

## INTERVIEW

# An interview with Eugenia del Pino

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Eugenia del Pino was a Professor at the Pontificia Universidad Católica del Ecuador (PUCE) in Quito, Ecuador, where her research focussed on understanding the unique development of marsupial frogs. During her career, Eugenia was elected to the US National Academy of Science in 2006 and was awarded the L'Oréal-UNESCO prize for women in science (2000), The Latin American Society for Developmental Biology prize (2019) and the Eugenio Espejo National Prize from the Government of Ecuador in 2012. This year, Eugenia was awarded the Society for Developmental Biology (SDB) Lifetime Achievement award. We talked to Eugenia about the impact of receiving this award, her work at PUCE and the importance of mentorship in her career.

## **Congratulations on winning the SDB Lifetime Achievement award: what does the award mean to you?**

Receiving this award is a very high honour, for myself, my students and the Pontificia Universidad Católica del Ecuador (PUCE), where I worked. To go even further, it is a great honour for the country of Ecuador. I am the 22nd winner of the SDB Lifetime Achievement award, and this is the first time it has been awarded to a Latin American scientist, so for this reason, I think it is an honour for the entire region. I am an active member in the World Academy of Sciences for the Advancement of Science in Developing Countries, and they have publicised my award to promote interest in scientific careers. Developing countries are advancing scientifically, and while the density of scientists is not as high as in other regions, it is great that our scientists are being recognised. I noticed that few women have previously received this award, so it is really a tremendous honour to have my work recognised and to represent women, as well as scientists, from Ecuador, Latin America and other developing countries.

## **When did you first become interested in science, and biology in particular?**

In high school, I did well in all my subjects and while I enjoyed science, my scientific interest really developed later. Initially, I didn't know what I wanted to study for my degree, but I knew that I needed to have a career. One of my brothers suggested the field of education to become a high school teacher, so I entered the School of Education at PUCE in Quito. John F. Kennedy was President of the USA and his administration had introduced the US Alliance for Progress Program to develop science teaching in Latin America. This program provided laboratory equipment and when I became a PUCE student, I used the new microscopes and materials that had been donated. There were also foreign professors, including the Professor of Biology, Dr Cándida Toro Acosta from Puerto Rico. She wanted to ensure that the program continued after the foreign professors had left, so she encouraged us to get further training. I received a fellowship from the



Latin American Scholarship Program of American Universities to study for a master's degree in the USA, but I felt that this wasn't enough and convinced the funders to allow me to continue my training to get a PhD degree. For the final year of my graduate studies, I received a fellowship from the American Association of University Women. I feel very privileged to have received these fellowships. I attended Vassar College for 2 years, where I was awarded my master's degree and then I was awarded my PhD from Emory University.

## **Was your move to the USA difficult, both scientifically and socially?**

Of course, it was a big move! In the USA, I was confronted with a different language and a different society. I was privileged to attend Vassar College because Vassar fosters academic and personal development. I received great attention from my professors, and I developed long-lasting friendships with other students. The Vassar support helped in my academic and social adjustment. These were essential keys for my academic success in the USA.

## **What was the process of moving to Emory University to complete your PhD?**

Emory University, Department of Biological Sciences accepted me as graduate student to work with an Ecology professor. When we

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met, he suggested that I go to the banks of a particular river to collect specimens to study the free-living protozoans. Fieldwork was not attractive; my interests were more in the area of cell biology. I met Dr Asa Alan Humphries, who worked with frog oocytes and asked developmental questions. He accepted me into his laboratory. This was the beginning of my connection with developmental biology.

**What was your research focus during your PhD and why did you decide to move back to Ecuador after being awarded your PhD?**

Dr Humphries' lab worked on both the lampbrush chromosomes in oocytes and frog fertilisation. I felt that studying fertilisation was more approachable. I began my work by looking at the frog egg-jelly in *Xenopus laevis* and its role in fertilisation. Then, when I finished my PhD, I immediately returned to Ecuador. You might ask, why didn't I stay in the USA. There were several reasons, but an important one was the requirement to leave the USA for 2 years before reapplying for a visa. I thought that a 2-year stay in Ecuador with a lack of research facilities would mean that when applying to return to a research position in the USA, I would know less than what I knew following my master's degree. So, the day I came back, I made the decision to stay in Ecuador. I also reasoned that I had a PhD, and I had the training to identify a problem and to ask questions. I wanted to find a developmental problem for my research in Quito. I thought about looking at the frog egg-jelly from a different frog species as I didn't have the funding to buy *Xenopus*. So, I went to the gardens of PUCE in search of a frog. To my surprise, I found the marsupial frog. I asked Dr Humphries to search in the Emory library about marsupial frogs – this happened before the internet era – because without library facilities, I could not do the search! So, he very kindly investigated in the library for me, and after a while he wrote back and said, 'nothing is known about this frog'. He also told me that if I wanted, I could make my whole career studying this frog. I followed his advice, and it meant that I had a problem to satisfy my intellectual curiosity, as well as projects for my undergraduate students.

**It is amazing to see how much you achieved working with your undergraduate students and collaborators with such limited funding. What do you put your success down to?**

I think you have to learn to work with what you have. I reasoned that I found a frog that was unique, and I had the opportunity to study its development. I wish to add that marsupial frogs occur only in Latin America, and are hard to find in the wild, with exception of species that live in the highlands. Therefore, I was fortunate to find a marsupial frog on the doorstep of my lab. The key to my scientific success was to recognise and explore the terrestrial deviations in the development of marsupial frogs in comparison with the aquatic mode of other frogs.

