

## Profile

### José M. Estevez

#### What inspired your interest in plant science?

I have always been fascinated by plants and their secrets. I think that they are amazing organisms in the diversity of their forms, colours and ultimate beauty, capable of adapting to the most extreme conditions. I was first inspired in my early years by my mom, although originally a lawyer, she was, and still is, an extremely good gardener and landscaper in a 'British' sense. We probably had the most beautiful and diverse 'botanical' garden in town with several native trees, orchids, bromeliads, cycads, and everything you could imagine. I think this had profound influences on my admiration for plants and nature. Then, as expected, Biology with Botany orientation as a major was my first choice as a Bachelor student at the University of La Plata (Argentina).

#### Why did you decide to pursue a career in research?

I consider myself very fortunate to have followed the research career and I do not see myself doing anything else. Of course, I was very lucky to be able to choose what to do in life. I do consider my work as 100% vocational and I would choose it if I had to start all over again. Saying that, of course, I have to be very resilient and persistent in my goals to do the job as best as I can against the many difficulties we face as scientists in Argentina. I hope working conditions will improve in the future, especially for the generations of young Argentinean scientists coming after us.

#### What motivates you on a day-to-day basis?

I think my main drivers are curiosity for the unknown, passion about my work, and more importantly, the freedom to choose what new biological questions I would like to try to answer. The feeling that our work as scientists provides knowledge about something completely new all over the world is unique. The other aspect of our work, that is incomparable to any other work, is that every day going to the laboratory is different, different from the previous day and different to the next one. On top of this, science is a universal language that allows us to understand people from all over the world and this feeling has some 'deeper' connotations for me. Finally, the idea that our individual discoveries are part of a broader picture that we all help to put together is amazing. This is something transcendental to our finite life.

#### Is there anyone that you consider to be a role model?

Most of the scientists who I have worked with, and those who I work with today, have all influenced me in a very positive way. But,

#### Box 1



Photo credit: Bruno Geller (Agencia CyTA-Leloir).

José M. Estevez graduated from the School of Sciences at the University of La Plata (UNLP, Argentina) in 1997, and in 2004 he obtained the PhD title under the organic chemist Dr Alberto S. Cerezo's direction from the School of Sciences at the University of Buenos Aires (UBA, Argentina). From 2005 to the end of 2009 José joined Dr Chris Somerville's laboratory in the Carnegie Institution at Stanford University (USA) and University of California, Berkeley (USA) for his postdoctoral training. From 2009 to May 2015, José directed his group at IFIBYNE Institute in Argentina, and in June 2015 he moved to Leloir Institute (IIBBA-CONICET), also in Argentina, where he is directing the *Molecular Basis of Plant Development* laboratory. In addition, in 2019, José joined the Centre of Plant Biotechnology (CBV) at University Andres Bello together with the Millennium Institute for Integrative Biology (iBio) at Santiago, Chile. José is currently a Principal Researcher of the National Research Council of Argentina (CONICET). José is broadly interested in how environmental signals (e.g. nutrients, salt stress, temperature), developmental programmes and hormones, are all coordinated at the single plant cell level (e.g. in root hairs and pollen tubes) to define growth.

Jose joined the Editorial board of *New Phytologist* as an Advisor in 2019.

For more information on José, visit <http://www.leloir.org.ar/estevez-en> and <https://researchers.unab.cl/es/persons/jose-manuel-estevez>

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if I have to mention one, my postdoctoral mentor at Stanford University, Chris Somerville, significantly changed the way I understood science at that time (2005–2008). He showed me a whole new world of plant biology using *Arabidopsis thaliana* as a model organism; he helped me to always look at problems from very different angles, and to believe that everything is possible. He was also very generous with all the people around him. I try to pass on all of these values to my students and colleagues. Also I admire several of the colleagues working in different topics in plant

biology. Just to mention a few of them: Philip N. Benfey and all the 'root biology' school of scientists he has formed, Liam Dolan for his mechanistically and evolutionary view of roots and root hairs, Niko Geldner helped to uncover the importance of the 'long time forgotten' root endodermis, Dominique Bergmann and Keiko Torii for amazing discoveries in stomatal developmental pathways, but my list is unfortunately too long to be detailed here. Outside plant biology, in the field of glycobiology, Carolyn Bertozzi always amazes me with her chemical approach to understanding and uncovering the diversity and functions of cell surface sugar-coated molecules in underlying diseases. Finally, I have a deep admiration for the work of David M. Sabatini, for his great and innovative discoveries on the whole target of rapamycin (TOR) pathway with a great impact on metabolic disorders, neurodegeneration, cancer and ageing. In recent years, the TOR pathway is also emerging in plant cells as a key regulator of very important cell and molecular processes.

