the plant journal

SEB SOCIETY FOR EXPERIMENTAL BIOLOGY

The Plant Journal (2026) **128,** e71208 doi: 10.1111/tpj.71208

IN CONVERSATION WITH...

In conversation with Dr. María Fernanda Gómez



@mfegoz

Originally from Cuernavaca, Mexico, Dr. María Fernanda Gómez turned an encounter with the resurrection plant, *Selaginella lepidophylla*, into a career in plant biology. She studied biology at Morelos State Autonomous University (UAEM) and pursued graduate training at the Institute of Biotechnology of the National Autonomous University of Mexico (UNAM). She later joined Professor Katie Dehesh's laboratory at the University of California, Riverside, where she expanded her expertise in plant biochemistry and metabolomics. Dr. Gómez now leads the Metabolomics Unit at the Centre for Research in Agricultural Genomics (CRAG) in Barcelona, Spain.

In this interview, she discusses how her life experiences shaped her scientific interests and her transition from laboratory research to leading a metabolomics facility. She discusses her recent paper in *The Plant Journal* investigating the role of the Conserved Oligomeric Golgi complex in Golgi organization and plant stress responses.

Dr. Gómez also reflects on navigating international academic environments as a Mexican woman of color and a mother. She offers her personal perspective on scientific development, setting professional boundaries and the importance of belonging within the plant science community. Our conversation explores these matters, offering a space to reflect on the expectations of academic life, the relationships that support professional growth, and the importance of maintaining a sense of self through change.

1. Can you tell us about you and your upbringing?
I was born and raised in Cuernavaca, Mexico, a city known as the 'City of Eternal Spring'. Its original name, Cuauhnáhuac, means 'near the trees', and the city is characterized by its natural ravines. I grew up in a small, single-parent family and received my entire education through the public education system. My interest in science began in middle school because I was good at chemistry. At that time, I wanted to become a pharmacist, so I decided to attend a technical high school to be trained as a clinical laboratory technician. Because my school was within the Morelos State Autonomous University (UAEM) campus, right across from the Biology school buildings, I was very early exposed to university life. By the time I graduated high school as a clinical lab technician, I had discovered that drawing blood was definitely not for me! So, I decided to pursue a degree in biology. During my undergraduate studies at UAEM, I became fascinated by the diversity of life and the different ways organisms interact with and adapt to their environments. From there, I simply kept following my curiosity. I didn't grow up knowing exactly what it meant to be a scientist, and I didn't have anyone in my circle doing science or research. Much of my academic journey has been learning along the way and making decisions based on the opportunities available to me. However, I did have an important role model at home: my mother. Growing up, I witnessed how hard she worked to provide for our family, and her dedication and determination have always been a source of inspiration for me. I often think about how fortunate I was to grow up in Cuernavaca. The city is home to the Institute of Biotechnology of the UNAM, where I eventually pursued my graduate studies. Having such an important research institution within reach made a tremendous difference in my life. Sometimes I wonder how different my path may have been if that opportunity had not been so close to home.

2. How did you become interested in science and biology?
Since I went to a technical high school, I had courses on parasitology, microbiology, and human anatomy. These classes gave me a rough understanding of how vastly different organisms are from each other, which still amazes me. That naturally drew me to biology rather than focusing exclusively on chemistry.

My interest in plant biology developed through exploration. Before discovering plants, I had the opportunity to

© 2026 The Author(s).
The Plant Journal published by Society for Experimental Biology and John Wiley & Sons Ltd.
This is an open access article under the terms of the Creative Commons Attribution License,
which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

