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FIRST PERSON

First person – Daniel Lagunas-Gomez

First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping researchers promote themselves alongside their papers. Daniel Lagunas-Gomez is first author on 'The C-terminus of the cargo receptor Erv14 affects COPII vesicle formation and cargo delivery', published in JCS. Daniel is a PhD student in the lab of Omar Pantoja at the Instituto de Biotecnología, Universidad Nacional Autónoma de México, Cuernavaca, México, investigating membrane trafficking using yeast and plants as model systems.

Daniel Lagunas-Gomez

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

Our cells are compartmentalised by the presence of several organelles limited from the cytoplasm by a surrounding membrane that requires the continuous exchange of proteins and lipids for their correct functioning. The secretory pathway plays an important role in this process, beginning at the endoplasmic reticulum and finishing at the membrane of each organelle or at the plasma membrane. We made use of brewer's yeast as a model system to study how membrane proteins are selected and packed into COPII vesicles with the help of cargo receptors and transported to the plasma membrane. Erv14/cornichon proteins are a family of cargo receptors, present from yeast to humans, that are required for the selection and packing of membrane proteins within COPII vesicles. However, not much is known about how these receptors are regulated by post-translational modifications – that was the focus of my research. Our study helps to improve our understanding of how a potential phosphorylation site (S134) at the C terminus of Erv14 regulates the function of this cargo receptor and its role in controlling the trafficking of plasma membrane proteins, indicating that a phosphorylation–dephosphorylation cycle is important for the functioning of Erv14.

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

One of the main aims of my project was to demonstrate the phosphorylation of Erv14. Initially, we attempted to obtain this evidence by proteomics analysis; however, this was unsuccessful. Therefore, I had to invest a lot of time in standardising alternative assays to reach this goal. After this, and a careful analysis of my results, together with the generation of mutations at the putative phosphorylation site, I was able to show the importance of S134 in regulating the function of the cargo receptor.

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

Yes, when I was able to demonstrate that the S134D mutant of Erv14 prevents the formation of COPII vesicles, it was very exciting. To do this work, I went to the lab of Dr Charles Barlowe, who developed this methodology. During this period, I was very nervous, as this was very important evidence that I needed to support my previous results and to propose the conclusions we reached in the article.

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

First, because of the very good reputation of JCS, and second, because it is a journal mainly focused on cell biology. I hope these characteristics will allow more researchers working in vesicular trafficking to evaluate my contribution.

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

Dr Omar Pantoja, my PhD mentor, has always been a source of motivation and support throughout my training. He always trusted me and gave me the freedom to plan my research project, as well as the experiments to employ, and discuss the results, more so when these were unexpected. The long discussions we had over the years helped me to improve the structure of my project; it also allowed me to be an independent researcher. I am also thankful to Dr Charles Barlowe for kindly accepting me in his lab and allowing me to complete a series of experiments that were important for my project.

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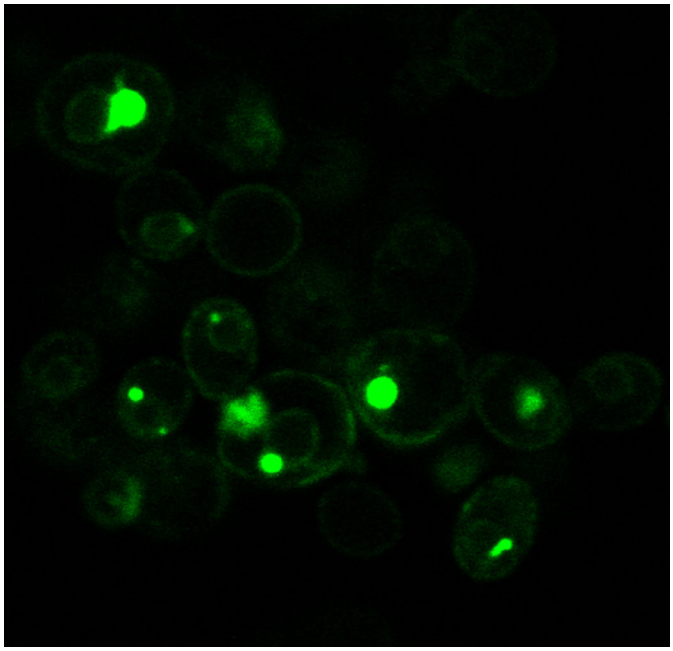

Confocal microscopy image of yeast cells showing changes in Nha1 localisation caused by mutation of S134 of the receptor Erv14.

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?

It has been 14 years since I started university, and now I am about to obtain my PhD degree; it has been a path full of ups and downs. I like every aspect of science: asking the questions, carrying out the experiments, trying different experimental approaches until the answer is reached, analysing the data to discover its meaning, and finally, writing up the article and hoping to have it published.

Who are your role models in science? Why?

I do not think there is a model to follow in science. I admire scientists who are passionate about their research and don't do it to maintain their 'status'. They are good mentors, who inspire all the members of the group.

What's next for you?

After finishing my PhD, I am thinking of carrying on with a postdoc, either in cell biology or in a different area. I am currently searching for new opportunities.

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

I like travelling to new places and exploring local cuisines, including local beers. I play football because I think combining sports with science is amazing, and doing sports always helps to refresh your mind.

Reference

Lagunas-Gomez, D., Yañez-Dominguez, C., Zavala-Padilla, G., Barlowe, C. and Pantoja, O. (2023). The C-terminus of the cargo receptor Erv14 affects COPII vesicle formation and cargo delivery. *J. Cell Sci.* **136**, jcs260527. doi:10.1242/jcs.260527