

FIRST PERSON

First person – Cansu Küey

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. Cansu Küey is first author on 'Unintended perturbation of protein function using GFP nanobodies in human cells', published in JCS. Cansu is a PhD student in the lab of Steve Royle at Centre for Mechanochemical Cell Biology, Warwick Medical School, Coventry, UK, where she is interested in developing novel tools that would allow us to answer membrane trafficking questions.

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

Our aim in this paper was to combine two existing tools used in cell biology: 'knocksideways', which allows us to move proteins inside



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the cell to specific locations, and the power of green fluorescent protein (GFP). As there are already many cell lines with GFP-tagged proteins, we wanted to make them suitable for knocksideways experiments by developing a 'dongle' that has a GFP-binding nanobody and a domain to allow knocksideways. This way we can move the protein we are interested in to the location we want in the cell. We managed to do this; however, we realized that when the dongle binds, it perturbs the function of the target protein. We decided to report this potential issue with the dongle system in our manuscript. Dongles and nanobodies have many potential uses, but their use needs to be carefully validated in experiments where the function of the protein of interest is crucial.

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

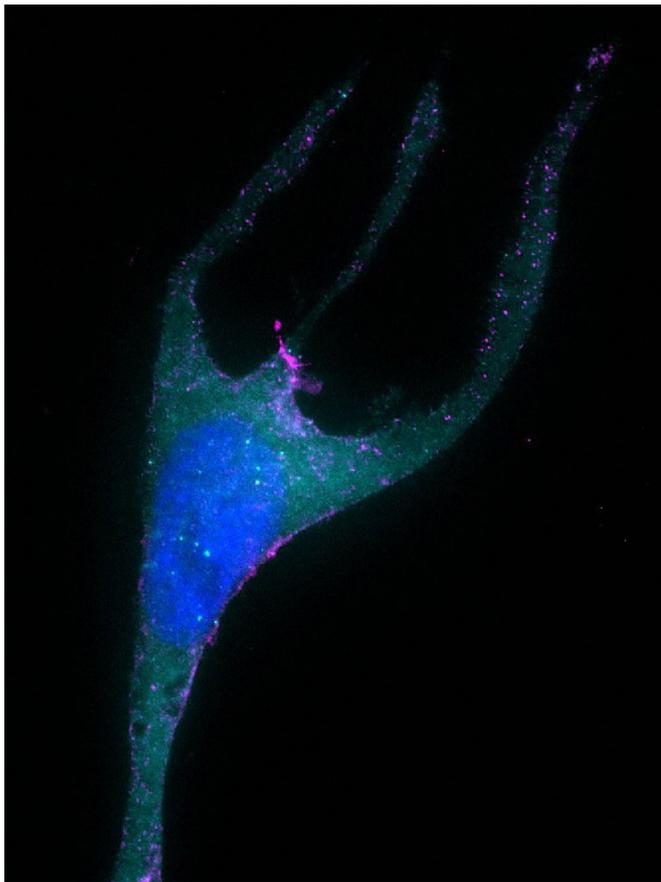
I took over this project as a rotation student in the lab, and wanted to pursue it to the end of the story. Once we realized the effect of dongles and nanobodies on the function of the target proteins, we needed to rule out other possibilities for the perturbation of protein function until we could conclude the perturbations were caused by the dongle itself. This might be seen as a long time to spend on negative data, but I think science is a detective job sometimes and you shouldn't leave the thread until you reach the end. Nanobodies are widely used by many labs as if they are totally benign. I believe that publishing negative or contradicting results helps the science community because you will prevent people doing the same research all over again somewhere else in the world.

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

My lab has published in JCS before, so we knew that the entire review process would be fast and clear. Also, JCS cares about the scientific community, so it is a great place to reach out to other cell biologists.

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 quit science after my masters and worked in marketing for a bit. I got back to science to do a PhD because I missed the creativity and autonomy that science gives you. Following a specific question and



Poseidon's trident – one of the first images taken in the lab by Cansu Küey.

The image shows an SK-MEL2 cell with endogenously GFP-tagged dynamin 2 (cyan), a nucleus (blue) and Alexa Fluor 568-conjugated transferrin (magenta). The cell is treated so that transferrin uptake is very low. This cell caught my eye because of its unusual shape. It looks like Poseidon's trident or maybe an inflatable air dancer. While not suitable for analysis, it was fun to image!

Cansu Küey's contact details: Centre for Mechanochemical Cell Biology, Warwick Medical School, Gibbet Hill Road, Coventry CV4 7AL, UK.
E-mail: c.kuey@warwick.ac.uk

building up theories on your findings piece by piece is a meticulous process that I enjoy.

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

I am a cinephile and I combined my passion for science and films by founding a science communication project together with two other PhD students. We recently held our first workshop that brought artists and scientists together to create

short films about research on human health at University of Warwick and we are hoping to do it again next year. You can find more information about it on our website: www.labcutsciencefilms.org.

Reference

Küey, C., Larocque, G., Clarke, N. I. and Royle, S. J. (2019). Unintended perturbation of protein function using GFP nanobodies in human cells. *J. Cell Sci.* **132**, jcs234955. doi:10.1242/jcs.234955