

FIRST PERSON

First person – Aushaq Bashir Malla

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. Aushaq Bashir Malla is co-first author on 'IP6K1 is essential for chromatoid body formation and temporal regulation of *Tnp2* and *Prm2* expression in mouse spermatids', published in Journal of Cell Science. Aushaq is a PhD student at the Centre for DNA Fingerprinting and Diagnostics, India, investigating the post-transcriptional regulation of mRNA and role of RNA–protein interactions in disease and development.

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

One of the most complex life processes is the formation of male gamete. Any abnormality in this process can lead to male infertility, which means the male gamete (sperm) is not able to fertilize the female gamete (ovum), and therefore unable to cause any pregnancy in the female. Our study features IP6K1, a protein required to synthesize higher inositol phosphates, as one of the key regulators of the male gamete formation process. In this study, we have shown that in the absence of IP6K1, mouse spermatids lose the ability to regulate the expression of key sperm-specific proteins (TNP2 and PRM2) required for sperm chromatin integrity and nuclear condensation. This inability to adjust the expression of TNP2 and PRM2 leads to their premature synthesis and unusual localization within a sperm cell, which ultimately leads to defective sperm head elongation and a failure to complete sperm development. Our study thus identifies IP6K1 as an indispensable regulator of male gametogenesis.

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

Working with male germ cells is itself a big challenge because spermatogenesis produces terminally differentiated haploid spermatids which cannot be cultured *in vitro*. Therefore, any chances of *in vitro* manipulations such as transgene-induced rescue experiments are not possible in these cell types, which make them least amenable as a model system to derive any further information. Although *in vitro* models are not readily available, one can always work with primary cells derived from the tissues or on histological tissues as we have done in this study. The other challenge I had to face was going to the animal house every time I had to perform any experiment. Our animal house is quite far away (almost 40 km) from the main laboratory. Every time I wanted to do any experiment, I had to spend a lot of time travelling to and fro to obtain testis samples before I could actually perform any experiments. However, I believe that enthusiasm and a positive approach are the keys to overcoming any hurdle one faces during a PhD.

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

I believe that the entire research project was fascinating and exciting. During this project the most enthralling moment to me was the

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localization of the protein of our interest, IP6K1, to chromatoid bodies, making this the first study to demonstrate the localization of endogenous IP6K1 to a cellular organelle. This finding led us to identify the critical role of IP6K1 in regulating sperm head condensation by ensuring timely translation of key spermiogenic genes. This finding was never anticipated based on other *in vivo* functions of this gene.

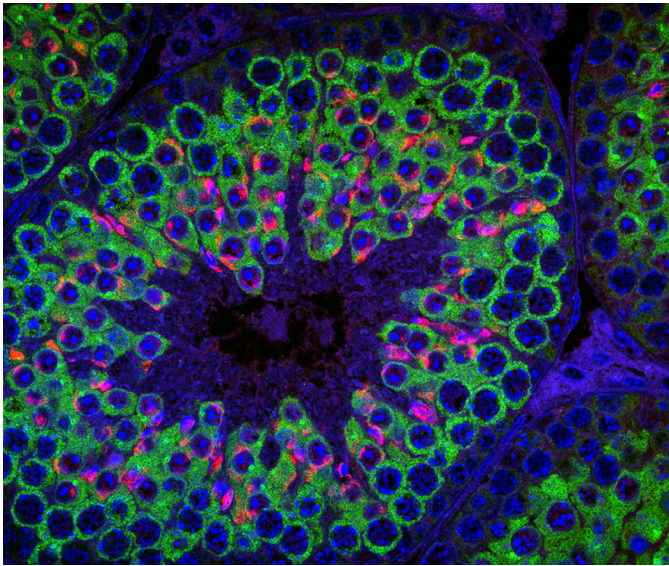
“The key to a successful PhD is hard work combined with patience and perseverance.”

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

My current mentor, Dr Rashna Bhandari, has had a significant role to play in shaping my scientific aptitude. Mentoring can be done in many different ways but to my mind the best mentor is one who understands what the student is capable of and then tries their best to bring that calibre out of the student. Rashna constantly encourages me to do my best and has always been open to my ideas. She has given me the freedom and support in all possible ways which I believe have helped me become an independent researcher.

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

The key to a successful PhD is hard work combined with patience and perseverance. Before one starts addressing a scientific problem, one should make sure that it is established, clear, achievable during



MVH (mouse homologue of VASA, green), PNA-lectin (red) and DAPI (blue) in mouse testis.

the span of a PhD and is not far-fetched. Additionally, one also needs to be fully updated with scientific research going on in the field. I also think it's important to understand that although research is a passion, one must also take time out to pursue personal interests, so that the former can be supported by the latter.

What's next for you?

I would like to continue working in the field of molecular/cell biology. My immediate plan is to pursue my post-doctoral studies in this field and establish myself as an independent academic researcher in the years to come.

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

I am a person who loves to do science, talk about it and encourage people to pursue it. Apart from doing research, I enjoy playing cricket and reading world history.

Reference

Malla, A. B. and Bhandari, R. (2017). IP6K1 is essential for chromatoid body formation and temporal regulation of *Tnp2* and *Pm2* expression in mouse spermatids. *J. Cell Sci.* **130**, 2854–2866.