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FIRST PERSON

First person – Alexander Hirschhäuser

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. Alexander Hirschhäuser is first author on 'CK1α protects WAVE from degradation to regulate cell shape and motility in the immune response', published in JCS. Alexander is a PhD student in the lab of Prof. Dr Sven Bogdan at the Philipps-University Marburg, Germany, investigating actin dynamics required for cell shape and cell migration of immune cells.

Alexander Hirschhäuser

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

Macrophages are prominent innate immune cells in both invertebrates and vertebrates and fulfill central roles in development as well as immune and tissue damage responses. Macrophages play important roles in the clearance of dying and dead cells after tissue damage. To accomplish that, macrophages need to be able to move in a crawling-like fashion. Therefore, cells dynamically change their shape with the help of their cytoskeleton. In our lab, we are interested in regulation of those dynamic processes in the physiological context of a living fly. A key regulator is the WASP family member protein WAVE. In this study, we were able to identify the protein CK1 as a novel regulator of WAVE. Loss of CK1 results in a disrupted cell shape and impaired cell migration of macrophages in living pupae. Depletion of CK1 leads to a reduction of WAVE protein level. Thus, our results highlight the importance of CK1 modification of WAVE for its stability.

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

After successfully investigating that CK1 regulates cell shape and migration through its phosphorylation of WAVE, I had to consider the interaction between the two proteins. I first thought that phosphorylation might control WAVE activity rather than stability. But then *in vitro* experiments revealed an influence on stability. This was very unexpected, yet led the whole investigation in a new direction. Confirming this influence on stability *in vivo* rounded up the whole story and made it even more exciting.

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

Journal of Cell Science publishes high-quality science and facilitates the publication of novel insights into the field of cell biology. Our group has already published many papers in JCS and it has been a good experience.

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

Beside our group leader Prof. Dr Bogdan, who was enthusiastic about the project all the time, I must mention the whole Bogdan group. All the past and present lab members helped me to get through this project. Being critical as well as cheerful in every lab meeting pushed the work a little more in the right direction. Outside of our lab it was especially Dr Forster, who is a same-age mentor for me. He is always one step ahead and therefore able to guide me through every professional and personal difficulty.

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?

After school I was enthusiastic about getting a closer look into dynamic biological processes, ranging from metabolism to intercellular communication. My biochemistry studies then revealed the huge diversity in science and gave me the fundamental knowledge about biochemical, cell biological and biophysical methods. I realized how deep scientific research can go and that there are so many questions one can aim to study. I think one of the most important findings for me was on the challenge to achieve ones goals, or in the case of science, the main question of a project, and that kept me following the scientific path.

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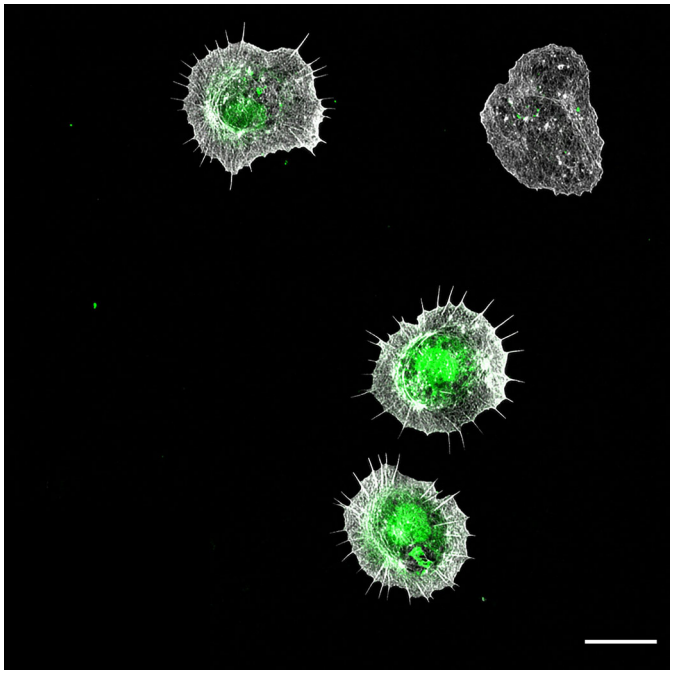

Maximum intensity projection of confocal image of the actin cytoskeleton in larval macrophages marked by GFP expression and stained with phalloidin (white). MARCM *ck1α* mutant L141M displayed the strongest defects in lamellipodia formation with a prominent stellate cell morphology compared to the 2 other available *ck1α* mutants. Thus, we confirmed CK1α as an important novel regulator of cell shape. Scale bar: 10 µm.

Who are your role models in science? Why?

Honestly, I do not have any specific role model who I think it would be worth emulating. It's more that I feel honored to know a few special people who accompanied me during my studies. They showed me what can be achieved in science and what can become possible after university. It's a pleasure for me to be able to say that I know them.

"For me, nothing is more important than being surrounded by family and friends who support you whatever happens."

What's next for you?

I will take the next couple of months to successfully graduate. So far, I don't know what comes next. I'm still figuring out the different opportunities. I am torn between working in the pharmaceutical industry or taking some time off and trying to push my passion for running. I'm sure that I would be able to reach the national team. But I am convinced that my long-term decision will be staying in science, because this is what I'm enthusiastic about.

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

Besides my academic career, I am a passionate runner. Everything that I've achieved with running, especially winning the German Marathon Championship in 2021, I could never have done without the support of my family. For me, nothing is more important than being surrounded by family and friends who support you whatever happens.

Reference

Hirschhäuser, A., van Cann, M. and Bogdan, S. (2021). CK1α protects WAVE from degradation to regulate cell shape and motility in the immune response. *J. Cell Sci.* **134**, jcs258891. doi:10.1242/jcs.258891