

FIRST PERSON

First person – Maria Pons-Vizcarra

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. Maria Pons-Vizcarra is first author on 'MUNC18-1 regulates the submembrane F-actin network, independently of syntaxin1 targeting, via hydrophobicity in β -sheet 10', published in JCS. Maria is a PhD student in the lab of Matthijs Verhage at Vrije Universiteit Amsterdam, where she investigates the mechanisms of dense core vesicle release.

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

Hormones are molecules that regulate behavior and physiology. Hormones are released in our bodies by different glands; one of these glands is the adrenal gland, which is localized on top of the kidney. Chromaffin cells are the cells in the adrenal gland, which especially secrete the hormones adrenaline and noradrenaline. Among others, these hormones play a role in our body's acute stress response.

MUNC18-1 is a protein that is very important for the release of hormones: in cells without MUNC18-1 (Munc18-1-knockout cells), there is a severe secretion defect. In these Munc18-1-knockout cells, two additional changes can be observed. First, there is an increase in the protein F-actin, a major component of the cytoskeleton, which is like the 'skeleton' of our cells. Second, the protein syntaxin1, which plays a key role in hormone release, is partly localized to a different position within the cell. In our study, we found that when we alter a small part of the MUNC18-1 protein, F-actin intensity is increased, but syntaxin1 is correctly localized. Using this mutant, we discovered which part of MUNC18-1 is essential for the regulation of F-actin.

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

My 'eureka' moment was when I could reproduce our findings showing increased F-actin using the mutant V263T of MUNC18-1 in knockout cells. We first did a screening including many mutants and this was the only one that showed a clear phenotype. However, the variability in my experiments was quite high and I was really afraid that this could 'mask' the results. It was an experiment where the researcher performing imaging and analysis was blind to the experimental conditions, so I did not know till the very end if the results of the screening were real or not. Completing the analysis of Figure 3, where I included all the proper controls, and realizing that the results were so clear was one of the best moments of this project. Furthermore, these results showed us for the first time that MUNC18-1 regulates F-actin and syntaxin1 independently – a very important finding.

Why did you choose Journal of Cell Science for your paper?

JCS was our first option to publish our manuscript because it is a renowned journal and a reference for cell biology studies. Matthijs Verhage's group had published in JCS before and we thought this



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manuscript fitted well within the journal's scope. I also like that it has this 'First person' section that can help young researchers, like me, to meet each other and to get to know new labs that may be interesting for future career plans.

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?

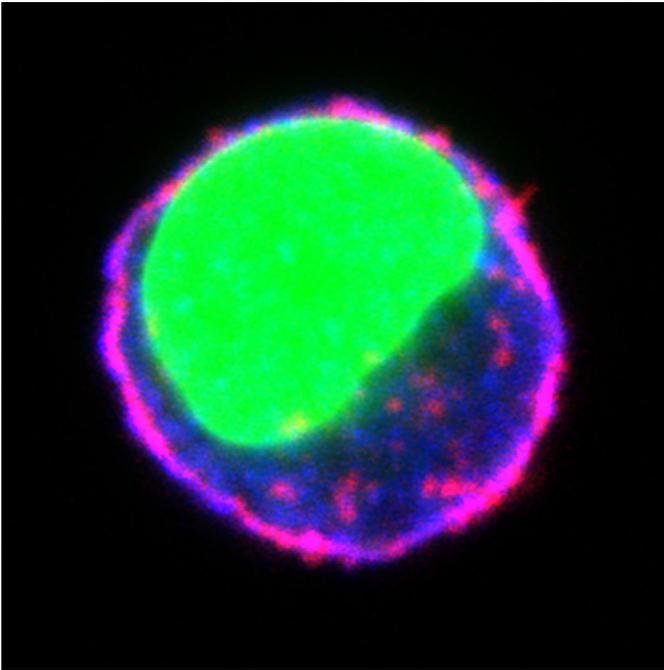
I studied in Barcelona, close to my hometown, and for me the most interesting and challenging moment was when I decided to move abroad. That was almost 6 years ago, when I just finished my bachelor degree in biochemistry. After being awarded with a scholarship to do an internship abroad I moved to Leuven (Belgium). There, I worked on a project in which we studied neuropeptides in *Drosophila melanogaster*. This allowed me to learn many new techniques, grow as a scientist and also as a person. In addition, as I realized how the experience of living abroad had enriched me, I decided I also wanted to do a PhD abroad (which is what I am doing now in Amsterdam) and pursue a career in science.

Who are your role models in science? Why?

I do not have a particular role model in science; in general, I admire all the women that were perseverant and dedicated to pursue a scientific career, achieving great results and making many discoveries important to our society.

In line with this, I would like to highlight Margarita Salas; she was a great Spanish scientist who passed away in November 2019. I admire her because she was one of the first to introduce molecular biology and biochemistry research in Spain. And because, as a woman in the sixties, she had to fight a lot to be recognized as the great researcher she was. She was, during her whole life, tireless in denouncing the situation of discrimination against women in science.

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Confocal image of *Munc18-1*-knockout mouse chromaffin cells expressing MUNC18-1(V263T). Green, nucleus-targeted Cre-eGFP signal reporting MUNC18-1(V263T) lentivirus expression. Red, Rhodamine-Phalloidin staining used to visualize the cytoskeletal component F-actin. Blue: anti-syntaxin1 antibody staining used to visualize syntaxin1 localization.

What's next for you?

I still have 8 months till my PhD contract finishes, so I expect to obtain my PhD degree next year. After that, I would like to start working as a postdoctoral researcher and continue my academic career in the field of molecular neuroscience.

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

The practise of a team of people forming 'Human towers' (castells) during festivities is part of the culture of Catalonia. I am a very proud member of the human tower team of my hometown, Moixiganguers d'Igualada. Even though I cannot be part of the team as often as before because I live abroad, I still follow them as much as I can on social media. I really like this tradition because, to achieve the goal of assembling and disassembling the tower, people – of all ages and socially very different – work together as a team. Sometimes I think that in science we should learn to cooperate and work together for a common goal more often, to overcome challenges more easily.

Reference

Pons-Vizcarra, M., Kurps, J., Tawfik, B., Sørensen, J. B., van Weering, J. R. T. and Verhage, M. (2019). MUNC18-1 regulates submembrane F-actin network, independently of syntaxin1 targeting, via hydrophobicity in β -sheet 10. *J. Cell Sci.* **132**, 234674. doi:10.1242/jcs.234674