

FIRST PERSON

First person – Matías Capella

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. Matías Capella is first author on 'ESCRT recruitment by the *S. cerevisiae* inner nuclear membrane protein Heh1 is regulated by Hub1-mediated alternative splicing', published in JCS. Matías conducted the research described in this article while a postdoc in Prof. Dr Stefan Jentsch's lab at the Max Planck Institute of Biochemistry, Munich, Germany. He is now a postdoc in the lab of Dr Sigurd Braun at the Biomedical Center Munich, Ludwig-Maximilians-Universität, Munich, investigating the regulation of repetitive DNA stability.

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

In eukaryotic cells, the nuclear envelope is an essential barrier that physically separates the nucleus from the cytoplasm. Ruptures in this double lipid bilayer membrane can be catastrophic, but luckily our cells deal with this problem by using a repair pathway that involves the membrane remodelling machinery known as ESCRT. In yeast, this surveillance system is recruited to the damaged site through an interaction between the ESCRT adaptor Chm7 and the nuclear membrane protein Heh1-L. However, how cells prevent the excessive recruitment of ESCRT proteins to nuclear ruptures, which is detrimental for cell growth, is still unclear. In our work, we show that the shorter spliced variant Heh1-S modulates ESCRT recruitment to the nuclear envelope by regulating the association between Chm7 and Heh1-L.

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

The biggest challenge that I faced was after the unforeseen death of my first postdoc supervisor Prof. Dr Stefan Jentsch. All of a sudden, I was unsure what to do and where to go next (even leaving academic science crossed my mind), but I never gave up. Due to some overlap with our topics, I contacted my current supervisor Dr Sigurd Braun. He allowed me to join his lab with my own projects, and, although I initially focused more on another one, I never gave up thinking about this story. After a while, we decided that it was time to wrap up the work we have just published in JCS.

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

I definitely had that moment! For a really long time, we knew that cells lacking Heh1-S and ESCRT members presented a synthetic growth defect, but did not understand why. Then, a paper from the Lusk lab came out, showing a link between Heh1-L, Chm7 and the nuclear envelope. We decided to go in that direction and observed that deletion of *CHM7* rescued the growth defect of our mutants.

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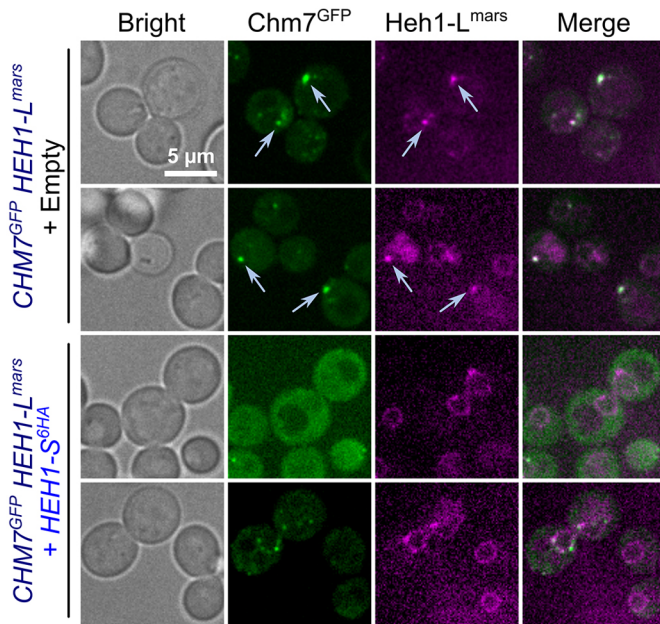
In that particular moment, we realized that Heh1-S has a role in nuclear envelope integrity.

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

Journal of Cell Science is a well-known journal that publishes fundamental molecular and cell biology papers of high quality, and we thought it could be an excellent fit. It was indeed our first choice.

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

I have been lucky, because all my supervisors have contributed to my further development both as a scientist and as a person. In particular, my PhD supervisor Dr Raquel Chan taught me how to be an independent researcher and gave me the chance to test my own hypotheses. Even now, years after leaving her lab, she is still helping me to improve. For my postdoc, I was lucky to join the lab of Prof. Dr Stefan Jentsch at the Max Planck Institute of Biochemistry. There, I learned a lot from discussions with him and members of his lab, especially how to see the big picture. Finally, my current supervisor Dr Sigurd Braun has been very supportive and allowed me to work on my own independent research when I joined his lab. He also helped me develop some soft skills that will be extremely useful for the next step of my scientific career.



Live-cell images showing Chm7^{GFP} and Heh1-L^{mars} colocalization (top), which is partially impaired by the presence of Heh1-S (bottom). Arrows denote strong Chm7^{GFP} and Heh1-L^{mars} accumulation.

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 was always intrigued about biology in general. But when I heard my PhD supervisor Dr Raquel Chan for the first time in one of her lectures, I knew what I wanted to do. Seeing her enthusiasm for science definitely influenced me. She always encouraged and

supported me, and gave me the tools and the knowledge to be a good scientist. Nowadays, every time I hear a talk from a person who is excited about their project, or discuss some intriguing results, I am reminded of how much I like science. I love what I do and I can't picture myself doing anything different.

Who are your role models in science? Why?

I did my PhD in Argentina, where our resources are quite limited and doing science is not always easy. Unquestionably, my role models are all the Argentinian researchers who, in spite of everything, keep going to do outstanding science. I also get my inspiration from those scientists that went abroad but returned with the idea of improving research in our country.

What's next for you?

Currently, I am finishing another project that deals with the maintenance of repetitive DNA regions. After that, I am planning to apply for positions where I can start my own group.

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

When my friends and I were getting our master's degrees, we decided to start making videos with all the different photos that we took while studying. I took over the task and learned by myself how to generate slideshows with different effects, video editing and even 3D modelling using freeware! It escalated quite quickly, and I ended up making videos for the wedding of some friends. I also enjoy spending time with my wife, watching series/movies and drinking maté.

Reference

Capella, M., Martín Caballero, L., Pfander, B., Braun, S. and Jentsch, S. (2020). ESCRT recruitment by the *S. cerevisiae* inner nuclear membrane protein Heh1 is regulated by Hub1-mediated alternative splicing. *J. Cell Sci* 133, jcs250688. doi:10.1242/jcs.250688