



Viñas Peña (third from right) attends a 2019 book fair to promote an optics book for secondary school students that she wrote with 13 other young optics researchers.

Courtesy of María Viñas Peña

REFLECTIONS IN DIVERSITY

# Celebrating Women and Girls in STEM

A postdoctoral researcher discusses the progress that’s been made, and the steps left to take, to address science’s gender-bias problem.

**O**n 11 February, the world will celebrate the International Day of Women and Girls in Science (IDWGS). The annual event, created by a United Nations resolution in 2015, is an opportunity to highlight the achievements of women in science and to empower women and girls, who currently represent less than 30% of researchers, to pursue STEM careers.

OPN spoke with OSA Ambassador María Viñas Peña, Marie Skłodowska Curie fellow at MGH-Harvard Medical School, USA, and Spanish National Research Council (CSIC), Spain, about her views on IDWGS and some of the roadblocks facing gender equity in STEM.

**Q. Tell me a little about your career thus far and your history with IDWGS.**

I work in visual optics and biophotonic sight—using light to investigate the visual system and how the brain sees the world. I did my Ph.D. at Complutense University in Madrid, and since then I’ve been a postdoc at the Institute of Optics (IO-CSIC). Now, I’m a Marie Skłodowska-Curie fellow at MGH-Harvard Medical School where I work on microscopy for ophthalmologic applications. We are trying to find a better treatment for myopia, a very hot topic in vision. I am also a founding member of a spin-off company, 2EyesVision, to develop clinical visual simulators.

For me, IDWGS is really special. For the last five years, I have done activities for it—either visiting a school, demonstrating an experiment for children or organizing a webinar. I love IDWGS because it's the perfect excuse to celebrate—there are more and more women in science, and we're doing awesome things.

**Q. You're very involved with gender-equity outreach, particularly mentorship. Why is this so important for women and girls?**

Role models are really important, especially for women scientists, and they are important at different stages in our lives. First, we need role models for girls. As a kid, everyone knows Einstein and Newton, but if you don't see any women as scientists, then how are you going to picture yourself as a scientist?

Mentors are also important at the postdoctoral stage. A scientific career is very competitive and very tough, and everyone needs help and support. I didn't notice bias during my bachelor's or my Ph.D., but as a postdoc, things changed. Postdocs have to defend their own ideas, stand by their projects and make their voices heard, and that can be challenging when you are one of only a few women—or the only woman—in a program. Mentorship is a good resource for that situation and for encouraging diversity—and we need a more diverse group of people investigating in science.

**Q. What has been your experience with mentorship?**

I've been very lucky to have strong women researchers as mentors. That's why I'm pushing forward with a mentoring program through OSA, Mentor Match, because I think that it's important for everybody.



Courtesy of María Viñas Peña

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*—María Viñas Peña*

I also promote a mentoring program within the Spanish Optical Society, which is specifically for women. Through various programs we try to show that there are women researchers doing very cool things in optics and photonics, especially at the postdoctoral level. Highlighting more junior researchers is important because when you look at an event program, it's often all men on the panels. When there is a woman, she is one of five or ten women who are at the very top of their field. And that's a problem; it's frustrating that women need to work so hard for the same opportunities. Science is a male-dominated field—it's improving, but there's a lot of work to do.

**Q. Do you find that the pandemic has affected STEM gender biases?**

Absolutely. COVID-19 has put even more stress on things. There was a moment at the beginning of the pandemic when all of the women researchers on Twitter said, “I cannot do more, this is too much.” If you have to take care of your kids because the nurseries are closed, or if you're responsible for elder care, then you can't go to the lab or write papers, and your publication rate is lower. It's difficult as a woman because you have to be an excellent researcher, better than the men, and you also have all these extra roles. It's a situation that already existed, and coronavirus just made it clearer.

**Q. What are some of the main pathways for combating gender bias?**

First, make people aware of women role models in STEM to attract more talent. There are regular women who are doing excellent science, and we need to make our community and the general public aware. For example, I'm working with OSA to create a trivia game about women researchers that is geared to a younger audience. Second is mentoring—we need to help women in different stages of their scientific career.

Third, which is a little bit controversial, is addressing discrimination through active policy. There are certain STEM fields that are only 5% women—with those numbers, policies need to be put into place. I think that scientific societies and also governments can do more in this respect. And fourth, we need to help women manage all the things they need to do—we should all share the same responsibilities. **OPN**

For more information, please go to [www.osa.org/get\\_involved](http://www.osa.org/get_involved).