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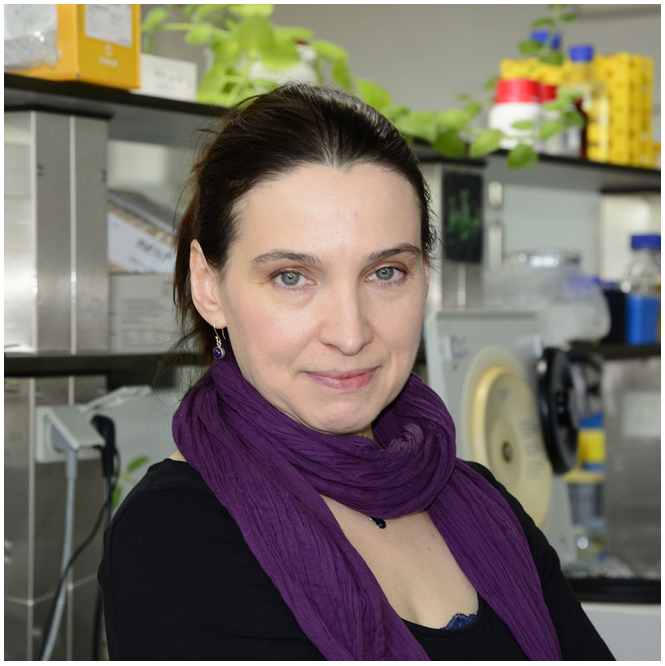
First person – Magdalena Woloszynska

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. Magdalena Woloszynska is the first author on 'The Elongator complex regulates hypocotyl growth in darkness and during photomorphogenesis', published in Journal of Cell Science. While completing this work, Magdalena was a postdoctoral fellow in the Chromatin and Growth Control group at the VIB-UGent Center for Plant Systems Biology at Ghent University, Belgium. Her research interests include plant molecular biology, epigenetics, transcriptomics, plant physiology and plant mitochondria.



Magdalena Woloszynska

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

In darkness, plants are white and grow fast in order to be longer because they look for light. When they finally find light, there is no more need to elongate and plants can start their true life – expand leaves, get green, carry on with photosynthesis and use the energy of sun to develop. There are proteins that stimulate plant elongation in darkness, and there are also those that inhibit the elongation in light and promote expansion of leaves. We found a regulatory role for Elongator – a complex comprising six proteins that work together to regulate growth in darkness and development in light in plants. Plants missing Elongator are shorter than wild-type plants when in darkness, while in light they grow too long, and their leaves expand more slowly and are narrow and elongated. How exactly does Elongator work? We still do not have a full picture, but we already know that Elongator can activate genes that code for some proteins that regulate development in darkness or in light. The genes become activated when Elongator decorates DNA with special chemical elements. These elements make genes more visible and easier to 'read' by special molecular machines, which transcribe and translate genetic information into proteins.

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

Looking at the striking differences between the phenotypes of darkness- or light-grown seedlings of the *elo3-6* mutant, we quickly got the idea that the transcriptomes of the respective seedlings are also very different. At that point we saw Elongator as a kind of switch between gene expression in darkness and light. Surprisingly, in darkness both positive regulators of skotomorphogenesis and photomorphogenesis were downregulated and we could not see many differences between transcriptomes in darkness and light. Elongator appeared to regulate hypocotyl elongation and cotyledon expansion in light and darkness by controlling cell wall biogenesis genes and positive photomorphogenesis regulators. That was a puzzling moment and it took us a while to understand that the light conditions themselves provide the switch because they decide which of the pathways becomes restrictive, allowing Elongator to promote opposite growth behaviours depending on the conditions.

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

Hanna Janska (University of Wroclaw, Poland), supervisor of my master and PhD theses, taught me to design, perform and analyze results of experiments. She gave me an opportunity to learn how to take full responsibility for my research. Mieke Van Lijsebettens (VIB Center for Plant Systems Biology, Ghent, Belgium) always treated me as a partner and gave me a lot of support via scientific discussions and advice. She helped me to discover my strong points, to expand my passion for experimental work and showed me how to turn a set of results into a story. Mieke helped me to understand what it means to be a group leader. I was lucky to observe her coaching very different people and always finding the right way to communicate. Thanks to Mieke, I have seen how to perform excellent science with respect for people.

"[My mentor] helped me to discover my strong points, to expand my passion for experimental work and showed me how to turn a set of results into a story."

What's next for you?

I am going back to Poland, to my city of Wroclaw, and to academic life in the university where I will work as an academic teacher. I am leaving Belgium, but I will take Elongator with me and I hope to find more about this fascinating complex.

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Triple mutants of *elo3-1 phyA-201 phyB-1* showing very striking phenotypes.

Reference

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