

## FIRST PERSON

# First person – Rachel Furlong

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. Rachel Furlong is first author on 'The Parkinson's disease gene *PINK1* activates Akt via *PINK1* kinase-dependent regulation of the phospholipid PI(3,4,5)P<sub>3</sub>', published in JCS. Rachel is a PhD student in the labs of Prof. Cora O'Neill and Prof. Aideen Sullivan at University College Cork, Ireland, investigating why neurons die in neurodegenerative disease and potential methods to prevent this.

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

Parkinson's disease affects over 10 million people worldwide. It is the second most common neurodegenerative disorder and its incidence is rising every year. At present, the treatment of Parkinson's is focused on the management of symptoms rather than prevention of disease. Current knowledge indicates that loss of *PINK1* function causes Parkinson's, indicating that normal functional *PINK1* is protective against this disease. Our investigation of *PINK1* function allowed us to identify novel targets involved in major cell survival systems that are regulated by *PINK1*. This has increased our understanding of how *PINK1* could protect against Parkinson's and identified potential novel therapeutic avenues.

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

At the start of my PhD, there was only a Master's student working in my lab, and myself. As a result, I came across a number of methodologies that I needed to learn that no one in the lab was doing, which was daunting at first. However, I found that by communicating with other labs within our department and School there was always someone willing to help who had some experience with a similar protocol. In order to prevent this from happening to future PhD students, I set up monthly 'Speak and Support' meetings for all postgraduates in our School in which everyone could discuss current issues that they needed help with.

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

I have been very lucky to have two amazing supervisors during my PhD who have really taught me so much about what it is to be a successful woman in STEM. Their guidance and encouragement have been crucial to completing my PhD. Their door was always open to offer support no matter what concern I had, big or small. I have no doubt I will be coming back to them for advice in the future.

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Rachel Furlong

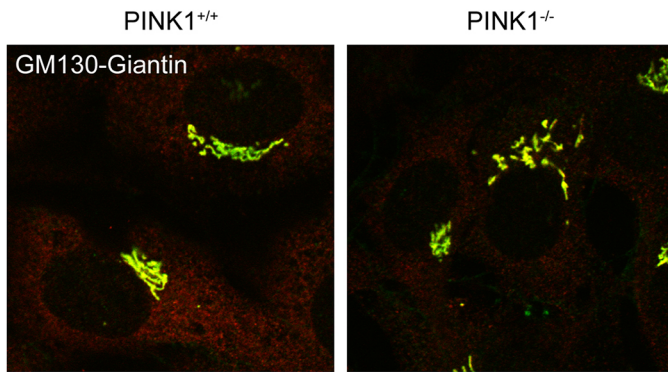
### What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?

I decided to pursue a career in biology because the idea of learning how our body works and what goes wrong in disease always fascinated me as a child and teenager. Through my PhD research focused on Parkinson's disease, I have definitely been able to pursue this to a new and exciting level. However, what I have enjoyed most about my research experience has been the moments you get to see why we do this research. I have taken part in numerous outreach events organized by the Cork NeuroScience Center including 'Brain Connections' and 'Braitalk'. These meetings aimed to bring the neurodegenerative community together by engaging with affected individuals and their families as well as clinicians and researchers nationwide. Meeting individuals with Parkinson's and Alzheimer's diseases really affirmed for me why I intend to continue striving to contribute to finding a disease-modifying therapy for these diseases.

### [...input (in effort) does not always match output, and that can be frustrating.]

### What advice would you give to other graduate students starting their PhD?

The best advice I was given during my PhD experience was to always remember 'you are not your PhD'. Sometimes you can go through periods of little success with experiments even though you



Confocal image of Golgi immunostained for GM130 (green) and giantin (red) showing that PINK1 protects against Golgi fragmentation in mouse embryonic fibroblasts.

are putting in 110% effort; input does not always match output, and that can be frustrating. But I tried to remember that a PhD is about training as well as generating results, and you can always learn from negative results; they ultimately make you a better scientist!

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

I spend most of my free time playing various sports, including basketball and tag rugby, and I have completed two half marathons!

**Reference**

Furlong, R. M., Lindsay, A., Anderson, K. E., Hawkins, P. T., Sullivan, A. M. and O'Neill, C. (2019). The Parkinson's disease gene PINK1 activates Akt via PINK1 kinase-dependent regulation of the phospholipid PI(3,4,5)P<sub>3</sub>. *J. Cell Sci.* **132**, jcs233221. doi:10.1242/jcs.233221