

FIRST PERSON

First person – Prajakta Gosavi

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. Prajakta Gosavi is the first author on 'The Golgi ribbon in mammalian cells negatively regulates autophagy by modulating mTOR activity', published in Journal of Cell Science. Prajakta is a postdoctoral research fellow in the lab of Paul Gleeson at the University of Melbourne, Parkville, Australia, investigating the role of the Golgi ribbon structure in the regulation of cellular signalling pathways and higher-order functions under physiological as well as disease conditions.

How would you explain the main findings of your paper to non-scientific family and friends?

Cells are divided into multiple compartments. Each compartment is made up of a unique set of essential building blocks, such as proteins and lipids, which are delivered to these compartments with the help of small carriers. The central unit of the cell that generates these carriers and regulates the transport mediated through these carriers is known as the Golgi. Any alteration to the size or shape of the Golgi perturbs this transport and generates stress leading to diseases. I study how disruption in the structure of the Golgi leads to changes in the cellular homeostasis or equilibrium.

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

I work with mTOR kinase which is reported to be localized to multiple subcellular sites. Several mTOR-specific antibodies are available, with some reports of predominantly lysosomal staining, whereas other reports indicate various organelle-specific staining including Golgi staining. A range of different fixation and permeabilization procedures are being used by different groups, and these procedures yield different staining patterns for mTOR. It was, therefore, a challenge to confirm the localization of mTOR on the Golgi ribbon in our cell line, which we overcame using multidisciplinary approaches such as confocal microscopy and cryo-immuno-electron microscopy.

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

"A PhD is a training platform that prepares you for life."

I was investigating the ultrastructural changes to the Golgi ribbon in a stable cell line overexpressing a Golgin using TEM, where we first noticed the presence of numerous electron-dense double-membraned structures that resembled autophagosomes or

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lysosomes. Indeed, when I stained the stable cells that exhibited a fragmented Golgi phenotype with LC3, a marker for autophagosomes, I was surprised to see a dramatic increase in LC3-positive autophagosomes. This proved to be a crucial turning point in my project. Such 'eureka' moments keep the passion alive and make research more fascinating.

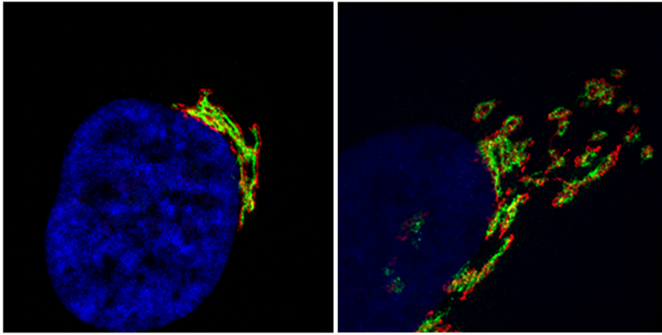
Have you had any significant mentors, and how have they helped you?

My PhD supervisor, Assistant Prof. Sorab Dalal, who instilled in me the importance of doing good science, and asking the right questions. My postdoc mentor, Prof. Paul Gleeson, who taught me to look at the bigger picture, and think beyond the question in hand. He also involved me in the grant writing and rebuttal processes. His passion for research and his enthusiasm is infectious.

"One invests the most fruitful years of one's life during a PhD, so make the most of it!"

What's the most important piece of advice you would give first-year PhD students?

A PhD is a training platform that prepares you for life. It not only teaches you to multi-task, to manage different personalities in a team, to build on collaborations and to be organized, but also exposes you to failure, stress and most importantly, to face the fear and move on, and ultimately to succeed. On the more practical side, I would advise students to maintain good communication with your supervisor regarding project goals and timeframe, learn to document your research well, and invest in good data backup and storage plans. Try to establish a support group within and outside your research institution. One invests the most fruitful years of one's life during a PhD, so make the most of it!



Super-resolution image of a compact perinuclear Golgi ribbon structure stained with a cis (red) and trans (green) Golgi marker in HeLa cells. A normal cell is shown on the left; the structure is lost upon overexpression of a golgin, GCC88, leading to dispersal of the Golgi ribbon into mini-stacks in the cytosol (right).

What changes do you think could improve the professional lives of early-career scientists?

In my opinion, early-career scientists will thrive better with longer work contracts, more seed grants and opportunities for collaboration and publications. I also think that in a competitive funding scenario, less weight should be given to the impact factor of the publications

or career interruptions, especially for female candidates, when taking into account the feasibility and quality of the project. Finally, a good mentoring program that educates about the transition from the early-career stage to an independent lab head, and guidance about the administrative responsibilities attached to such a position, should be offered by departments or institutions.

What's next for you?

I will continue with my current postdoc work to develop a model system to investigate mTOR signalling at the Golgi ribbon. I am also interested to expand this system in a cancer disease model.

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

I enjoy a good game of badminton; it is a great stressbuster after a long day. I learned to play a harmonium. I love to travel around the world, to understand different cultures and lifestyles, to click the world through my camera lens. I try to write a travel blog of each trip to capture the memories.

Reference

Gosavi, P., Houghton, F. J., McMillan, P. J., Hanssen, E. and Gleeson, P. A. (2018). The Golgi ribbon in mammalian cells negatively regulates autophagy by modulating mTOR activity. *J. Cell Sci.* **131**, jcs211987.