

FIRST PERSON

First person – Abhishek Chadha

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. Abhishek Chadha is first author on 'The route of the visual receptor rhodopsin along the cilium', published in JCS. Abhishek is a postdoc in the lab of David S. Williams at Jules Stein Eye Institute, UCLA, USA, working on the characterization of ciliary protein trafficking in photoreceptors.

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

Photoreceptors are neurons in the retina that detect light via pigments located in a specialized portion of the cell called an outer segment. Retinal cell biologists are interested in how the visual pigment, opsin, traffics to photoreceptor outer segments, since normal trafficking of the pigment is critical for vision, and retinal degeneration is frequently accompanied by rhodopsin mislocalization. There has been some controversy in the field of photoreceptor cell biology about how rhodopsin traffics to the outer segment of rod photoreceptors. The fundamental mechanistic point of this paper is that trafficking occurs via the plasma membrane, rather than via intracellular trafficking.

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

The biggest challenge I had in this work was performing live-imaging studies in retinal explants, since the explants tend to drift in culture quite a bit. To overcome this challenge, I carefully titrated the amount of Ames medium I used for my explants, so that the explants would have enough medium to survive but not so much as to cause drift.

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

Development of an N-terminal tag for live imaging of rhodopsin was rewarding, since the molecule is notoriously difficult to tag at its N-terminus. Removal of the C-terminal GFP also seemed to improve rhodopsin localization, relative to the EGFP-tagged rhodopsin that is typically used in the field. Overall, it is satisfying to have developed a new tool that will be useful for studying rhodopsin dynamics in the cilium.

“Overall, it is satisfying to have developed a new tool ...”

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

We were hoping to reach a wide audience for our work, since our studies have implications for membrane trafficking in cilia in general.

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

Our lab manager, Barry Burgess, is an experienced hand, and is a tremendous resource for everyone in our lab. He is very patient and

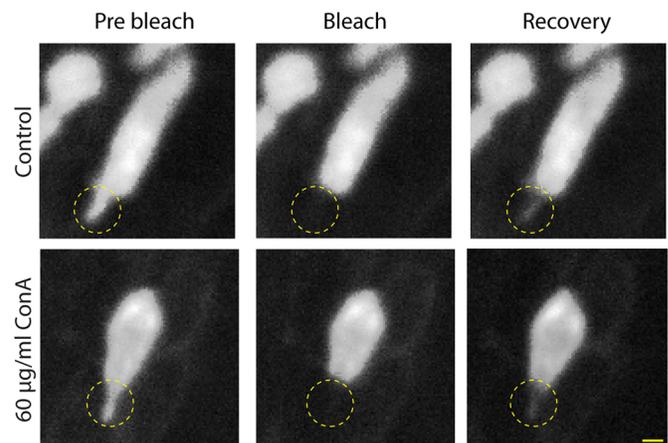


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genuinely wants the best for the people in the lab. I think it is valuable to have mentors who lead by example.

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?

I think that it is a very exciting time to be a scientist. The most interesting moment that I have had in science was in my graduate studies. During studies of proprioception in a *Drosophila* leg joint, I used a candidate approach to discover the mechanically gated ion channel that mediates proprioception in the joint. Interestingly, it was actually David, my current advisor, who suggested that I perform that experiment when I was interviewing with him for my current job!



Live imaging of *RHO-GFP^{+/-}; RPE65^{-/-}* mouse retinal explants. Here, we have compared fluorescence recovery after photobleaching (FRAP) of control photoreceptors (top) with photoreceptors treated with the lectin ConA (bottom).

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Who are your role models in science? Why?

Albert Einstein – to have made theories that are being validated a hundred years after their inception is truly remarkable. I think it is amazing that a person's scientific work can have made such a massive impact on science and human history.

What's next for you?

My goal is to complete my postdoctoral studies in the next few years and then move on to a supervisory role.

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

I'm working towards my blue belt in Brazilian jiu jitsu (which is almost as challenging as research!). Hopefully I will have it by the time I finish my postdoctoral studies!

Reference

Chadha, A., Volland, S., Baliaouri, N. V., Tran, E. M. and Williams, D. S. (2019). The route of the visual receptor rhodopsin along the cilium. *J. Cell Sci.* **132**, jcs229526. doi:10.1242/jcs.229526