

## FIRST PERSON

# First person – Rini Ravindran

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. Rini Ravindran is the first author on 'New ubiquitin-dependent mechanisms regulating the Aurora B-protein phosphatase 1 balance in *Saccharomyces cerevisiae*', published in Journal of Cell Science. Rini is a PhD student in the lab of Kelly Tatchell at LSU Health Sciences Center in Shreveport, Louisiana, USA, investigating the maturation and regulation of protein phosphatase 1 (PP1).

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

The attachment of a small protein called ubiquitin to other proteins (ubiquitylation) triggers changes in diverse cellular functions. Although in most cases ubiquitylation targets proteins for degradation, it may also lead to non-degradative processes. In this study, we used budding yeast to show that ubiquitylation regulates the function of two proteins, Aurora B and protein phosphatase 1, that ensure chromosomes are accurately split between the new cells during cell division. We observe that cells with defective ubiquitylation exhibit a higher stability of Aurora B, suggesting that normally ubiquitylation targets Aurora B for degradation. By contrast, reduced ubiquitylation changes the cellular localization of protein phosphatase 1, but does not affect its protein stability. Thus, our results show that cellular signals, such as ubiquitylation, can lead to completely different fates, even for proteins regulating the same biological pathway.

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

Yes! While assessing Glc7 localization in a ubiquitylation-defective mutant (*uba1-W928R*), we observed abnormal Glc7 nuclear foci. I reasoned that if a defect in the E1 ubiquitin-activating enzyme leads to defects in Glc7 localization, then mutations in downstream E2 enzymes should also influence Glc7. To test this hypothesis, I examined Glc7 fluorescence in E2 conjugating enzyme mutants. It was a real eureka moment when I observed bright Glc7 foci in *rad6Δ* and *cdc34<sup>tm</sup>* cells that were similar to those observed in the upstream *uba1-W928R* mutant. These results indicated that Cdc34 and Rad6 had previously unknown roles in regulating Glc7 localization and function.

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

Firstly, I wanted my first first-author publication in a journal that has a good reputation in the scientific community. During my PhD, I have read several papers published in Journal of Cell Science, all of which are well-structured studies with solid data and controls. One key paper (Cheng and Chen, 2015) has especially provided important insights that have driven my work. Secondly, since my work has a combination of techniques ranging from yeast genetics to



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molecular and cellular biology, I was looking for a journal with a broad scope. Journal of Cell Science fits both these criteria.

### “[...] mentoring in science goes way beyond just imparting knowledge”

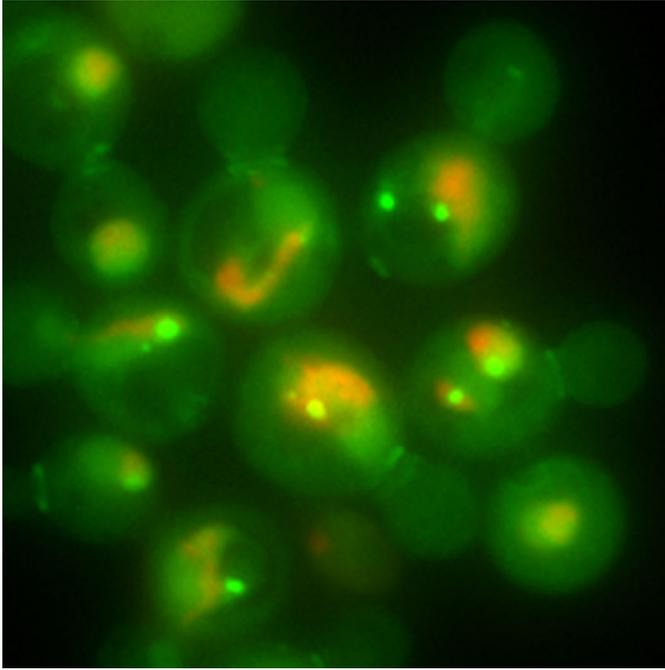
### Have you had any significant mentors who have helped you beyond supervision in the lab?

Undoubtedly Dr Lucy Robinson, my co-mentor. In spite of not being my PhD mentor, Dr Robinson always makes time to discuss my ongoing and future experiments. When faced with a problem, she encourages me to think independently about alternative experimental approaches. This has developed my trouble-shooting skills, which has been crucial to surviving graduate school. Moreover, since Dr Robinson is very approachable, I seek her advice even on matters not directly related to science. She is one of the few mentors who understand that mentoring in science goes way beyond just imparting knowledge.

### 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?

Ever since high school, I have been amazed at the intelligent design of cells. Studying the numerous intricate signaling pathways made me curious about the complexity of cellular functions. This is why I decided to pursue bachelor's and master's degrees in biochemistry. Later, I also got a chance to teach biochemistry to undergraduate students at the University of Mumbai. Being a teacher was one of the most enriching experiences of my life. I enjoyed teaching so much that I decided to pursue a PhD in biochemistry to gain more exposure to scientific research and enhance my capabilities as a teacher.

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Glc7-mCitrine foci (green) observed in *uba1-W928R* cells. Nop56-RFP (red) marks the nucleolus.

#### Who are your role models in science? Why?

I have had several role models in science, particularly female scientists like Marie Curie, who have exhibited courage and

determination to excel. Today, my role model in science is my mentor, Dr Kelly Tatchell. He is one of the most selfless people I have met, who goes out of his way to help fellow colleagues and students without expecting anything in return. He gives me hope that even in the current competitive environment, good scientists exist. Dr Tatchell has very high ethical standards and he has taught me to do the right thing, even though it may be the difficult path to take. Above all, Dr Tatchell inspires me to tackle problems in life with a smile and makes me want to be a better person.

#### What's next for you?

I am currently looking at interesting research areas for postdoctoral training. Eventually, I aspire to join academia, where I would be able to teach and do research. I dream of having my own lab some day and mentoring future scientists!

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

Cooking is my stress-buster. It calms me and many of my new ideas for experiments come up while I cook! My husband says I make the best tiramisu.

#### References

- Cheng, Y.-L. and Chen, R.-H. (2015). Assembly and quality control of the protein phosphatase 1 holoenzyme involves the Cdc48-Shp1 chaperone. *J. Cell Sci.* **128**, 1180-1192.
- Ravindran, R., Polk, P., Robinson, L. C. and Kelly Tatchell, K. (2018). New ubiquitin-dependent mechanisms regulating the Aurora B-protein phosphatase 1 balance in *Saccharomyces cerevisiae*. *J. Cell Sci.* **131**, jcs217620.