

FIRST PERSON

First person – Alexander Auld

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. Alexander Auld is the first author on 'Aplip1, the *Drosophila* homolog of JIP1, regulates myonuclear positioning and muscle stability', published in Journal of Cell Science. Alexander is a PhD student in the lab of Dr Eric Folker at Boston College, Chestnut Hill, USA, investigating muscle development with a focus on the mechanisms and function of nuclear movement.

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

Skeletal muscle cells are very large and contain many nuclei that undergo a complex set of movements to become evenly spaced at the edge of the cell. Scientists are interested in piecing together the mechanisms that regulate nuclear movement and position because nuclei that are not positioned correctly in muscle are a sign of diseased muscle. In this paper, we show that a protein called Aplip1 plays two independent roles in maintaining muscle attachment and regulating nuclear movement. We did this by using the model organism *Drosophila melanogaster* (fruit fly) because their muscle cells show a good level of conservation with those in mammals but are a lot easier to image. We used *Drosophila* genetics and a number of microscopy techniques to monitor nuclear movement and muscle structure in the developing embryo.

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

The majority of work that has been done on Aplip1 has been in neurons with not much work showing the expression in muscle, although there is evidence in the literature for disruption of JIP1 (mammalian Aplip1) causing dystrophic muscle when overexpressed. Therefore, it was difficult to say if the effects on nuclear positioning were muscle autonomous. To overcome this, we carried out fluorescent *in situ* hybridization (FISH) to show that Aplip1 was expressed in the mesoderm and knocked down Aplip1 specifically in the muscle using RNAi to demonstrate the muscle-specific role of Aplip1 in nuclear movement.

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

We were very surprised when we expressed Aplip1–GFP within the muscle and saw that the main localization was at the myotendinous junction and that it was very dynamic. The Aplip1–GFP extended out beyond the end of the muscle before retracting back in again. This was surprising to us as this suggests that extensions from the muscle ends continue beyond the time when muscle attachment has happened with the tendon cell.



Alexander Auld

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

Dr Folker has been a fantastic mentor throughout my PhD. He has always been available to discuss results and talk about potential experiments. His ability to interpret data has taught me a lot about how scientists should think when analyzing the results from a number of experiments and how those results fit into the bigger picture.

“[...] be willing expose yourself to different areas of research that are new to you”

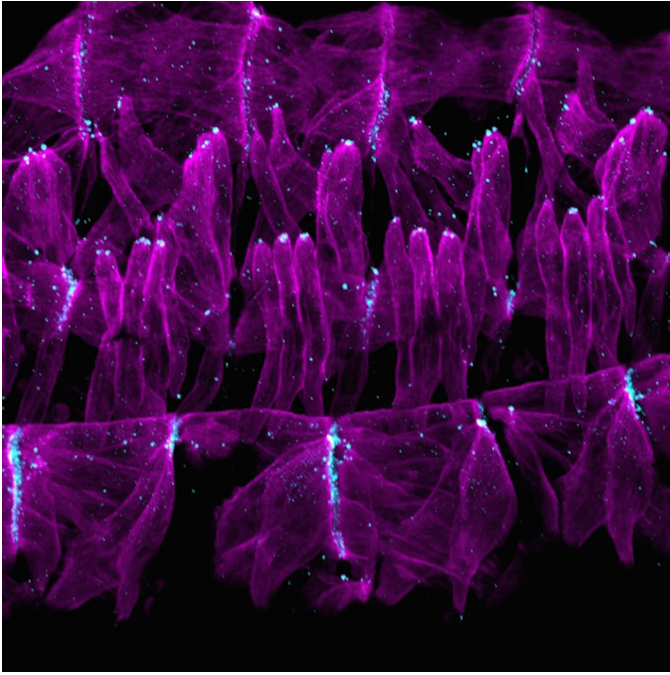
What's the most important piece of advice you would give first-year PhD students?

Come into your particular department with an open mind and be willing expose yourself to different areas of research that are new to you. It will open your eyes to research questions and techniques that you are not familiar with and expand your way of thinking in order to apply it to your particular questions.

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

I believe that choosing a mentor that you can work well with for many years is vital and probably the most important choice early on in your scientific career. A less obvious one, which has helped me during my PhD, is finding a hobby outside the lab. I found it really

Alexander Auld's contact details: Department of Biology, Boston College, Chestnut Hill, MA 02467, USA
E-mail: aulda@bc.edu



Aplip1 (cyan) localization in the muscles (magenta) of a *Drosophila* embryo.

helped me if I was struggling with an experiment or writing, to get out the lab for a couple of hours and come back at it in a fresh state of mind.

“I found it really helped me [...] to get out the lab for a couple of hours and come back at it in a fresh state of mind.”

What’s next for you?

I am currently writing my thesis and looking for postdoc positions. I would like to stay in the muscle field and in particular use stem cells to study how cell fate is regulated in the early stages of muscle development.

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

As I mentioned above, I found it very useful to get a hobby outside of the lab. I have played rugby most of my life and chose to continue that when I moved to the USA. It’s a very good stress reliever! I currently play for MIT Rugby Club in New England Men’s Division 3.

Reference

Auld, A. L., Roberts, S. A., Murphy, C. B., Camuglia, J. M. and Folker, E. S. (2018). Aplip1, the *Drosophila* homolog of JIP1, regulates myonuclear positioning and muscle stability. *J. Cell Sci.* **131**, jcs205807.