



Eugenia M. del Pino
Ecuador

“ We are all offered a range of choices in life; you have to choose a path and focus on it in order to be successful... ”

Interview Winston Oswaldo Báez*

Senior Lecturer in Biological Sciences, School of Biological Sciences, Pontifical Catholic University of Ecuador (PUCE), Quito since 1972. Head of the Department of Biological Science, PUCE (1972 to 1974). Eugenia del Pino Veintimilla is a distinguished Ecuadorian biologist of international renown. An in-depth conversation about her career in biological research and various personal subjects provided an insight into her character. Eugenia answered the questions with her characteristic friendliness. A summary of this interesting conversation is given below.

Current main research interests

In her laboratory at PUCE, Dr. del Pino undertakes comparative studies on the early embryonic development of Ecuadorian frogs with the *Xenopus laevis* developmental model frog. Her main areas of research are oogenesis strategies and the early development of marsupial frogs, particularly the marsupial frog *Gastrotheca riobambae* (Hemiphractidae), the development strategies of frogs with terrestrial eggs, *Epipedobates machalilla* and other frogs from the Dendrobatidae family and *Engystomops randi* (Leiuperidae) frogs with foam nests, compared to the early embryonic development of the *Xenopus laevis* developmental model frog. This comparative analysis began 40 years ago, when developmental biologists concentrated exclusively on studying model organisms such as the *Drosophila melanogaster* fruit fly and

the *X. laevis* frog. There is currently interest in comparative studies on early development, since adaptations of various organisms to their environment are natural experiments that increase our knowledge of embryonic development.

The comparative studies by Dr. del Pino and her colleagues are therefore of great interest to the international scientific community.

The achievements that constitute her greatest source of pride

Rather than proud, I would describe myself as content with my life in general and with the choices I have made.

Studying Biological Sciences was an excellent decision, as it has allowed me to develop my intellectual abilities, learn methodologies and contribute to science at a national and international level.

Working in science in Ecuador rather than abroad has allowed me to develop personally, as well as contribute to society and scientific progress.

In this way I have been a pioneer in training students and scientific research in Biological Sciences at PUCE. The wonderful biodiversity of Ecuador has provided the specific themes of my research on embryonic development in Ecuadorian frogs.



Eugenia M. del Pino with students in the PUCE laboratory in Quito (photo by Micheline Pelletier, L'Oréal)
 Photo on page 107: Highlands of Island Santa Cruz, Galápagos. Where the *Scalesia* provide another example of the radiation evolution. In arid regions the plants are shrubs whereas in the highlands, where it is wet the *Scalesia* evolved into trees. Photo by Eugenia M. del Pino

I have also had a productive relationship with the Charles Darwin Foundation for the Galapagos Islands, through which I helped to train Ecuadorian scientists devoted to preserving those islands as well as Ecuador and Latin America. This kind of partnership is extremely unusual for a female scientist working in a laboratory on developmental

biology. My involvement in education on the conservation of the Galapagos stems from being a scientist based in Ecuador. I have learnt a great deal about biology and the problems associated with conserving the Galapagos Islands. I have become interested in Ecuador's enormous biological diversity.

Honors and Recognitions

International scholarships:

- Grant from the Latin American Scholarship Program of American Universities (LASPAU), 1967-1971 for a Masters' degree at Vassar College (Poughkeepsie, NY) and a doctorate at Emory University (Atlanta, Ga), United States.
- International Scholarship, awarded by the "American Association of University Women," 1971-1972, to complete her doctoral studies in the United States.
- Scholarship from the Alexander von Humboldt Foundation to carry out research at the German Cancer Research Center in Heidelberg, Germany during a sabbatical year. (July 1984 to July 1985).
- Fulbright Fellow and Visiting Professor at the Washington Carnegie Institution, Embryology Department, Baltimore, United States, during a six-month sabbatical (March to September 1990).
- Activities supporting science and conservation
- Member of the Charles Darwin Foundation for the Galapagos Islands since 1976.
- Founding member of the Ecuadorian Biology Society since 1976.
- Member of the Board of the Charles Darwin Foundation for the Galapagos Islands (1986 to 1992).
- Vice President for Ecuador of the Charles Darwin Foundation for the Galapagos Islands (1992 to 1996).
- Vice President of the General Assembly of the Charles Darwin Foundation for the Galapagos Islands (1998 to 2001).
- Member of the Board of the Third World Academy of Science (TWAS) (2004 to 2009).

