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FIRST PERSON

First person – Carlos Martín-Rodríguez

First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping early-career researchers promote themselves alongside their papers. Carlos Martín-Rodríguez is first author on 'TrkB deubiquitylation by USP8 regulates receptor levels and BDNF-dependent neuronal differentiation', published in JCS. Carlos conducted the research described in this article while a PhD student in Juan Carlos Arévalo's lab at the Instituto de Neurociencias de Castilla y León, University of Salamanca, Spain. He is now a postdoc in the lab of Aranzazu Sanchez and Blanca Herrera at the Department of Biochemistry and Molecular Biology, Complutense University of Madrid, Spain, investigating the transmission of molecular signals from the cell exterior to the interior.

Carlos Martín-Rodríguez

How would you explain the main findings of your paper in lay terms?

Neurons need to 'talk' to each other for the proper development of the nervous system. I have studied how one of their 'conversations' works and how neurons react to this conversation. In this process, TrkB receptors play a critical role. Ubiquitin, a small protein that is attached to TrkB receptors, regulates the fate of the receptors after they bind to their ligand (BDNF). Another protein, USP8, is a key regulator in this process, as it modifies the receptor's ubiquitinylation status and, consequently, its final destination, choosing between degradation or recycling back to the membrane. If this process is impaired, it has several consequences for the proper development of neurons.

Were there any specific challenges associated with this project? If so, how did you overcome them?

Working with neurons as a model is always complicated, because they are very sensitive to changes. I spent several months trying to optimize our protocols and generated several tools for this research (antibodies, plasmids, shRNA, etc.). It was always a matter of numerous trial-and-error attempts to get the best results.

When doing the research, did you have a particular result or 'eureka' moment that has stuck with you?

We spent almost a year trying to get a key result for our research, and we tried more than a few different protocols, but none of them seemed to work properly. After several attempts, we finally found the perfect protocol for the experiment and we got a striking result.

Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?

Over the years, I have had several mentors in and outside the lab. I can start by talking about several teachers, not only in high school but also in elementary school, who motivated me to pursue my interest in biology. Inside our research center, I have learned a lot from every colleague I have had a conversation with, and it is very difficult to talk about only one of them, because everyone has taught me something. If I had to choose someone, I would like to mention my PhD director Juan Carlos Arévalo, who has supported me during my thesis and always encouraged me to think about new ideas when experiments were not successful.

What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?

For as long as I can remember, I have been interested in science and how our body works. I remember when I was a child, I used to sleep with a book about the human body that had a lot of pictures and cartoons. Of course, my parents have always motivated me to follow my interests no matter what. I have always enjoyed all the actual knowledge in science and I just wanted to contribute to its expansion.

Who are your role models in science? Why?

I think I do not have a specific role model because I always try to get the best of everyone I talk to or read about. I love scientists who know that they work for all humankind and not only for their personal purposes, the ones who share their knowledge and tools and are always happy to spend some of their busy life teaching you something new.

What's next for you?

I would love to stay in academia, because I have a great time in the lab. However, right now, it is very complicated to do so in my country because of financial issues. I will never give up, but I have also considered teaching, because I think that performing good research and sharing knowledge with new generations are both important.

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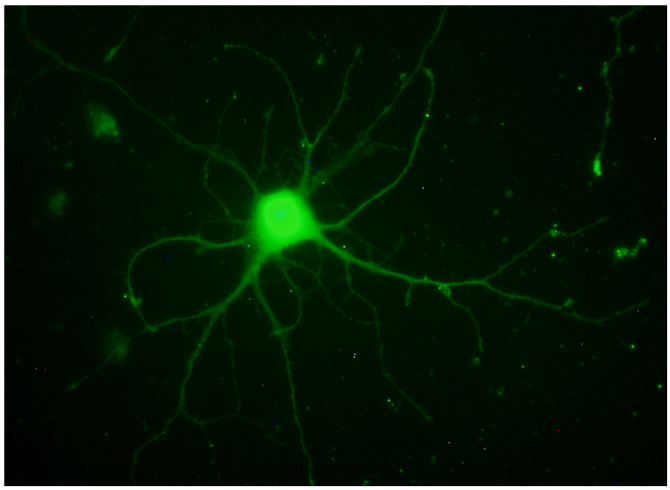

A lonely neuron looking for its partners.

Tell us something interesting about yourself that wouldn't be on your CV

During my bachelor's degree in biology, I spent some years going to the lab to start learning how science works. Afterwards, I obtained a master's degree in neuroscience at the University of Salamanca, and I decided to spend the next years getting my PhD in neuroscience at the same university. Then I decided to pursue a future in academia, and that is why now I am working at Complutense University of Madrid in molecular biology.

Reference

Martín-Rodríguez, C., Song, M., Anta, B., González-Calvo, F. J., Deogracias, R., Jing, D., Lee, F. S. and Arevalo, J. C. (2020). TrkB deubiquitylation by USP8 regulates receptor levels and BDNF-dependent neuronal differentiation. *J. Cell Sci.* **133**, jcs247841. doi:10.1242/jcs.247841