

FIRST PERSON

First person – Shafali Gupta

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. Shafali Gupta is first author on 'Enhanced RhoA signaling stabilizes E-cadherin in migrating epithelial monolayers', published in JCS. Shafali is a postdoc in the lab of Alpha S. Yap at Institute for Molecular Bioscience, The University of Queensland, Brisbane, Australia, investigating the critical mechanisms behind different cellular processes.

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

Life is vibrant; a butterfly characteristically lives through two distinct phases of life before it flaps its wings, a hungry animal runs 100 mph to chase its next meal, a tiny plant climbs several inches to get essential sunshine. In the human body, many cells also move and work together in a dynamic fashion. During embryonic development, cells migrate over long distances to perform their required function, and defects in cell migration at any stage of development may lead to severe embryonic malformations. Cell migration is also involved in pathological processes like cancer metastasis, in which cancer cells move away from the primary tumour site to the lumen of blood vessels, and with the help of the bloodstream, they reach other organs to form secondary tumours. In the past few decades, collective cell migration (CCM), which can be simply described as the 'coordinated movement of groups of cells', has been an extensive topic of research, but its underlying mechanisms appear to be much more complex. In my research, I focus on understanding CCM of epithelial cells. Epithelial cells function as a protective barrier and line the surfaces of organs in the body. They display CCM that is distinguished from other forms of CCM as they migrate while preserving physical connections between the cells. I mainly focus on understanding how enhanced RhoA signalling stabilizes E-cadherin to promote orderly collective migration of epithelial cells. Upon manipulating GTP-RhoA (the active form) by knocking down anillin (a scaffolding protein which has a binding site for GTP-RhoA), I observed diminished activation of RhoA during migration and loss of orderly movement of cells, highlighting the importance of upregulated GTP-RhoA levels in this process.

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

My 'eureka' moment was when we imaged the first movie of an increase in RhoA intensity at cell-cell junctions using an AHPH biosensor (which serves as a proxy for GTP-RhoA). We optimised this as much as we could with an earlier time scale, but unfortunately, I was never able to capture an increase. It was an experiment where I set up an overnight live cell imaging experiment like any other and ended up not analysing it for quite some time. Completing the analysis of Fig. 2A and Fig. 5B in the paper, where I included all the experimental controls, was easily the best moment of this project.

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Shafali Gupta

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

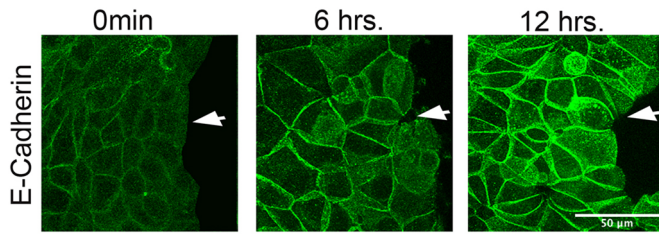
JCS was our first option to publish this manuscript because it's a well-recognised and renowned journal of the field. Dr Kenneth Wee from Alpha Yap's group had published in JCS before and we thought that this story also fitted well for the journal. Additionally, the fast decision timelines offered by the journal make it easier for researchers to publish their work quickly.

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

I am extremely lucky to have a PhD mentor like Prof. Alpha Yap. I had a lot of freedom in the project to plan and execute the experiments the way I wanted to, which helped me in becoming an independent researcher. Additionally, Prof. Alpha taught me how to be critical towards my data, and also how to have productive collaborations inside and outside (with overseas colleagues) the lab.

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 come from a small town in India and opportunities there can seem limited. I have persevered against all odds to come to where I am today. If you had asked me 10 years ago if what I have today can realistically be achieved, I might have just laughed and shrugged off the thought. While growing up, I never had a role model or any working women around me who could inspire me. Fortunately, I got to be a Junior Research Fellow at one of the top-most research institutes of India, TIFR (Tata Institute of Fundamental Research). Here, I did my research under Dr Ankona Datta. She did her PhD research at Princeton University and her post-doctoral research at



Junctional E-cadherin in migrating MCF-7 cells over time.

UC Berkeley, USA. She was the first working woman I interacted with and she inspired me in so many ways. She gave me the vision to pursue a career in science.

Who are your role models in science? Why?

My role model in science is Kiran Mazumdar Shaw. She is the chairperson and founder of Biocon, India (one of India's biggest pharmaceutical companies). Her strong determination, passion for her work and ability to fight against the social mindset is something which inspires me the most.

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

Apart from science, I love to play badminton, dance, ride my bike and indulge in other adventurous activities.

Reference

Gupta, S., Duszyc, K., Verma, S., Budnar, S., Liang, X., Gomez, G. A., Marcq, P., Noordstra, I. and Yap, A. S. (2021). Enhanced RhoA signaling stabilizes E-cadherin in migrating epithelial monolayers. *J. Cell Sci.* **134**, jcs258767. doi:10.1242/jcs.258767