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FIRST PERSON

First person – Maria-Eleni Lalioti

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. Maria-Eleni Lalioti is first author on 'GemC1 governs multiciliogenesis through direct interaction with and transcriptional regulation of p73', published in JCS. Maria is a PhD student in the lab of Prof. Stavros Taraviras at School of Medicine, University of Patras, Greece, investigating signaling cues involved in the commitment program for multiciliated cells to delineate the mechanisms disrupted in cilia-associated diseases.

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

Our bodies consist of many different cell types, which are generated from undifferentiated cells, called stem cells, during embryogenesis and adult life, and the acquisition of such a functional diversity is regulated through a well-organized process. Our study is mainly focused on understanding how multiciliated cells are generated from a specific population of stem cells in the brain and the lung. Multiciliated cells are functionally specialized cells that carry dozens of hair-like organelles on their surface (which are called cilia) and beat in a coordinated way to drive fluid flow in many different tissues in our body. Our findings shed light into the molecular mechanisms that regulate the generation and functional specialization program of multiciliated cells. We have shown that GemC1 forms a complex with p73 and E2F5 transcription factors and that this is a key step in this process. Our *in vivo* data have suggested that GemC1 is essential for the expression of p73 in multiciliated epithelia in the brain cavities and the airways. Our findings might also provide a novel insight into the mechanisms underlying cilia-associated diseases, such as hydrocephalus and defective mucociliary clearance in the lung.

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

Given that p73 and GemC1–E2F5 have common target genes but transcriptionally regulate different regulatory elements, it was a challenge for us to find and establish an appropriate assay to investigate how the above protein complex could act.

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

In the beginning of this study, we observed that GemC1 transcriptionally regulates p73 in an E2F-mediated manner, which is similar to the way GemC1 regulates other important genes for multiciliogenesis. An intriguing moment was when we realized that GemC1 also interacts with p73 and recruits it to E2F-containing complexes, a combination that further enhanced the transcriptional activity of the p73 promoter. This result was a very important turning point for us, as it showed that GemC1 can recruit p73 in regulatory elements that contain E2F-binding sites and put forward the idea that GemC1 can have multiple binding partners to regulate the well-conserved pathway of multiciliogenesis.

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Maria-Eleni Lalioti

Why did you choose Journal of Cell Science for your paper?

We chose Journal of Cell Science as it is a very well-established journal with high-quality publications. Considering that our aim was to reach a broad audience in cell biology, we believe that this journal is an ideal platform to share our work.

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

Professor Stavros Taraviras was my first mentor and the person who provided me with the opportunity to explore many different aspects of research. His scientific guidance as well as his support have been very valuable to me, especially regarding my future career goals. Furthermore, I have been very fortunate to have worked with many talented PhD students and postdocs in our lab, who have also inspired me and helped me both in personal and scientific aspects.

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?

Since I was at school I have known that I would like to study biology, as I have always been driven by a willingness to acquire knowledge about how organisms develop, function and respond to

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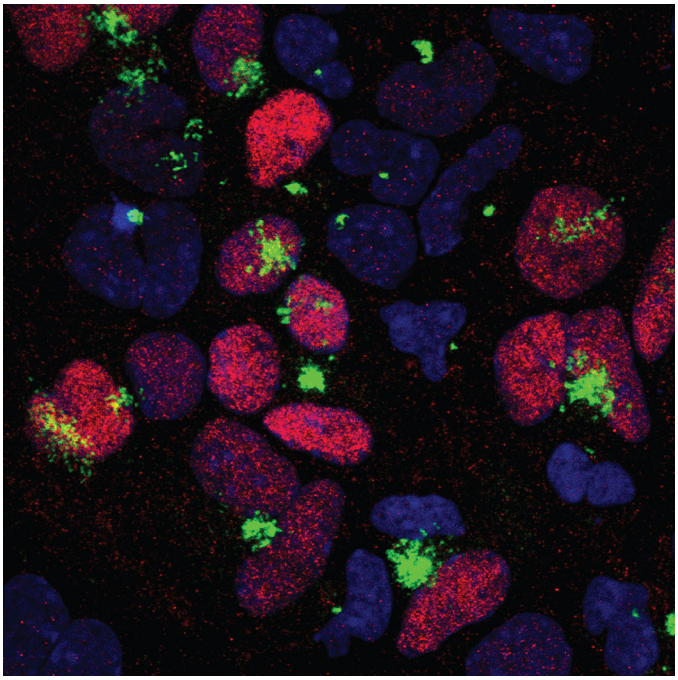

Mouse progenitor cells upregulate p73 expression (red) and increase their number centrioles (green) to differentiate into multiciliated ependymal cells *in vitro*.

different stimuli. The trigger-point for me came while I was doing my undergraduate thesis in Professor Taraviras' lab. It was then that I realized how much research fascinates me and decided to pursue a career in science.

What's next for you?

I am currently in the process of completing my PhD thesis and looking for a postdoctoral position. I am very excited about this next step in my career and hope that I will find a position that will give me the opportunity not only to fulfill my research interests but also to broaden my scientific horizons.

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

Maintaining a proper work–life balance is of great importance to me, even though it requires a lot of effort. When not in the lab, I enjoy spending time with my family, watching movies, doing yoga and going for long walks with my dogs.

Reference

Lalioti, M.-E., Arbi, M., Loukas, I., Kaplani, K., Kalogeropoulou, A., Lokka, G., Kyrousi, C., Mizi, A., Georgomanolis, T., Josipovic, N. et al. (2019). GemC1 governs multiciliogenesis through direct interaction with and transcriptional regulation of p73. *J. Cell Sci.* jcs228684. doi:10.1242/jcs.228684