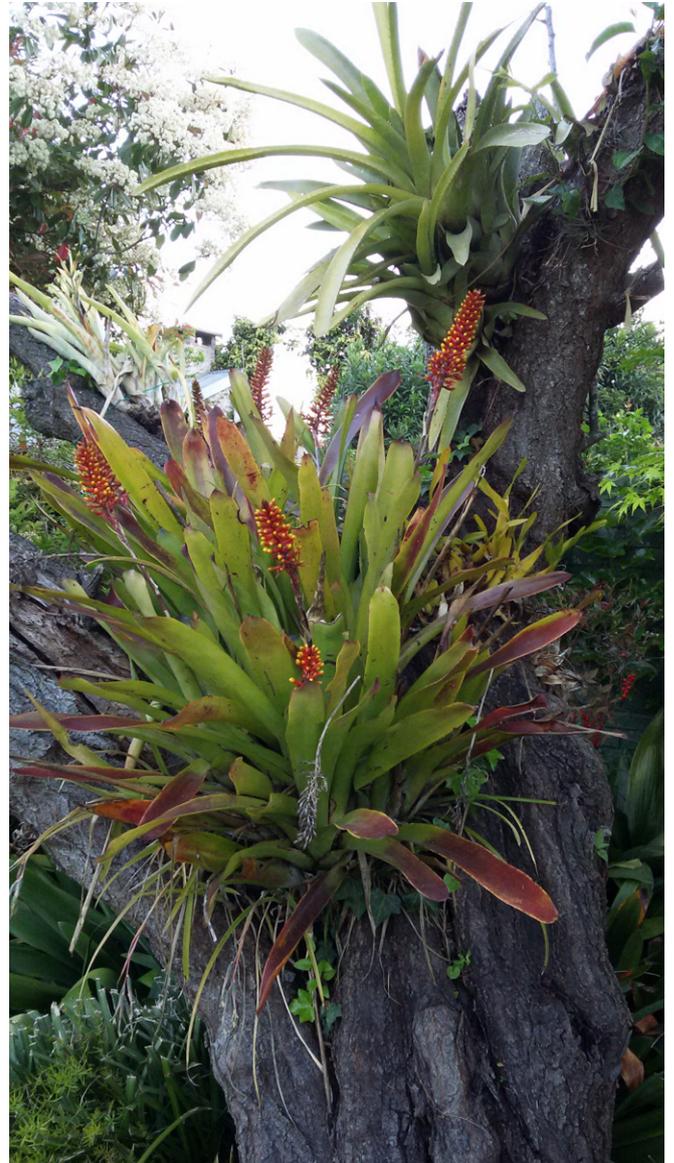
### What are your favourite *New Phytologist* papers of recent years, and why?

First, I really enjoy Tansley reviews and Tansley insights that provide, to the scientific community, a fresh big picture of recent discoveries in a very nice format. One example of this is the Tansley review by Wachsman *et al.* (2015) where the authors highlighted the power of combining large-scale experiments with classical techniques to uncover new pathways in root development. In the Tansley insight, Laliberté (2017) highlights the importance of studying belowground traits to better predict future changes in plant biodiversity and their consequences for ecosystem functioning. Another interesting paper to me was published by Fujinami *et al.* (2017) who studied the origin of apical root meristem using Lycophytes to understand early evolution of roots.

Second, one of my favourite things about *New Phytologist* is the broad topics covered by the journal, from cell and molecular biology to ecological aspects of plants, and not only model plants, in a very integrative manner. Also, it includes interesting studies on algae, seaweeds and fungal organisms so really represents biology in a broad and integrative sense.

### What is your favourite plant, and why?

There are two groups of plants that have always amazed me: the bromeliads and the insectivorous plants, such as the Venus flytrap. Both groups of plants have evolved in very specific directions. The bromeliads present an astonishing array of colours and textures with beautiful foliage, with strappy leaves in red, green, purple, orange, yellow, banded, stripes, spots or other combinations (Fig. 1). In the case of the Venus flytrap, the plant compensates for its environmental limitations by trapping insects in their adapted green 'stomach' as specialized leaf traps, which decompose the insects to release nutrients.



**Fig. 1** Several bromeliad species growing on a 'Ceibo' tree (*Erythrina cristagalli*), often known as the cockspur coral tree.

### References

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**Key words:** auxin, cell signalling, cell surface receptors, cell walls, nutrients, polar growth, root hairs, transcription factors.