

## FIRST PERSON

# First person – Olivia Susanto

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. Olivia Susanto is the first author on 'LPP3 mediates self-generation of chemotactic LPA gradients by melanoma cells', published in Journal of Cell Science. Olivia is a postdoctoral researcher in the lab of Prof. Robert Insall at the Beaton Institute in Glasgow, UK, where she focuses on imaging live cell interactions and cell migration both *in vivo* and *in vitro*, in cell biology and immunology.

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

We were interested in finding out what makes a certain type of skin cancer spread so quickly from the skin. These skin cancer cells are really attracted to a molecule called LPA, but because LPA is everywhere in the body, cells are usually overwhelmed by it and it doesn't cause them to move anywhere. Imagine a field with a cow in it. The cow is the skin cancer cell, and the grass in the field is the LPA. There's so much grass around that the cow never has to bother moving. However, imagine that during skin cancer tumour formation there are suddenly a lot more cows in the field. Because they're all eating, there's not enough grass around and the cows start to move out of the field to find more grass. We have found that these skin cancer cells have a protein called LPP3 that helps them to 'eat up' the LPA around them, so that they end up moving away to find more LPA, and this helps them spread. When we removed LPP3, these skin cancer cells were no longer able to 'eat' the LPA, and could not spread as easily.

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

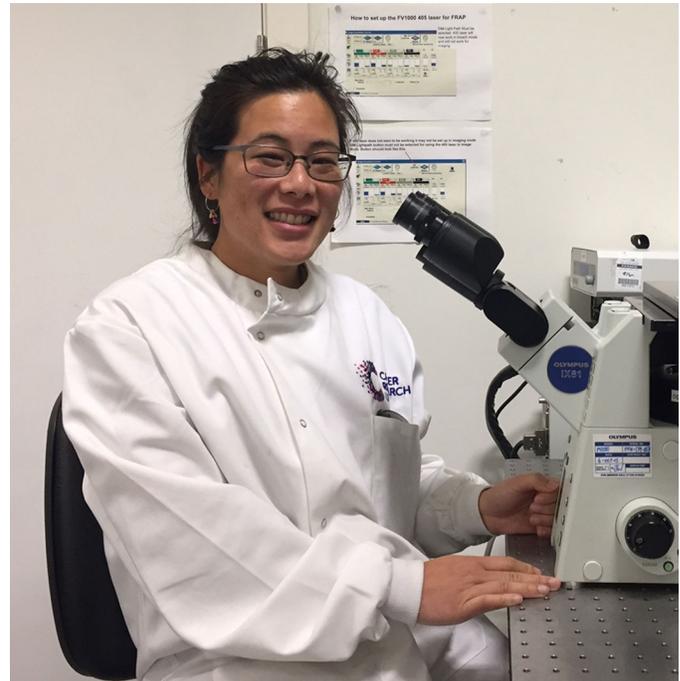
The major challenge was trying to create a stable LPP3 knockdown cell line, which we never managed to successfully produce, despite trying several different techniques. In the end, we found that using a double hit of siRNA was enough to reduce LPP3 expression for long enough to do our longest experiment.

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

Finding that the autotaxin inhibitors don't affect the ability of melanoma cells to produce and migrate in response to self-generated gradients was not surprising because we expected this, but, given that the effect of autotaxin is sometimes confused with the effect of the self-generated gradients in promoting cancer cell migration, it was really nice to have such a clear-cut result.

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

All my supervisors have mentored me in some way. My PhD supervisors Joe Trapani and Nigel Waterhouse were really great in



Olivia Susanto

giving me support, good advice and confidence in my abilities, and my postdoc supervisor Robert Insall has shown me how to think outside the box and approach science from different perspectives.

**“[...] get to know what areas of science you really enjoy and are interested in”**

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

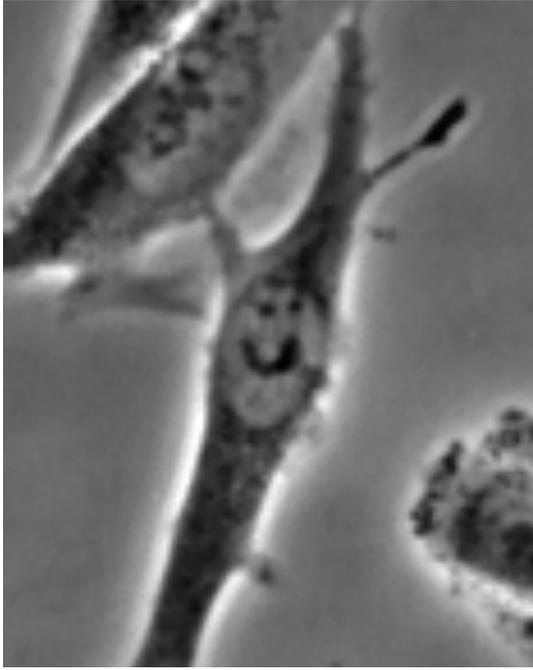
Try lots of different things and diverse projects at the beginning of your PhD so you will get to know what areas of science you really enjoy and are interested in, and don't panic if you don't feel like you're getting significant results straight away. Also I think it's important to try to maintain a social life outside of your PhD to keep yourself balanced. Even when you're really busy with work I think setting aside time to meet friends ultimately helps to refresh you and keep you more productive when you are at work.

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

A bigger variety of funding bodies, perhaps with fewer restrictions on nationality or lab location. Early-career scientists tend to work very long hours continuously, and in comparison to other industries we aren't really remunerated for it, despite the many years of higher study that we have to undergo to attain these positions; so higher salaries would also be reasonable. Finally, it would be very helpful if more institutes could provide on-site or subsidised childcare,

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**A WM239A metastatic melanoma cell amongst a field of cells in an Insall chamber chemotaxis assay.** The cells are travelling along a self-generated LPA gradient, with the position of the nuclear chromatin within this cell making it look very happy to be migrating.

which would obviously help many parents trying to juggle work and parenthood.

#### Reference

Susanto, O., Koh, Y. W. H., Morrice, N., Tumanov, S., Thomason, P. A., Nielson, M., Tweedy, L., Muinonen-Martin, A. J., Kamphorst, J. J., Mackay, G. M. et al. (2017). LPP3 mediates self-generation of chemotactic LPA gradients by melanoma cells. *J. Cell Sci.* **130**, 3455-3466.