

## FIRST PERSON

# First person – Kira Allmeroth

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. Kira Allmeroth is first author on 'N1-acetylspermidine is a determinant of hair follicle stem cell fate', published in JCS. Kira conducted the research described in this article while a PhD student in Martin Denzel's lab at the Max Planck Institute for Biology of Ageing, Cologne, Germany. She is now a postdoc in the Denzel lab, investigating stem cells and metabolism.

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

In this project, we aimed to identify cell fate determinants using an organoid culture of hair follicle stem cells (HFSCs). These cells constantly have to make fate decisions during the natural hair cycle and are therefore an ideal model. But why is it important to influence cell fate? Stem cell fate decisions play an important role in tissue homeostasis, which declines during aging. The identification of cell fate determinants is therefore important to prolong health span. Here, we investigated cell fate decisions upon changes in the availability of specific metabolites – the polyamines. These positively charged molecules are essential for cell growth and are required for protein synthesis. Although HFSCs in organoid cultures display low translation rates, we have found that reducing protein synthesis through decreased levels of polyamines is not sufficient to affect cell fate. Instead, specific tuning of the polyamine ratios is required. We have identified a translation-independent role of N1-acetylspermidine in cell fate decisions that is mediated via increased proliferation.

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

This project was far away from the lab's expertise. Therefore, there were two different types of challenge associated with this project: first, technical problems with the organoid culture, and second, correct interpretation of results and putting them into a wider context. I was fortunate to collaborate with outstanding scientists, who helped with both types of challenges. Overall, our collaborations were fundamental to successfully finishing this project, and I would like to highlight the important contributions of all co-authors. Without them, this work wouldn't be published now!

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

I had two 'eureka' moments. The first and most important 'eureka' moment in this project, and of my PhD, was when I saw that DENSpM treatment affected the HFSC ratio. I was more than three years into my PhD research when this happened. It was the basis for this paper and motivated me to continue this project. The second moment was when I analyzed the organoid cultures treated with



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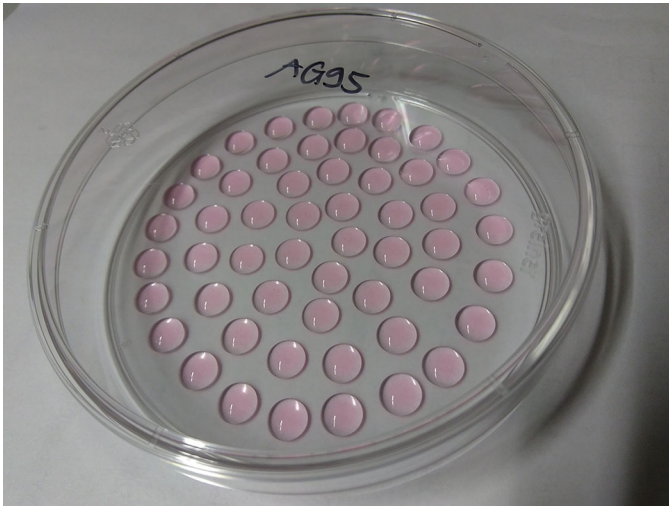
N1-acetylspermidine for the first time. I couldn't believe that this acetylated polyamine would affect stem cell fate, because it has mainly been described as export product. Today, it is my favorite metabolite.

**“I couldn't believe that this acetylated polyamine would affect stem cell fate [...] Today, it is my favorite metabolite.”**

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

We submitted our paper through Review Commons and chose Journal of Cell Science because the published articles cover diverse fields and the research published in JCS is well executed. Our story is very diverse, so we aimed to publish in a journal that covers a variety of different topics in order to make our findings accessible to a wide readership. During the publishing process, it was helpful to interact with an editor who himself faces the joys and problems of science and publishing on a regular basis. I am glad that we decided on JCS and recommend it to everyone who would like to publish a beautiful story in the field of cell biology!

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Murine hair follicle stem cells embedded in dome-shaped Matrigel droplets at the start of the organoid culture.

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

Oliver Sandscheid, who supervised me during my master's thesis work, has played a big part in my personal development and prepared me for the endeavor of a PhD. My doctoral supervisor Martin Denzel always encouraged me to evolve on both a scientific and personal level. This guidance was fundamental not only for my development in the lab but also beyond, and I wouldn't be the same person without it. Carien Niessen encouraged us to apply for an international research consortium focused on skin homeostasis (SFB829) and thereby provided an environment that was of tremendous help. The personal support I received was outstanding and as important as the scientific input. Sara Wickström shared her seemingly unlimited expertise and knowledge, and thereby enabled me to develop my own ideas and see the bigger picture. Peter Tessarz always took the time to help me with both scientific and personal problems, to share ideas and to ask the right questions to change my perspective. It was immensely important to know that I could come to his office any time. The guidance of these mentors was special since it was far beyond the 'normal' supervision. They contributed to the person I am today, and I am grateful that I received such an amazing mentorship.

**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?**

The basis for my scientific career was provided when I was a schoolgirl, aged 15. When I learnt about Mendel's laws of inheritance, I became fascinated by the logic of genetics. This fascination about science in general accompanied me along the way. I can still remember when I ran my first agarose gel in the advanced biology course at school. To me, the bands we saw were a mystery that needed to be unraveled, which made me curious. I wanted to learn more and decided to study biotechnology. Today, I am still fascinated by science and enjoy the curiosity-driven way we try to understand the fundamentals of life.

**Who are your role models in science? Why?**

My role model is Marie Skłodowska-Curie. She pursued her passion for science despite many challenges. Her outstanding endurance is something I admire even more than her scientific achievements. On a daily basis, my lab mates are my role models. Every one of them has unique traits that make them amazing individuals and great scientists, and I try to learn from them.

**What's next for you?**

I decided to take an unusual path: I will stay as a postdoctoral fellow in my PhD lab. I am fortunate to work in such an amazing environment, which doesn't limit my scientific and personal development (yet). I will switch fields, and I am looking forward to starting this new endeavor, to setting up new collaborations and to maintaining existing ones. We already have some exciting preliminary data, so stay tuned!

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

Two fun facts about me: First, I always wear two different socks, on purpose! My boyfriend does our laundry, and at some point he started to mix my socks to make me laugh. It worked out so well that he hasn't stopped mixing them ever since. It still raises a smile each morning when I put on a fresh pair! Second, since I really like ice cream, I know the name of every ice cream flavor in Italian, although I don't speak Italian!

**Reference**

Allmeroth, K., Kim, C. S., Annibal, A., Pouikli, A., Koester, J., Derisbourg, M. J., Chacón-Martínez, C. A., Latza, C., Antebi, A., Tessarz, P. et al. (2021). *N1-acetylspermidine is a determinant of hair follicle stem cell fate. J. Cell Sci.* **134**, jcs252767. doi:10.1242/jcs.252767