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FIRST PERSON

First person – Sina Krokowski

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. Sina Krokowski is first author on '*Shigella* MreB promotes polar IcsA positioning for actin tail formation', published in JCS. Sina conducted the research described in this article while a PhD student in Serge Mostowy's lab at Imperial College London, UK. She is now a postdoc in the lab of Andres Floto on the Cambridge Biomedical Campus, Cambridge, UK investigating the cell biology underlying host–pathogen interactions, and specifically cell autonomous immunity towards bacterial pathogens.

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

The bacterium *Shigella flexneri* is an important human pathogen that causes diarrhoea, abdominal cramps and inflammatory destruction of the gut epithelium. *S. flexneri* can invade the gut epithelium and causes the host cell to polymerise the cytoskeleton actin to form a 'tail' that propels the bacterium through the cytoplasm and into neighbouring cells. Actin tail formation relies on the localisation of the bacterial protein IcsA to cell pole, where it recruits the host actin polymerisation machinery. However, it was poorly understood how IcsA specifically localized to the bacterial cell pole. In our fluorescence microscopy-based study, we discovered that MreB, the bacterial homologue of actin, helps to position IcsA at the bacterial cell pole, which promotes bacterial actin tail formation.

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

The biggest challenge of this project was to fluorescently label the bacterial MreB cytoskeleton. The construction of fluorescent fusions to cytoskeletal proteins is challenging and, on top of that, I had never constructed a fusion protein before. We were lucky enough to collaborate with Arnaud Chastanet and Rut Carballido-López, two amazing scientists and MreB experts. Thanks to a Travelling Fellowship from The Company of Biologists, I was able to visit Rut's lab in France for two months to construct my MreB–GFP fusion. However, I quickly realized that, even in the best possible settings, science can be tricky, as none of my attempts to construct a fluorescent fusion to MreB worked. However, I did not give up and with the knowledge I acquired in France, I was finally able to construct my MreB–GFP sandwich fusion back in the lab in London.

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

When I finally managed to construct my MreB–GFP fusion and I could see it under the microscope for the first time. Going through the whole process of constructing my own fusion proteins really made me appreciate how amazing it is that we can tag bacterial proteins to understand their cellular localization and follow them over time during the infection process!

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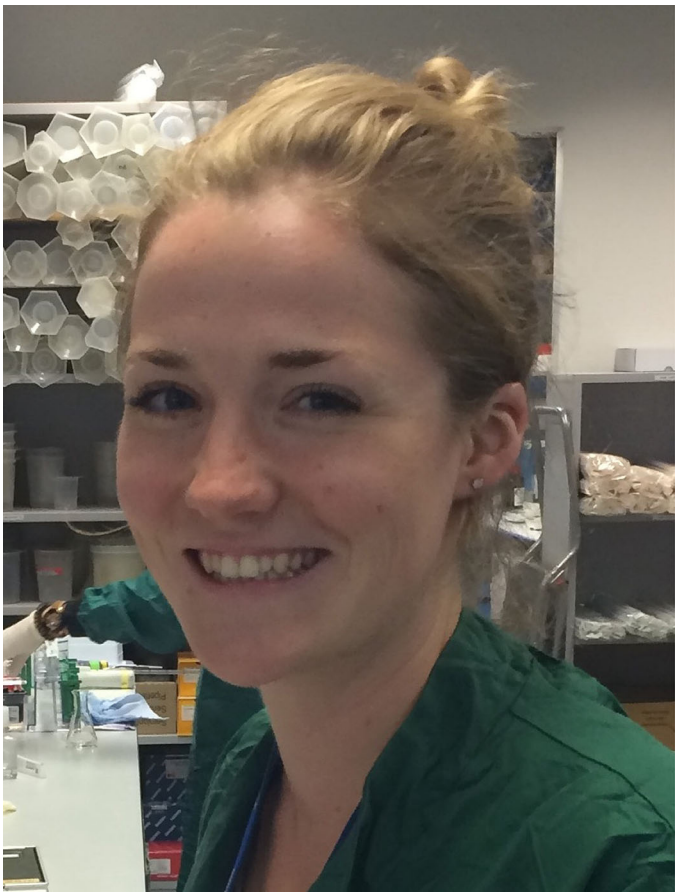

Sina Krokowski

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

The name says it all: JCS publishes beautiful science covering the full breadth of cell biology topics. Especially while writing my PhD thesis introduction, I came across several high-quality articles from this journal. Additionally, choosing JCS was like closing a circle as they supported me at the very beginning of my project with a Travelling Fellowship so it only felt right to go back to JCS with our completed story.

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

This project is a great example of several international scientists, who come from different backgrounds, working together on the same project. I had great support inside and outside the lab from my own group as well as from the Carballido-López group in Paris and the Salje group in Oxford, Bangkok and New Jersey. Coming together for scientific discussions (and more) significantly helped advance the project, as well as my personal development. Thank you!

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 recognized my deep interest in understanding the molecular basis of diseases during my work experience at the University Hospital in

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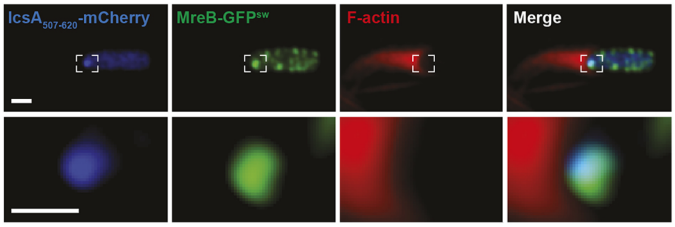

Airyscan confocal image of *Shigella flexneri* producing MreB-GFP and IcsA$_{507-620}$-mCherry, which form an actin tail inside a HeLa cell.

Essen (Germany). Since then, tackling – and sometimes solving – new scientific riddles has strengthened my wish to pursue a career in science. It was also great to have Serge as my PhD supervisor, who has been fully supportive of my career in research and really enabled me to experience science.

Who are your role models in science? Why?

My role models are all women in science who manage two groups: their family and their lab. I admire the many mums who do amazing science without sacrificing a family life, and I am inspired by their passion and dedication.

What's next for you?

I have just started in the Floto group at the MRC LMB in Cambridge. For my postdoc, I wanted to change my scientific direction while building on my existing experience. Therefore, I picked a lab that has a lot of expertise in using cutting-edge genetic approaches, where I can apply my microscopic background for phenotypic analysis. In the longer term, I would like to have my own group investigating host–pathogen interactions while also teaching the beauty of cell biology.

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

It is more embarrassing than interesting, but I must admit I love British reality TV!

Reference

Krokowski, S., Atwal, S., Lobato-Márquez, D., Chastanet, A., Carballido-López, R., Salje, J. and Mostowy, S. (2019). *Shigella* MreB promotes polar IcsA positioning for actin tail formation. *J. Cell Sci.* **132**, jcs226217. doi:10.1242/jcs.226217