study different organisms, including fish, turtles, and mosquitoes. These experiences helped me realize what I really liked and, perhaps more importantly, what I didn't. One experience that marked me was seeing the resurrection plant, *Selaginella lepidophylla*, turn green again after being completely dried out. That moment sparked my curiosity about the strategies plants have evolved to cope with environmental stress. So, I made the conscious decision to pursue plant biology. My undergraduate thesis focused on understanding how *Nicotiana tabacum* accumulates heavy metals and the transport mechanisms involved in this process. What made this project meaningful to me was its potential application in phytoremediation. The research was connected to a Mexican community affected by heavy metal pollution from an old mine, and I had the opportunity to participate in field sampling. Seeing firsthand the impact of science on a real environmental problem was incredibly motivating. It helped me realize that research is also about generating knowledge to benefit communities. This marked the beginning of my interest in how plants respond to abiotic stress and the role of cellular membranes and transport proteins in these responses. Later, during my graduate studies, I began working with *Mesembryanthemum crystallinum*, a plant known for its remarkable tolerance to salinity. This allowed me to explore membrane biology in greater depth, particularly how membrane proteins and their movement through intracellular trafficking pathways contribute to physiological responses.

3. What has your career path been like? What is your current role and how did you land it?

My career path has been shaped by a combination of curiosity, opportunities, and a willingness to step outside my area of expertise. Although my master's and PhD studies involved several years of research experience, my first formal research position was in Professor Katie Dehesh's laboratory at the University of California, Riverside (UCR). At the time, Katie was looking for someone with my background, and the position offered something particularly attractive: training in metabolomics. I was immediately interested because it would allow me to experience a different academic environment, develop expertise in a new field, and start working with *Arabidopsis thaliana*. I was already aware of the growing importance of omics technologies in biological research, and I saw metabolomics as a valuable addition to my toolkit. When I first joined Katie's lab, I worked closely with a post-doctoral researcher, contributing to the experiments to support her publication. At the same time, the Metabolomics Core Facility at UCR played an important role in my training, providing the environment and technical support that helped me develop these new skills. Eventually, I started performing metabolite analyses for researchers both within UCR and at other institutions, which helped me develop my analytical skills and confidence in this field. I also had the opportunity to contribute to several research projects that broadened my scientific perspective. I learned more about chloroplast biology, metabolic pathways, and plant stress signaling. I feel that this experience helped me become a more well-rounded plant biochemist. Toward the end of my time at UCR, I had the opportunity to take responsibility for the COG7 project, which became particularly meaningful to me. In many ways, it felt like returning to my scientific roots on membrane trafficking.

After nearly 5 years at UCR, I recently started a new position at the Centre for Research in Agricultural Genomics (CRAG) in Barcelona, Spain, where I am now leading the Metabolomics Unit. My role involves overseeing the operation of the facility and supporting research projects through metabolomics-based approaches. This transition represents a new kind of challenge for me. Until now, most of my work has focused on contributing directly to research projects within a laboratory. In my current position, I have the opportunity to impact a wider range of scientific questions by helping researchers apply metabolomics to their studies. What really attracted me to this position was the opportunity to reconnect with one of my long-standing interests: contributing to research with potential practical applications. While my time at UCR gave me a strong appreciation for fundamental research, I am excited about applying my expertise to research involving agriculturally important crops at CRAG. I see this new position as a natural continuation of my career, bringing together my background in plant biology, biochemistry, and metabolomics while allowing me to contribute to research from a different perspective.

4. Was there a particular mentor, teacher, or moment that inspired and motivated you?

This is actually a difficult question for me because I cannot pick a single person or moment. Instead, I think I have been shaped by many people throughout my academic and professional journey. I have had the opportunity to work with different mentors and colleagues, each with their own approaches to science, leadership, and teamwork. From these experiences, I have learned not only the qualities I admire and would like to incorporate into my own professional life, but also the practices and attitudes I would prefer not to repeat. For example, my master's advisor, Dr. Vera, taught me the importance of dedication and perseverance in bringing scientific ideas and projects to life. As for what keeps me in academia instead of leaving to open my own Mexican restaurant (which is very tempting!), I think it comes from my belief that science is something we cannot afford to lose as a society. I believe that, as scientists, we also have a responsibility to communicate what we do, make our work more accessible, and invite the broader community to engage with science.

© 2026 The Author(s).

