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FIRST PERSON

First person – Fernando Salgado-Polo

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. Fernando Salgado-Polo is first author on 'Sequence-dependent trafficking and activity of GDE2, a GPI-specific phospholipase promoting neuronal differentiation', published in JCS. Fernando is a PhD student in the lab of Anastassis Perrakis at The Netherlands Cancer Institute, Amsterdam, The Netherlands, investigating biochemical characterization of (lyso)phospholipases and their biological roles in cell signaling.

Fernando Salgado-Polo

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

Neuroblastoma is one of the most common cancer types in children, and happens when some motor neurons keep dividing uncontrollably. Glypican 6, among many other proteins on the surface of the cell, can get messages across telling cells to keep dividing. In our lab, we identified that a protein on the cell membrane, called GDE2, can shed glypican 6 off the cell surface, making cells less cancerous. In this work, we aimed to explain why GDE2 is sometimes found on the cell surface, where it is active, and some other times in vesicles inside the cell, where it would be inactive. To figure this out, we chopped off pieces of GDE2, and we discovered a sequence that forces GDE2 to leave the cell surface and go inside the cell. Eventually, we saw that this related to more glypican 6 being present on the surface, making neuroblastoma cells divide more. In the future, we will explore which other proteins take part in making GDE2 go into vesicles. This will help us get a better picture of its role in neuroblastoma and, possibly, neurodegenerative diseases.

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

When we performed experiments to determine if the GDE2 truncations caused distinct phenotypes, our unanimously agreed least-favorite was the quantitation of internalization and recycling rates by biotin labeling. As part of the revision of the paper, we had to first optimize a working protocol with a cell line, as well as get technically reproducible results, which meant my co-author Elisa Matas-Rico and I had to work for very long hours in the lab for a couple of months. Eventually, we managed to get it all to work and fulfill the reviewers' expectations. Going through this made me recall once again how gratifying science is when hard work has its reward.

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

I think our shared 'eureka' moment was the time we observed the subcellular localization of each truncation when using inducible stably transfected cells. Upon taking a first glimpse on the microscope, it was clear to both of us that the 'trend' we were seeing with transient transfections was in fact a real phenotypic difference.

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

The Journal of Cell Science appealed to us because of its focus on fundamental research in the field of cell biology, which is why we thought our story would be a fit. Moreover, JCS is published by a not-for-profit organization with an interdisciplinary audience, which warrants a broad audience.

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?

Contrary to what most people would respond to this question, biology was admittedly one the subjects I liked the least in high school – age 12–15. However, it was around this time when my uncle, who worked as a biotechnologist, passed away in an unexpected way. I think this was one important factor that made me focus my attention on biochemistry and physics in the coming years. Regarding milestones that shaped me professionally, I would say that moving to The Netherlands to take my master's degree has arguably had the biggest effect on my career in science. In large part because this allowed me to get out of my comfort zone and work in two well-known Dutch research institutes with an international and multidisciplinary environment. Our article in JCS is a very good example of this, since it mainly involved cell biology and microscopy techniques that I had no experience with as an undergraduate student. Honestly, I believe having a change of scene and research groups can only enrich your training and education as a scientist, and I highly recommend people who are unsure about it to take that chance and go for it.

Who are your role models in science? Why?

I was studying biochemistry at the Complutense University of Madrid when the European financial crisis started to damage

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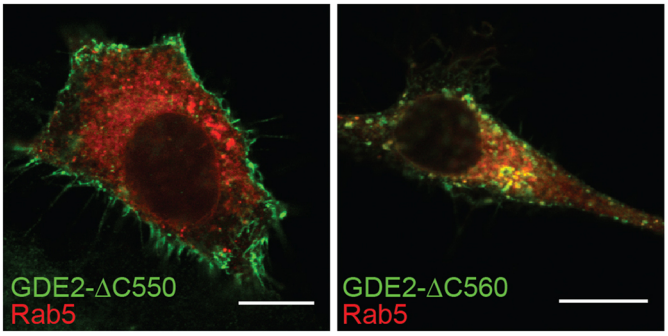

C-terminal tail truncations uncover unique regulatory sequences. Confocal images of N1E-115 cells co-expressing the indicated GDE2 C-terminal truncations and Rab5–mCh as a marker for early endosomes. Scale bars: 10 µm.

science in Spain. During my university years, I admired many motivated scientists who were and are still passionate about biochemistry and molecular biology despite the lack of resources they face. One such example is Dr Cristina Casals, who kindly hosted me as an undergraduate student. Her passion both in lectures and in the lab was contagious and made research really appeal to me up to this day. This further confirmed to me that my research path should always include protein biophysics and lipid research as constants, since that is what I truly love doing.

What's next for you?

In the short/medium term I will be working on finishing up other projects as part of my PhD. I expect to finish by the second half of 2021 (let's see if my prediction stands by then!), after which I would like to take up a job as a postdoctoral researcher and continue my career trying to combine structural biology and cell biochemistry – since I can't make up my mind which one I prefer.

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

Beyond all doubt, learning languages is one of my passions in life, which has held true ever since I was in middle school. I really enjoy knowing what the logic behind a language is, what sounds people use to communicate, and how culture has shaped dialects and accents into what they are nowadays. Of course, I will take any chance to practice with a native speaker, which is easy in such an international and friendly environment like the Netherlands Cancer Institute. However, sometimes this means I will try to think in five different languages while doing experiments at work… Aside from this, I enjoy having beers after work on Fridays (*borrelen* in Dutch), going clubbing with friends, and traveling. The latter has been partly restricted to Madrid lately, since I became the proud uncle of a gorgeous baby boy last May.

Reference

Salgado-Polo, F., van Veen, M., van den Broek, B., Jalink, K., Leyton-Puig, D., Perrakis, A., Moolenaar, W. H. and Matas-Rico, E. (2020). Sequence-dependent trafficking and activity of GDE2, a GPI-specific phospholipase promoting neuronal differentiation. *J. Cell Sci.* **133**, 235044. doi:10.1242/jcs.235044