

FIRST PERSON

First person – Nannan Gao

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. Nannan Gao is first author on 'Respiratory syncytial virus disrupts the airway epithelial barrier by decreasing cortactin and destabilizing F-actin', published in JCS. Nannan is a postdoctoral fellow in the lab of Fariba Rezaee, at the Cleveland Clinic, Cleveland, OH, investigating the impact of respiratory viral infection and environmental factors on airway epithelial barrier.

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

The airway epithelium is the first line of defense of our respiratory system, and airway epithelial cells are major targets of inhaled pathogens such as respiratory viruses. Respiratory syncytial virus (RSV) is the leading cause of small airway infection globally. We know that RSV infection disrupts the airway barrier and leads to inflammation by breaking the connections between neighboring airway epithelial cells, but there is a knowledge gap on how this happens. Our paper reveals that RSV disrupts the airway epithelial barrier by destabilizing the cytoskeleton actin network. More interestingly, we identified that RSV achieves this by decreasing the levels of a protein called cortactin in epithelial cells and therefore inhibiting the Rap1 pathway.

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

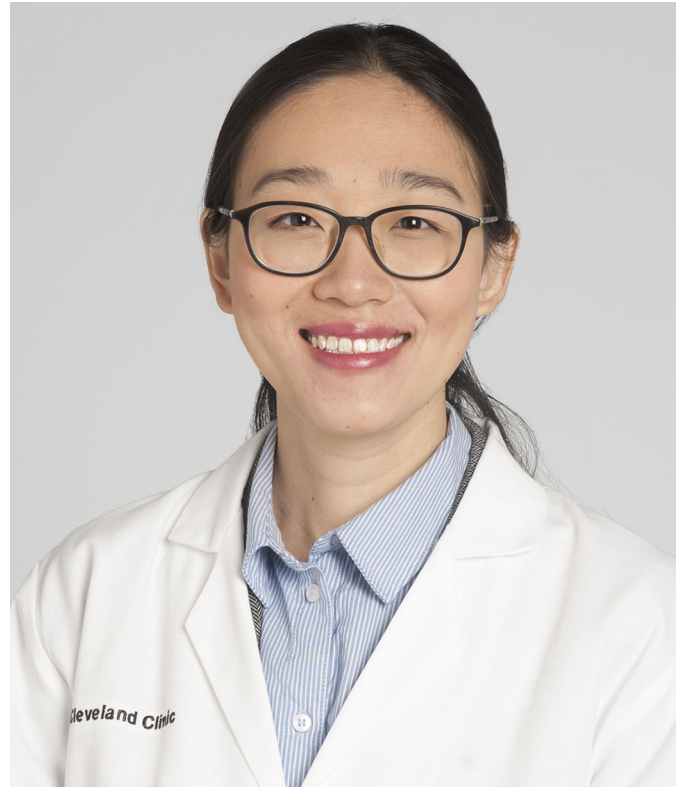
Navigating through the paperwork to get material transfer agreements (MTAs), new protocols, specific reagents and biohazard materials approved are challenging. I overcame these challenges by working closely with my PI, co-authors and our administration team, especially the Institutional Biosafety Committee. Communication about the timelines and expectations is crucial to getting things done in time.

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

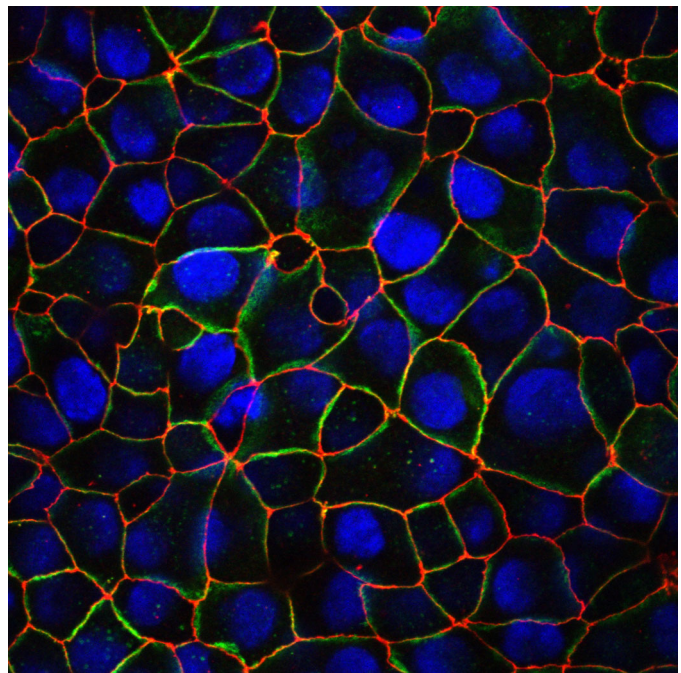
When I saw a consistent decrease of the protein of interest across different *in vitro* and *in vivo* models in my project, I couldn't have been more excited.

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

Journal of Cell Science has focused on new insights and scientific excellence in cell biology over its long history. We appreciate that the Journal of Cell Science is pushing our understanding about how cells react and respond to environment by publishing high quality research with a transparent reviewing process, which makes this journal a perfect candidate to submit our paper.



Nannan Gao



Epithelial cell monolayer showing a 'chicken wire' pattern of a tight junction protein (ZO-1, red) and an adherens junction protein (E-cadherin, red). Nuclei are visualized in blue.

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

Dr Jiannan Li, a previous postdoc in my department. She gave me plenty of valuable career suggestions and was generous with her time to help me navigate the paperwork involved in the postdoc visa process.

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?

Curiosity is my biggest motivation, and I enjoy finding out answers to scientific questions, big or small.

When I was in high school biology class and saw mitotic cells in an onion root tip under a very basic microscope for the first time, I was enchanted immediately and had so many questions. I knew back then what I wanted to study in college.

Who are your role models in science? Why?

Rita Levi-Montalcini, the neuro-embryologist who co-discovered the nerve growth factor. She has been my role model in science

because of her persistence, bravery and determination in fighting for a scientific career in a chaotic, dangerous time as a Jewish female in fascist Italy. She was also a fighter in Italian politics, an active researcher, and a devoted mentor.

What's next for you?

To become an independent researcher and understand the pathobiological mechanisms of infectious lung disease.

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

I improved my spoken English by talking to cashiers everywhere I went in the first year of moving to the U.S.

Reference

Gao, N., Raduka, A. and Rezaee, F. (2022). Respiratory syncytial virus disrupts the airway epithelial barrier by decreasing cortactin and destabilizing F-actin. *J. Cell Sci.* **135**, jcs259871. doi:10.1242/jcs.259871