5. What were the biggest barriers you faced early on (cultural transition, finances, confidence), and what helped you push through as a woman of color in academia?

I think every stage of my academic and professional journey has come with its own challenges, and fortunately, I have been able to navigate them and learn from them. There have certainly been situations where my abilities and skills were underestimated because of my race, nationality, and gender. However, one of the most important things I learned is to recognize my own strengths and limitations. Knowing what I am capable of, while also being aware of what I still need to learn, has helped me develop greater confidence in myself and my work. I would say that one of my biggest personal challenges has been living with impostor syndrome, which I think is quite common in academia. It can be difficult to celebrate your own accomplishments, especially in an environment where you are surrounded by very talented people, while some others are constantly trying to push you down. Over time, I have learned that not knowing everything does not make me less capable. Being willing to ask questions, learn from others, and continuing to develop new skills is also an important part of being a scientist. Another important challenge has been navigating different cultural and professional environments. Moving from Mexico to the United States, and more recently to Spain, has exposed me to different approaches to research, communication, and workplace dynamics. As a Mexican woman working in international academic environments, I have become more aware of how cultural backgrounds and personal circumstances can shape our professional experiences.

Motherhood has also been an important part of my journey. Balancing family responsibilities with long working hours and high academic expectations is not easy. This made me reflect on how we define commitment and productivity in academia. I believe that being a dedicated scientist should not be measured only by the number of hours spent at the bench, but also by the quality of our work and contributions. Over time, I learned the importance of establishing professional boundaries and developing my own work ethic. For me, this means being responsible and committed to my work while recognizing that dedication should not come at the expense of personal well-being. It also means treating colleagues with respect, being fair in my expectations of others, and contributing to a working environment where people can do their best without feeling that they constantly need to prove their worth. Ultimately, what has helped me move forward is understanding that confidence is not about having all the answers or proving myself to everyone. It is about trusting my experience, recognizing when I need support, and continuing to grow without losing sight of my identity, my values, and the kind of scientist and colleague I want to be.

6. Looking back, what do you wish someone had told you about the hidden curriculum of academia (how to find mentors, choose labs, publish, or navigate setbacks)?

I wish someone had told me that being a scientist is not just about being passionate about research or being good at experiments. In many ways, being a scientist turned out to be quite different from what I had originally imagined. I think we grow up with a romanticized image of scientists like Darwin or Mendel, having the time and freedom to explore whatever questions interest them. But the reality of modern academia involves deadlines, funding, publications, administrative responsibilities, and many other demands beyond experiments. Another thing I gradually came to understand is how much mentors, professional networks, and institutional affiliations can influence the opportunities available to you. The laboratory where you train and the people you work with can shape not only your scientific development but also how others perceive you. Fortunately, I have met people who were willing to share their experiences, offer advice, and give me opportunities to grow.

7. In general terms, what are your research interests? How did that lead to your latest paper on TPJ (https://doi.org/10.1111/tpj.71077)?

My research interests focus on understanding how plants respond and adapt to environmental stress, particularly the roles of membrane trafficking, organelle function, and metabolic regulation in these processes. During my graduate studies, I investigated the intracellular trafficking of aquaporins in *Mesembryanthemum crystallinum* under salt stress. This sparked my interest in how membrane trafficking contributes to plant adaptation. Later, I expanded my interest by exploring chloroplast stress signaling and organelle communication. I also developed expertise in metabolomics, which added a new dimension to my scientific interests by allowing me to investigate how cellular responses are reflected in changes in plant metabolism.

In our recent paper in The Plant Journal, we investigated the role of the Conserved Oligomeric Golgi (COG) complex in Golgi organization and plant stress responses. We found that COG7 is essential for maintaining normal Golgi size and organization. Interestingly, although COG7 has a unique role, we also identified partial functional compensation by COG3 and COG6 (Figure 1), something that had not been reported in earlier works. Importantly, some of these responses can be genetically separated, suggesting that Golgi dysfunction influences different cellular processes through distinct mechanisms. For me, this project was particularly meaningful because it brought me back to my original research interests in membrane trafficking, while allowing me to apply the broader perspective on plant stress signaling and organelle function that I developed at UCR.

