

FIRST PERSON

First person – Syed Qaaifah Gillani

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. Syed Qaaifah Gillani is first author on 'PCTAIRE1 promotes mitotic progression and resistance against antimetabolic and apoptotic signals', published in JCS. Syed Qaaifah conducted the research described in this article while a PhD student in Dr Shaida Andrabi's lab at the Department of Biochemistry, University of Kashmir, India, and as a visiting research scholar at the Biosciences Institute, Newcastle University, UK, and the Dana–Farber Cancer Institute, Harvard Medical School, Boston, USA. She is now a postdoc in the lab of Dr Anja Zeigerer at Helmholtz Zentrum Munich, Germany, investigating the connection of endosomal trafficking to liver metabolism, and its impact on non-alcoholic fatty liver disease and diabetes.

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

Mitosis is regulated by a number of kinases, and alteration in the expression or activity of these kinases is bound to have an impact on cell division. Dysregulation of the activity or expression of many of these kinases results in an uncontrolled growth of cells, leading to tumorigenesis. Additionally, some of these kinases are also responsible for chemotherapy resistance of cancer cells, which is one of the major concerns for efficient cancer treatment. This highlights the importance of identifying such candidates so that they can be characterized in detail. In this context, we screened a library of 196 kinases and identified the kinases that are involved in mitosis and impart resistance against cell death. In particular, among these kinases, our research sheds light on the novel mitotic roles of PCTAIRE1. Our study shows that PCTAIRE1 localizes to the mitotic spindle and also interacts with PP2A and PLK1, which are among the key players of mitotic progression. Additionally, our findings also show PCTAIRE1 to be a kinase that is involved in imparting chemotherapeutic resistance to cancer cells, and thus highlight its significance as a potential drug target to overcome resistance exhibited by cancer cells in response to conventional chemotherapy.

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

Characterization of the kinases identified in the library screen required in-depth mitotic studies, which were technically challenging in the lab, primarily due to limited infrastructure for such studies. Fortunately, we collaborated with outstanding scientists who had immense expertise in mitosis and kinase signaling. This allowed us to perform live-cell imaging and extensive microscopy in addition to various drug assays that helped us to understand the roles of these kinases in detail.

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

I remember when I first detected PCTAIRE1 using immunofluorescence; I was thrilled to see it right at the



Syed Qaaifah Gillani

centrosomes. I was not expecting this, as my main objective was to just observe the localization of PCTAIRE1 with respect to polyomavirus small T (PolST). It was truly a 'eureka' moment for me, as it was an interesting and novel finding, and I was not even looking for it. Nevertheless, it set the direction for our next experiments.

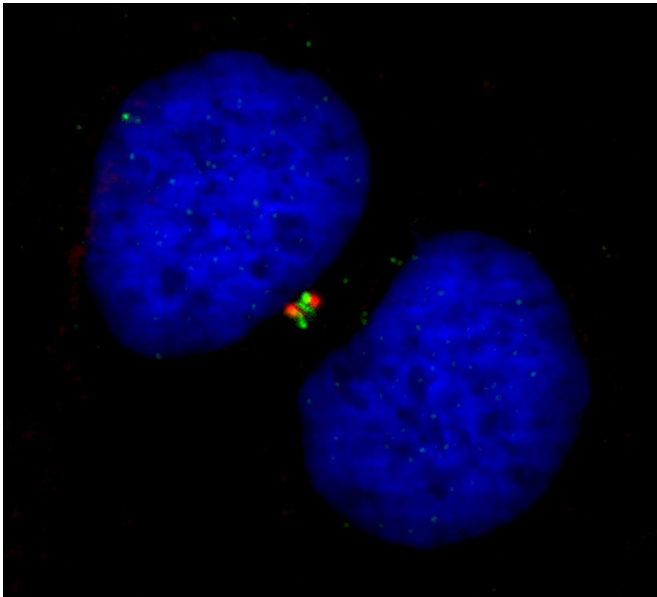
Why did you choose Journal of Cell Science for your paper?

Journal of Cell Science is committed to publishing high-quality research work after an extensive peer review process. It has earned recognition as being an outstanding journal in the field of cell biology and has a broad readership across the scientific community. Since our research encompasses diverse aspects of cell biology, JCS was the best option for our paper to reach a wider scientific audience.

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

I have been fortunate to have had outstanding mentors at every step of my scientific journey. My PhD supervisor, Dr Shaida Andrabi, has been an excellent mentor, and his guidance was fundamental in shaping my research career. He has always supported me and encouraged me to evolve both on a scientific and personal level. I am also grateful to Professor Jonathan Higgins and Professor Thomas Roberts, who supervised me during my research visits to their labs. Their immense expertise in the relevant fields and worthy inputs from time to time were crucial to the findings of this research.

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PCTAIRE1 (red) localizes adjacent to PLK1 (green) at the midbody between the daughter nuclei (blue) in a crisscross orientation during cytokinesis.

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?

Growing up, I was always curious about how cells work and coordinate different biological functions. The more I got to know about it, the more intrigued I became. Therefore, I decided to study biochemistry during college and then pursued my postgraduate studies in the same field. During this period, I was excited to learn about significant scientific breakthroughs, like the discovery of

the revolutionary CRISPR/Cas9 gene editing system, which has revolutionized life science research. These events fuelled my passion to undertake a research career, and thus I pursued my PhD studies. The most interesting moments in my scientific journey also include the times when I secured two different international fellowships as a graduate student that allowed me to connect with eminent scientists at an international level and thus made it possible for me to pursue my PhD research at three different places (in India, the UK and the USA). This experience inspired me further to undertake different challenges and make a significant contribution to science.

Who are your role models in science? Why?

I admire all the eminent scientists who have made noteworthy contributions to science. In particular, Marie Skłodowska-Curie has been a great inspiration for me, as she was full of determination and endured many challenges to achieve her scientific goals.

What's next for you?

I intend to stay in academia and have just started my postdoctoral research. While I want to continue pursuing cellular and molecular biology research, I am also looking forward to broadening the area of my expertise and conducting multidisciplinary research to be able to explore cellular functions using a holistic approach.

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

I am an avid lover of nature and love spending time out in the open. I also love traveling to new places and exploring different cultures.

Reference

Gillani, S. Q., Reshi, I., Nabi, N., Un Nisa, M., Sarwar, Z., Bhat, S., Roberts, T. M., Higgins, J. M. G. and Andrabi, S. (2022). PCTAIRE1 promotes mitotic progression and resistance against antimitotic and apoptotic signals. *J. Cell Sci.* 135, jcs258831. doi:10.1242/jcs.258831