Prizes and distinctions:

- Elected Member of the Biological and Natural Sciences Section of the Ecuadorian Cultural Center (May 1978).
- Diploma for her work on Education for the Conservation of the Galapagos Islands, awarded by the World Wildlife Fund, Gland, Switzerland (March 21st, 1986).
- Honorary Overseas Member of the American Society of Ichthyologists and Herpetologists (a permanent post awarded in 1996).
- Merit Medal for the Conservation of the Galapagos Islands, awarded by the Charles Darwin Foundation for the Galapagos Islands on the 40th Anniversary of its founding (Quito, 1999).
- L'Oréal-UNESCO Women in Science Award (Paris, France, 2000).
- Sheth Prize for Distinguished Graduates of Emory University (Atlanta, GA, 2003).
- "Feather of Dignity," prize awarded by the National Union of Ecuadorian Journalists (Quito, 2003).
- Medal from the Academy of Sciences of the Developing World (Alexandria, Egypt, 2005).
- "Eugenio Espejo" Medal for Science, awarded by the Council and Mayor of Quito Metropolitan District (Quito, 2005).

The three main areas of her research refer to the strategies of oogenesis and the early development of marsupial frogs, particularly the *Gastrotheca riobambae* marsupial frog. Photo by Eugenia M. del Pino





Eugenia M. del Pino

- Diploma awarded by the National Women's Council (CONAMU) (Quito, 2006).
- "Eugenio Espejo" Prize for Science, awarded by the Government of Ecuador (Quito, 2012).

Academies that have elected her as a member:

- Member of the Latin America Science Academy (ACAL) since 1987.

- Member of the Academy of Sciences of the Developing World since 1989.
- Foreign Honorary Member of the American Academy of Arts and Science, since 2006.
- Foreign Associate of the United States National Academy of Sciences, since 2006.

Why did you decide to study science?

My career in Biological Sciences began when some opportunities appeared while I was studying at PUCE. My parents fostered the intellectual abilities that I demonstrated as a child. They were not university-educated, but one great goal of their generation was to support their children in the university studies that would lead to a career that would allow them to earn a living. I am the youngest of three children and my two siblings played an important part in my youth, as they were adamant that I should study at the university. My problem was that I did not have a clear idea of which discipline. I enjoyed literature as much as mathematics and biology and was particularly interested in German and other foreign languages. I studied in the Education Sciences Faculty at PUCE and graduated in Education Sciences, as a secondary school Biology teacher.

However, my Biology teachers at PUCE encouraged me to apply for a scholarship to study in the United States. Once I had decided on Biological Sciences, I committed myself to them. I immensely enjoyed my time studying in the United States. When I returned to Ecuador, af-

ter joining the teaching staff at PUCE I began research in the area I had studied, Embryology and Developmental Science.

We are all offered numerous options in life. One has to choose a path and focus on it to succeed. I devoted myself to Biological Sciences, and in particular Developmental Biology, and ignored my other academic interests.

Why is it important for women to work in Science?

All human beings have the social responsibility of using our abilities for the benefit of society. Women also have a responsibility towards themselves, to develop an independent, worthwhile life. I have many female colleagues and students at PUCE. The School of Biological Sciences awards Bachelors' and Masters' degrees, but we do not yet have a doctoral program. I have supervised many of my students' Bachelor's theses. Several scientific projects on which we have worked together have been published in national and international journals. I supervised the Masters' degree thesis of the first person - a young woman - to obtain a Masters' Degree in Conservation Biology from PUCE, in 2012.

A number of my thesis students have studied successfully at universities in Latin America, North America and Europe. Some have returned to Ecuador and some are even part of the Biological Sciences teaching staff at PUCE.

Who or what inspired you to work in science?

My two siblings provided support for my academic abilities during my childhood and youth. I chose to study Biology because I was offered a scholarship to study in the United States. The LASPAU scholarship aimed to enhance the abilities of the teaching staff at Latin American universities. Consequently I felt a moral obligation to return to Ecuador after my training. I should stress that Ecuador is the country with whose culture I identify myself most. However, when I joined the Department of Biological Sciences at PUCE I was struck by how limited the research facilities were in comparison with those I had used abroad. I set myself the professional goal of finding a research topic that satisfied my scientific interests and would allow me to make scientific contributions of international significance in Quito. I reasoned that if I gave up scientific research then I would soon lose all that I had learnt, as science progresses at breakneck speed.