© 2026 The Author(s).

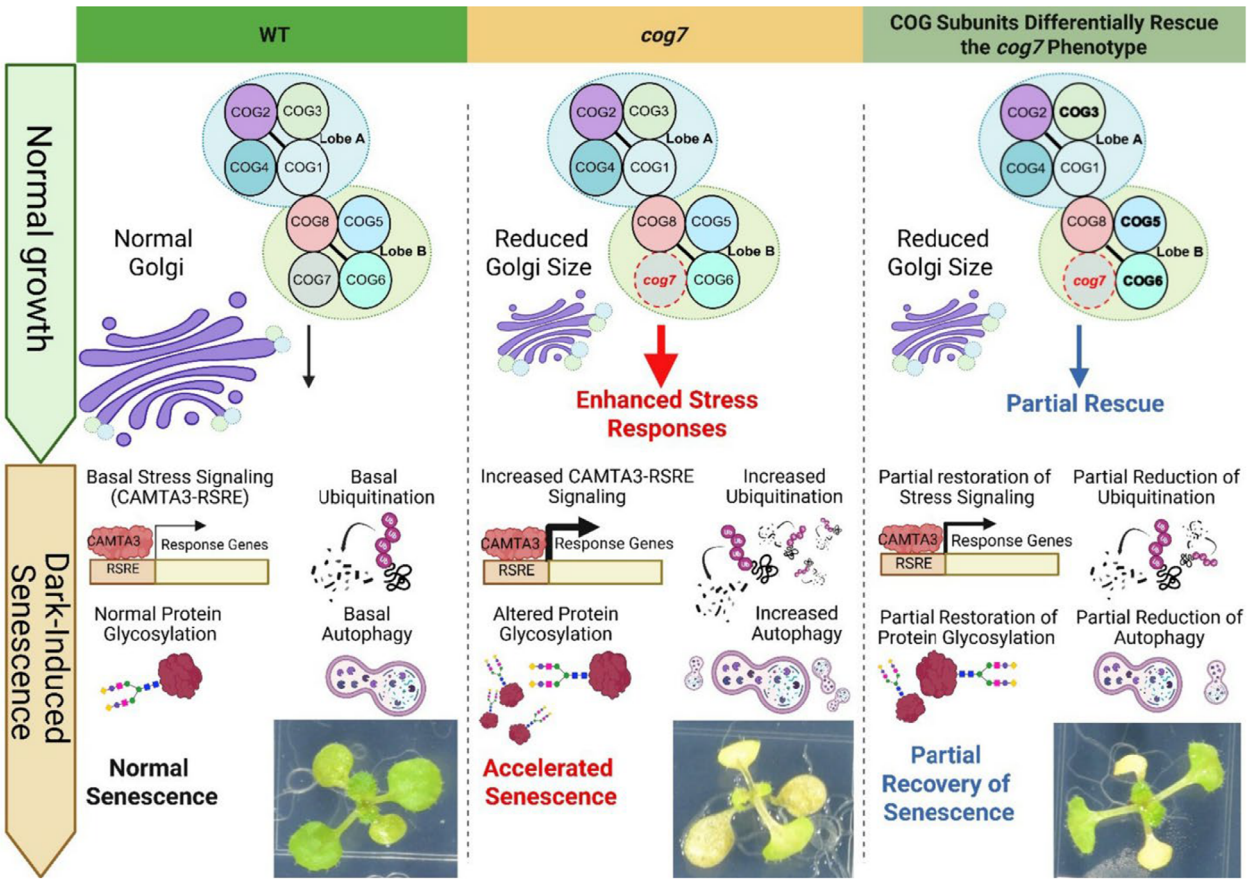


Figure 1. The role of the Conserved Oligomeric Golgi (COG) complex in Golgi organization and plant stress responses.

