

FIRST PERSON

First person – Bhawik Kumar Jain

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. Bhawik Kumar Jain is first author on 'The golgin *PpImh1* mediates reversible cisternal stacking in the Golgi of the budding yeast *Pichia pastoris*', published in JCS. Bhawik Kumar conducted the research described in this article while a graduate student in Dr Dibyendu (Dib) Bhattacharyya's lab at the Advanced Center for Treatment Research & Education in Cancer (ACTREC), Mumbai, India. He is now a Postdoctoral fellow in the lab of Prof. Todd Graham at the Department of Biological Sciences, Vanderbilt University, Nashville, TN, where he investigates membrane trafficking.

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

Our human body is made up of millions of cells, and each cell has different compartments that perform specialized functions; these are called organelles. Our organelle of interest is the Golgi because it works as a packaging center of the cells. It modifies lipids and proteins, and sorts them to their destinations. The Golgi is made up of sacs called cisternae. These cisternae have different enzymes to modify the contents depending on the target destination. The Golgi displays variable shapes in different species, from dispersed cisternae in the yeast *Saccharomyces cerevisiae*, to stacked cisternal structure in the yeast *Pichia pastoris* and laterally connected ribbons of cisternal stacks in vertebrates. We were interested to understand the potential proteinaceous adherent factors that hold Golgi cisternae together in a single stack.

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

The major challenge of this project was to identify and screen the candidate proteins responsible for cisternal stacking. We started with the unbiased approach of screening cisternal stacking mutants, but that did not work out. Then we planned to target membrane proteins, which can form a contact between two membrane sites. We selected the golgin class of proteins, which can dimerize and form a contact between two membrane sites. Our primary technical challenge was to perform electron microscopy of the yeast strains in our institute and get good quality EM images to show the proper Golgi structure. These challenges were overcome by an optimization of conditions, incubation times, and imaging speed and frequency.

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

The eureka moment for this paper was when we undertook electron microscopy analysis of the *PpImh1* deletion mutant strain. I was very excited to see the clear separation of Golgi cisternae from Golgi stack in the *PpImh1* deletion mutant. It was a critical result which



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established the base of this manuscript. Another exciting moment was when we deleted a short region of 100 amino acids on the N-terminus of the *PpImh1* protein; it failed to capture the vesicles, but such deletion does not have any effect on the cisternal stacking.

“I was very excited to see the clear separation of Golgi cisternae from Golgi stack in the *PpImh1* deletion mutant.”

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

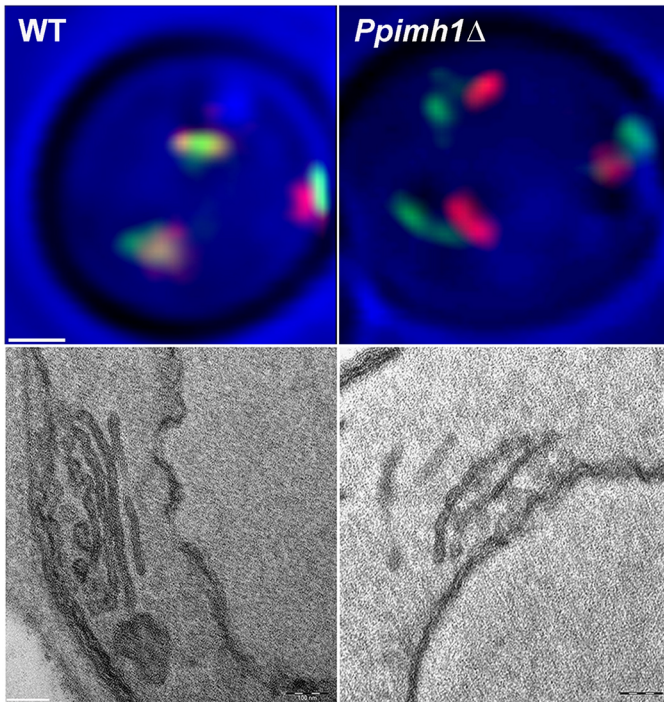
Journal of Cell Science is a well-respected cell biology journal that makes high quality, fundamental research accessible to the scientific community. Its editorial board involves renowned cell biologists that belong to the field of protein trafficking. The journal also supports the progress of early-career scientists through its 'First person' and 'Cell scientist to watch' sections.

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

My thesis supervisor, Dr Dibyendu Bhattacharyya. He has always guided me, on every stage of my PhD work. He gave me lots of freedom in my work and the opportunity to explore, while keeping me focused on addressing our biological question. He understands my weaknesses and strengths, which helped me in my professional and personal growth. I was fortunate to have Dr Sorab Dalal as a thesis committee member. He gave valuable, timely suggestions and was very encouraging and appreciative of the work.

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Fluorescence (top) and electron micrograph (bottom) images of wild-type and *Ppimh1*Δ strains. In the top panel images, *Pichia pastoris* cells are expressing the early Golgi marker msGFP-VIG4 and late Golgi marker SEC7-DsRed.M1x6.

“The best thing about science is that it is a continuous learning curve, no matter what stage of career you are.”

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?

The best thing about science is that it is a continuous learning curve, no matter what stage of career you are at. I always enjoyed thinking about and discussing scientific discoveries with my colleagues. I have always been passionately curious about every small thing around me in daily life. I believe that science is involved in every activity of our routine life. Although it involves lots of failures and frustrations, it helps you to understand the different phases of life. My PhD studies taught me lots of things, which really helped me to evolve as a better human being. I feel a scientific career involves many small victories. We should enjoy it and look forward to another exciting day to explore.

What’s next for you?

I have joined Prof. Todd Graham’s lab as a postdoctoral fellow at Vanderbilt University in the United States. I am working on understanding P4-ATPase substrate interactions and their transport. I want to continue to work on membrane trafficking and establish myself as an independent investigator.

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

I love spending time with my family and friends. I also enjoy playing and watching cricket matches and exploring nature.

Reference

Jain, B. K., Dahara, R. and Bhattacharyya, D. (2019). The golgin *PpImh1* mediates reversible cisternal stacking in the Golgi of the budding yeast *Pichia pastoris*. *J. Cell Sci.* **132**, 230672. doi:10.1242/jcs.230672