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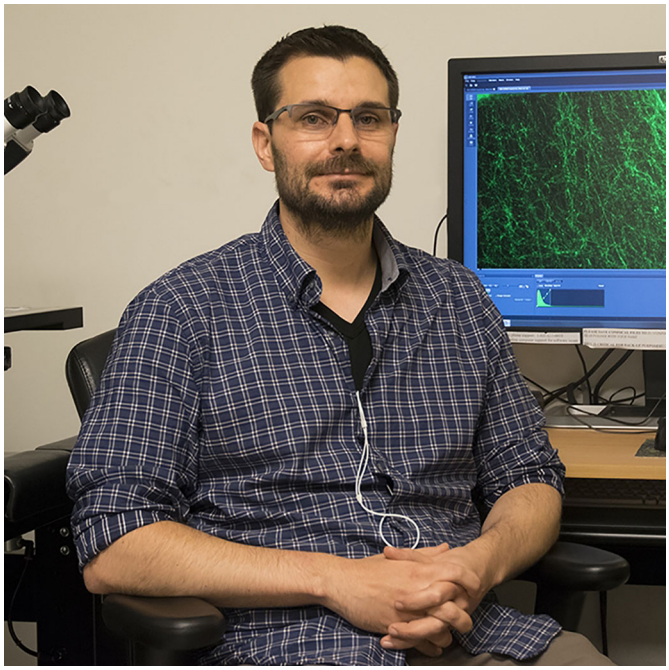
FIRST PERSON

First person – Brian Jenkins

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. Brian Jenkins is the first author on 'Effects of mutating α-tubulin lysine 40 on sensory dendrite development', published in Journal of Cell Science. Brian conducted the research in this article while a post-doc in the lab of Jill Wildonger at the University of Wisconsin-Madison, Madison, WI. He is now at the Jungers Center for Neurosciences Research, Oregon Health and Science University, Portland, OR, where his research interests include visualizing all things related to how cells transport RNA, proteins and organelles throughout the cell.



Brian Jenkins

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

I typically make an analogy between cells (neurons in particular) and cities. Similar to cities, neurons need efficient means of transporting cargo to several different locations over long distances. One way in which cities handle this is by delivering cargo via trucks traveling on streets to reach their destination. In cells, this transport is facilitated by molecular motors 'walking' along 'roads' called microtubules. Modifications to these microtubule streets is thought to influence the transport behavior of specific cargos, and may also affect the length and stability of the roads themselves. Although we studied several of these modifications, acetylation of lysine 40 stands out as a somewhat mysterious and controversial microtubule modification, despite being one of the most-well studied. We developed a new genetic tool to specifically test the functionality of lysine 40 in *Drosophila*. Our work shows that altering lysine 40 acetylation affects transport, microtubule polymerization and dendrite branch dynamics.

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

The biggest challenge to this field is to directly assess the importance of specific microtubule post-translational modifications to neuronal function and development. We overcame this issue by using a gene editing approach.

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

Every piece of data gathered provided small eureka moments, as these findings brought us closer to understand what the modifications might be doing (or not doing). That is why I love this job – every day can hold 'eureka' moments.

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

I am fortunate to have been surrounded by great scientists throughout my career and several people have helped shape my understanding of science in one way or another. In particular, my graduate advisor Gary Banker and the imaging specialist Stefanie Kaech-Petrie instilled in me methodical research practices, thoughtful experimental design and the spark to question everything. Furthermore, they emphasized following the question and science – which is how I found my postdoc mentor Jill Wildonger. I am very passionate about understanding how cells work and, in particular, how molecular motors and microtubules communicate with each other to enable efficient cargo delivery within neurons – and Jill was asking similar questions. Jill's mentoring provided the perfect balance of freedom and guidance for a postdoctoral trainee to 'stretch their wings' and she was instrumental in further developing my independence as a scientist.

"[…] the road to a PhD is long, adventurous and mostly uphill, so find a question that truly interests you in order to enjoy the adventure as much as possible"

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

Don't give up – the road to a PhD is long, adventurous and mostly uphill, so find a question that truly interests you in order to enjoy the adventure as much as possible. When the road becomes challenging, and it will, try to keep in mind that you are getting paid to learn – and that is quite a privilege.

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

We chose this profession because we love it – we love asking questions and trying to figure out how nature works through experimentation. It is obvious most scientists do not go into this profession for the short hours or large salaries. However, the

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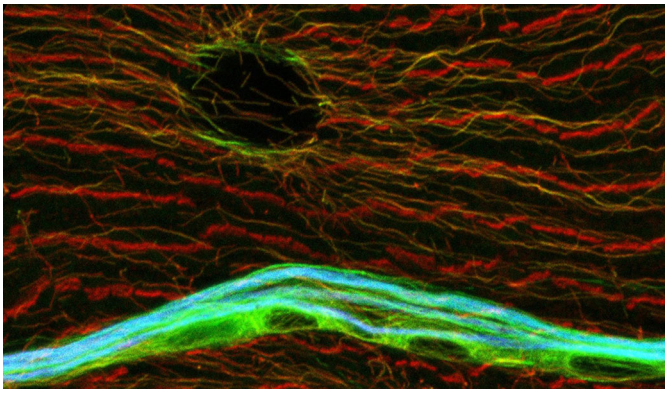

'*Drosophila* muscle sunrise' – *Drosophila* muscle cells expressing GFP-tubulin and stained for tyrosinated tubulin and Futsch (Map1B homolog)

demanding time commitment combined with just-enough compensation makes it extra difficult to balance work with life outside of work. I am not sure how to make scientists work less or increase salaries – it seems easier to just create more hours in the day (so scientists should start figuring out how to do that).

If I had to make a change, I think there should be more opportunities to explore non-academic careers in science. Not just outside speakers and career fairs but, perhaps, short, paid internships with mechanisms that allow a pause on the traditional postdoc without fear of losing your position and without the PI paying for the internship. Such an experience would help in securing a tangible future career direction and lead to more fulfilling scientific careers.

What's next for you?

I truly enjoy the academic environment, lab work and mentoring so I would like to continue working in this setting in some capacity. However, it is tough out there for academic scientists now (and always), but I'll refer you to my advice for first-year PhD students and apply it to myself.

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

When I am not imaging on the microscope, I can be found outdoors hiking and photographing nature. Or not found, since that is my idea of hiking.

Reference

Jenkins, B. V., Saunders, H. A. J., Record, H. L., Johnson-Schlitz, D. M. and Wildonger, J. (2017). Effects of mutating α-tubulin lysine 40 on sensory dendrite development. *J. Cell Sci.* **130**, 4120-4131.