8. What are the skills you learned through your research that now enable you to perform in your current position?

I would say that the most important skills are related to metabolomics, particularly LC–MS-based analytical methods and data analysis. I have hands-on experience working with different mass spectrometry platforms, including high-resolution mass spectrometry and triple quadrupole instruments. This allowed me to develop skills in sample preparation, chromatographic separation, method optimization, instrument troubleshooting, and quantitative analysis. I also have experience analyzing complex metabolomic datasets, particularly hormone profiles and other stress-related metabolites. I learned how to approach metabolite identification, evaluate analytical results, and connect changes in metabolite abundance with the biological questions behind each experiment. One of the most valuable aspects of my experience was working on projects involving different research groups. This helped me understand that metabolomics is not simply about generating data, but also about selecting appropriate analytical approaches, recognizing the limitations of each method, and helping researchers interpret their results.

I think all these experiences have prepared me well for my current position leading the Metabolomics Unit at CRAG. Although I am now taking on additional responsibilities like management and organization, I can build on the technical and analytical knowledge I have to support other researchers. I also believe that my background in plant biology and biochemistry is an important advantage because it allows me to understand the biological context of the samples and communicate more effectively with researchers about their experimental goals.

9. What is your current role in the North American Arabidopsis Steering Committee (NAASC)? How do you use this platform to support and empower the plant biology community?

I am currently involved in two NAASC committees: the Early Career Scholars Committee and the Inclusivity Scholars Committee. Through these groups, we organize activities aimed at bringing together plant scientists across North America, sharing knowledge, creating opportunities for professional development, and strengthening our scientific community. Some of the activities we have

© 2026 The Author(s).

organized include webinars such as 'Finding Your Way into Scientific Publishing: From Peer Review to Editorial Roles', which aimed to help researchers understand how scientific publishing works, the different roles involved in the editorial process, and how they can become involved in peer review and editorial activities. We also organized 'LGBTQ+ Voices in Science & Community', an event focused on increasing visibility and recognizing the diversity of people who contribute to science. Scientists come from many different backgrounds and identities, and I believe that acknowledging and celebrating this diversity is one of the simplest ways we can help build a strong scientific community.

We are also preparing an article titled 'Research in Our Hands', which aims to highlight the research and personal experiences of people working with plant science across North America. The idea is to showcase not only science but the people behind it, their backgrounds, and perspectives. What motivates me the most about these activities is the opportunity to reach scientists beyond my circle and create a stronger sense of community and belonging. Being part of NAASC has been a very exciting and rewarding experience. It has also given me the opportunity to understand how scientific organizations operate behind the scenes and appreciate the effort involved in organizing initiatives for the community. More importantly, it has reinforced my belief that these organizations are essential not only for advancing science but also for bringing together and supporting the people who make science possible.

10. Do you have any advice for young plant scientists, especially those who are new to research or navigating big transitions?

My advice would be to not be afraid of exploring new opportunities, even when they take you outside your comfort zone. Sometimes, stepping into something unfamiliar can open doors you never imagined. We cannot plan or predict every single step, so it is important to remain open to new possibilities. Looking into different programs, training, and research communities can help expand your options. I would also say to listen to other scientists and learn from their experiences. Everyone has a different journey, and their perspective can teach valuable lessons. I would also encourage them to trust their abilities but be open to learning and recognizing the areas where they can continue improving. You don't need to know everything from the beginning, and growth happens through effort and dedication.

Finally, I think it is important not to forget about your personal life and well-being. Finding balance helps us maintain the energy and clarity of mind that scientific work requires. Of course, everyone has their own way of working, and finding that balance is also part of the learning process. If I could summarize my advice, I would say: *Be patient with yourself, take every opportunity to learn, take care of yourself, and strive to be the kind of scientist your community needs*.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

Luis de Luna Valdez
University of California Riverside, Riverside, California, USA
luisd@ucr.edu

© 2026 The Author(s).