first time they show you their true colors.

Dr. Erika Tatiana Camacho

Credits

Figures 1, 2, and 3 are courtesy of Dr. Erika Tatiana Camacho. Illustration of Dr. Erika Tatiana Camacho was created by Ana Valle.