**How did you find your transition to teaching when you returned to Ecuador? I read that you were made head of department a few months after returning to PUCE.**

The transition was not easy, I felt quite lonesome as I felt my experience in the USA made me different from my school classmates in Quito. But then, I was also lonesome in the USA, as I had a different background. In the end, I realised that I could feel at ease all over the world. That is how I look at my life experiences. I think that the administrators and society often do not understand that it is important to give young faculty the time and space to grow. On my return, I was asked to contribute in so many aspects to the university and society. So, soon after I returned, I became director of

the biology department: a demanding task. There were so many other tasks but if I had tried to fill them all, I would not have been able to go back to the lab as the day has only 24 hours! I had to find a balance between teaching, university administration and other roles, and my research endeavours.

The subject I was best qualified to teach was developmental biology, so I started a developmental biology programme in Ecuador. I knew that not all my students would go on to become scientists; however, I felt it was important for them not only to learn about the principles of developmental biology, but also the skills needed to identify a problem and its analysis. I didn't realise at the time how unique our programme was in Latin America. Now it is different: there are numerous developmental biology laboratories throughout the continent. This was evidenced in a special issue of the International Journal of Developmental Biology, published in 2021. I was one of the guest editors of the special issue, and we documented the contributions to the field from Ibero America.

**What role has mentorship played in your career, and what is your mentorship style?**

I feel very lucky to have had such good mentors. At Vassar College, Dr Sue Lumb encouraged my interest in embryonic development and supported me. She was a student of Viktor Hamburger. With Alan Humphries at Emory University, I learned to do research. I didn't think that I was up to the standard of his laboratory and in the beginning, it was difficult for me. But he understood me, and he helped me to become a good scientist, so I am grateful for that. The academic genealogy of Dr Humphries goes back to Theodor Boveri and Marcela O'Grady Boveri. Dr Humphries was a student of Gerhard Fankhauser, who, in turn, was a student of Fritz Baltzer. Baltzer was a student of Theodor Boveri. I did not know that I was inheriting this distinguished genealogy when I began working in Dr Humphries' lab!

With Dr Humphries and other students, I would go to the Emory cafeteria where we would discuss all kinds of different topics from history to science, whatever came up, and I really enjoyed that. So, in Quito, I had comparable discussions with students from my lab. They would often have a different interpretation of the results of our work, and for me it was a wonderful opportunity to appreciate those young bright minds. Of course, there is a different relationship with the students that you teach in the classroom, in big groups, in comparison with the personal relationship with those that work closely with you in the lab.

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**Do you think you would have done anything differently in your career if there were more funding opportunities in Ecuador?**

During my career, I always wished to have more funding but then I think what would I have done with more funding? Of course, I could have given support to students, postdocs and research assistants, and I could have bought equipment and materials. Your question reminds me of the opinion of the late, Professor Peter Hausen, from the Max Planck Institute in Tübingen. He once said that I wouldn't want a grant anyway, as I was too much of a free spirit and would not want to follow the rules that come with grant

funding. I think that he was right! Of course, I had teaching requirements at PUCE. So, I gave lectures, but the rest of the time was mine, for my own research interests. It is wonderful that PUCE gave me such academic freedom. So overall, I am happy with how it worked out! I need to add that I did receive some national and international grants and donations for my work, as well as the support of international colleagues. Funding is necessary for scientific work.

**What advice would you give to young scientists looking to become group leaders or teachers in developmental biology?**

This is a very difficult question; my first thought is that I can't give advice to others. But I would say that it is important to be honest with yourself and to recognise your capabilities. I think that each person must find their own route.

**What will be the big questions for developmental biologists to address over the next decade?**

This is another difficult question. I believe that the questions will depend heavily on technological advances. So, I think that the field is wide open! Developmental biology is at the core of biological sciences. I think that each generation will learn something different using new technologies. I am so positive about developmental biology, and meetings like the Joint SDB-PASEDB Meeting (Pan American Society for Evolutionary Developmental Biology) reinforce this feeling. I do think that the embryo is our teacher. Looking back, it is possible to see that we are still answering the questions posed by Theodor Boveri and his wife, Marcella O'Grady Boveri, many years ago, when they were studying cell division and the role of centrosomes, as well as the importance of the nucleus and cytoplasm in development. The questions posed by Boveri and others are still valid to this day, and we can approach them with new methods.

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**You have been retired since 2013 but have continued to publish papers; what does retirement look like for you?**

I retired, but the university has been a huge part of my life, so I was still going to the lab every morning until I was confined at home because of the COVID-19 pandemic in 2020. After being forced to stop going to the university, I realised that I was happy to be at home! But I am lucky, I finally had the time and peace of mind to analyse unpublished results. Moreover, every year, I received invitations to write papers, so that's why I continued to publish. Now, I like being able to keep my own pace when I'm working! I enjoy retirement and I'm not sure what will come next.

**Finally, is there anything Development readers would be surprised to find out about you?**

I am very much in favour of the rational use of energy. In my house, I installed solar panels for water heating. I also have an urban garden. With the help of my gardener, I plant vegetables around the back and the sides of the house, and flowers in the front so that everyone can enjoy them when they go by!

The other thing that people might not know is that I'm very much interested in languages. As I told you, I am a biologist because of the fellowships to go to the USA, but at the time I really wanted to learn German. The German professor thought I was the best candidate to learn the language. I can speak and write in German quite fluently, and when I was in Germany with a fellowship from the Alexander von Humboldt Foundation, I used every opportunity to practise the language. Now, I'm learning Italian!