FIRST PERSON

First person – Gina Smith

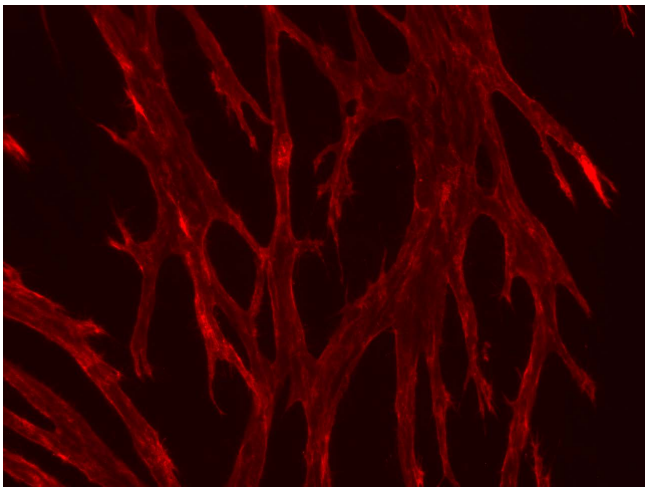
First Person is a series of interviews with the first authors of a selection of papers published in Biology Open, helping early-career researchers promote themselves alongside their papers. Gina Smith is first author on 'Ubiquitination of basal VEGFR2 regulates signal transduction and endothelial function', published in BiO. Gina conducted the research in this paper while a PhD student in the lab of Vas Ponnambalam at the University of Leeds, UK, but now works as a technical specialist at Covance Laboratories, where she is developing *in vitro* models of the cardiovascular system in both health and disease.

What is your scientific background and the general focus of your lab?

My PhD in molecular and cellular biology was funded by the British Heart Foundation for cardiovascular disease research. The lab specifically focusses on the role of receptor tyrosine kinases in endothelial cell biology, researching growth factor-stimulated signal transduction, receptor trafficking and their functional cellular outputs.

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

Signalling is an essential communication process that controls fundamental activities of cells and coordinates all cell actions. Signalling from receptors on the surface of cells that line blood vessels is vital for blood vessel health. Disrupted signalling is associated with disease. In this paper, we identify a novel pathway that regulates receptor signalling from the surface of cells that line blood vessels and could be targeted by future drugs to prevent and/or treat heart disease.



Vascular modelling; endothelial-fibroblast co-culture induces tubulogenesis *in vitro.*

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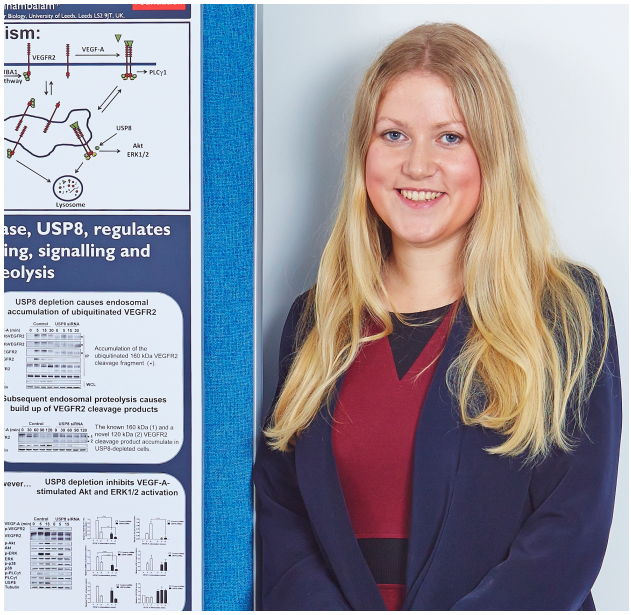

Gina Smith

What are the potential implications of these results for your field of research?

This research identifies a previously unknown mechanism for receptor regulation that could be applicable to other receptors and should be explored further by other researchers in the field. Additionally, the pathway we identified could be targeted by drugs in the future to subvert or prevent disease-linked communication processes.

"One experiment led to another and eventually resulted in us proving the existence of this pathway for receptor regulation."

What has surprised you the most while conducting your research?

The results from a screen at the beginning of this project were completely unexpected and led us down a path to discovering an unknown mechanism for regulating receptor levels at the cell surface. One experiment led to another and eventually resulted in us proving the existence of this pathway for receptor regulation. The initial unexpected result followed by acquiring sufficient data for publication was a surprise!

What, in your opinion, are some of the greatest achievements in your field and how has this influenced your research?

Discovery of the growth factor and receptor researched in our study. Identification and understanding of VEGFR2 signalling pathways and functional endpoints. Without these achievements, our research would not have been possible.

Biology Open (2017): doi:10.1242/bio.027896: Supplementary information

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

Easier access to journal articles, with more availability through open access. Also, more opportunities to publish; I was lucky in that my supervisor encouraged us to publish our work. I'm aware that some supervisors are reluctant to publish and hold back work, especially at PhD level. This is not helpful for the professional development of early-career scientists.

What's next for you?

Since completing my PhD, I have been working at Covance Laboratories as a research scientist. I have remained in the field of cardiovascular research, using microfluidic devices for dynamic *in vitro* modelling of the cardiovascular system in both health and disease. The aim is to create a physiologically relevant environment for human cells that require shear flow for homeostasis. This would reduce or potentially replace the need for animal models in supporting the safety assessment of pharmaceutical products.

Reference

Smith, G. A., Fearnley, G. W., Abdul-Zani, I., Wheatcroft, S. B., Tomlinson, D. C., Harrison, M. A. and Ponnambalam, S. (2017). Ubiquitination of basal VEGFR2 regulates signal transduction and endothelial function. *Biol. Open* **6**, doi:10.1242/bio.027896.