I needed a frog to study embryonic development, as I did not have enough money to buy the *Xenopus laevis* frog, the model organism on which my experience was based. In the PUCE gardens I found a marsupial frog (*Gastrotheca riobambae*), and as I knew nothing of its biology I wrote to my thesis supervisor at Emory University, Dr. A. A. Humphries, Jr. who very kindly researched it in the library. I can clearly remember his

letter, in which he told me that the embryonic development of marsupial frogs was unknown and that the field of study was therefore completely open.

This freed me from the pressure to publish and compete with other researchers, and I progressed slowly but surely, studying the reproduction and embryonic development of marsupial frogs. I strived to produce articles of international quality and publish them in specialized journals. So I discovered a “niche” in the study of the biology and development of marsupial and other Ecuadorian frogs, and one which no other researcher had access to. This is a result of the rich diversity of the embryonic development of Ecuadorian frogs.

The international scientific community was interested in our research results and has always supported me. I was a visiting researcher at major research centers during my sabbatical year: the German Cancer Research Center in Heidelberg, Germany and the Embryology Department at the Washington Carnegie Institute in Baltimore, United States, where I was assisted by Professor Michael Trendelenburg and Dr. Joseph Gall, respectively. At those centers I could employ the most advanced methodologies available to analyze the embryonic development of marsupial frogs. Other researchers have supported me, not only by donating reagents and equipment, but also by guiding my analysis to define my lines

of research. I am grateful to my international colleagues who have offered to discuss our research, because that discussion is crucial for scientific progress and critical thinking.

The marvelous biology of marsupial and other frogs has always motivated me in my scientific career.

What are the main obstacles you have come across, and how have you overcome them?

I cannot say that there have been specific obstacles in my life and academic career. Everyday large and small problems appear, which we solve, and then carry on. If I can foresee a problem occurring I take a proactive attitude to prevent it from happening.

As a student I did not suffer any discrimination in Ecuador or the United States. On the contrary I was accepted by both students and professors. Neither has there been any discrimination in my workplace at PUCE. Biology was a new career and male and female graduates obtained posts at the university and other academic centers in Ecuador.

I suppose that the various responsibilities imposed by academic life and society are a form of obstacle. One has to learn to manage time appropriately and allocate specific periods to scientific work.

Do you have any family?

I have not raised a family. I was very close to my mother, who supported me personally and professionally. Over time social roles have changed, and parents evolve from providing support to requiring support from their children. A child's development is different, as it gradually acquires a sense of self and is less dependent on its parents. On the other hand our parents' ageing process is sad, as they increasingly need help from their children and loved ones. In my mother's last years, she needed a professional care-giver. My academic and personal commitments, in addition to my lack of medical training, made it impossible for me to provide her with the care she required. Thankfully a doctor and one of my siblings advised me that caring for my mother was beyond my abilities and that she needed professional help.

What do you like to do in your spare time?

I do not have a great deal of spare time and I am not an athletic person and so I do not have a hobby as such. My home has a very peaceful effect on me, and I listen to classical music and appreciate the colorful flowers in my garden, as my mother did. However, the weeds grow far too rapidly for me to eliminate them. I am interested in German and study it when I am in the mood.

Frog embryos developing



What message would you give to other female scientists?

I would share the recommendations that I was given early on in life. The teachers at “La Providencia” Elementary and High School in Quito taught us to develop our intellectual abilities as much as possible to help society. I have never forgotten that lesson, and that commitment to society. Alongside that message is another that I received from my family. Parents can only support their children for a limited period of time, and the children must use that support to become independent in the future.

Every man and woman owes it to society to develop his or her intellectual abilities and choose a meaningful career.

Scientific research is fascinating as it allows us to question our environment. Scientific careers are very suitable for women. They must find a research “niche” to progress at their own speed, and ideally they should not be competing fiercely with other laboratories. This would spare scientists the unpleasant experience of realizing that another center is doing research similar to theirs. On the other hand, no laboratory possesses everything. Therefore each one should identify their strengths and use them in the best way.

Eugenia del Pino is a tireless researcher who has worked for four decades with scientific and methodical rigor and has thus made important contributions to science. She is candid and modest about her achievements in research and numerous publications and recognitions. When she recently received an award, she declared “Calm is the only possible habitat for science” and “a prize increases one’s responsibility to society.” This responsibility entails creating and recreating good science and disseminating it in the way Eugenia has done, with a brilliance that has done credit to her university. ■

*Oswaldo Báez Tobar is a biologist and science writer, Biological and Environmental Science Professor at the Central University of Ecuador, founding member of the Ecuadorean Society of Biology and Assembly Member of the Charles Darwin Foundation for the Galápagos Islands.