


PEOPLE & IDEAS

# Nina Cabezas Wallscheid: Enjoying the freedom to decide my research path

Lucie Van Emmenis 

**Nina Cabezas Wallscheid is a group leader at the Max Planck Institute of Immunobiology and Epigenetics in Freiburg, Germany. Taking a multidisciplinary approach, her lab investigates the mechanisms by which metabolites regulate the epigenetic and metabolic state of hematopoietic stem cell fate in young and upon aging, with the aim to identify therapeutic strategies for nutritional and hematological diseases. We spoke to Nina recently to learn more about her long-term interest in cell regulation, the joys of being a group leader, and the adventures she goes on while outside of the lab.**

**Please tell us a little about yourself and how you first became interested in science.**

I grew up in Roses, a little town in Costa Brava, in the north of Spain. I lived near the coast, surrounded by mountains, a place where you could feel the nature. I am half German, half Spanish; my father is from the south of Spain and my mother is from Münster in the north of Germany, so I had an international upbringing that was also enriched by growing up in a multicultural place that attracted international tourists, with neighbors from France, Germany, and the Netherlands.

My first interest in science came from the mountains and the nature of Costa Brava, but it was further sparked by playing with science kits for kids that came with a microscope and a handful of slides. At school we also had practical courses in a real lab, where we learned about chemistry and how to use microscopes, which I found really exciting!

**Tell us about your career trajectory, and what led you to being a group leader at the Max Planck Institute.**

From my little town, I moved to Barcelona to study biotechnology at the Universitat Autònoma de Barcelona. I also spent time in Italy as part of the Erasmus program, which was a very enriching experience. I then

moved to Mainz in Germany to pursue a PhD under the mentorship of Dr. Ernesto Bockamp, where I studied the onset of acute myeloid leukemia, specifically the role of the translocation AML1-ETO, and developed a mouse model that recapitulated the disease observed in patients. During my PhD studies I also spent some time at the Harvard Stem Cell Institute in Boston under the mentorship of Prof. David Scadden. That was an awesome experience where I could meet and talk with so many talented people—I felt like a kid in a candy shop! For my postdoc, I went to the German Cancer Research Center where I worked under the mentorship of Prof. Andreas Trumpp. There I got interested in understanding how hematopoietic stem cells are regulated, and I established new low-input omics methods and analyses in close collaboration with a fantastic team of scientists from the European Molecular Biology Laboratory, European Bioinformatics Institute, and many other institutions. When I was finishing my postdoc (or, perhaps more accurately, when I was starting to feel like, “OK, now I am ready to be independent.”), I decided to apply for group leader positions. I secured a position as a group leader at the Max Planck Institute of Immunobiology and Epigenetics in Freiburg, where I am to this day. The Max Planck Institute is a great place, with awesome science, fantastic researchers, and outstanding facilities.



Nina Cabezas Wallscheid.

**How did you first become interested in the topic of hematopoietic stem cell regulation?**

I was already interested in hematopoietic stem cell regulation during my PhD; working in the context of leukemia, the regulation of hematopoietic stem cells was already something I was aware of. To put it in another way, I have been interested for many years in how these unique cells are regulated.

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**What are you currently working on and what projects are you most excited about?**

My lab is interested in understanding how stem cell fate is regulated in physiological conditions, during aging, and in hematological and nutritional disorders. We are particularly excited about understanding the interplay between metabolites, epigenetic factors, and transcription. To answer our biological questions, we put a lot of effort into establishing new methods at the population and single-cell level like metabolomics and chromatin accessibility tools, especially for rare cell populations like hematopoietic stem cells. Our main ultimate goal is to translate our findings into the clinic.

**Please tell us about some work in your field that you are currently interested in.**

I am excited about the fact that, far from simply being the product of cellular processes, metabolites have recently been shown to play an active role as signaling molecules. I am also excited about the new methods that allow us to determine the function of metabolites, making it possible to then address how they regulate cell fate.

**What are some of the qualities that you learned during your graduate studies or postdoc that you maintain and foster in your own lab?**

I learned many qualities during my graduate studies and postdoc that I am now

passing to the next generation. That includes presentation and science communication skills, critical thinking, reviewing manuscripts, writing papers, among others.

**This year at JEM we are focusing on women in STEM, and we have heard from women at different stages in their scientific careers about their experiences and their thoughts, both positive and negative, on academia. Do you feel optimistic about the future for women in science?**

I feel positive about the future for women in science. There have been a lot of measures taken in the last few years, and we are slowly and steadily seeing positive changes. For instance, I am happy to see that the proportion of women in leadership positions is increasing. There are of course some places where more must be done, but others are already better. As a positive example, 40% of group leaders were women when I arrived at the Max Planck Institute of Immunobiology and Epigenetics, and two of five directors were women too. It was very encouraging to see so many women in leadership positions. Beyond the increasing number of women in leadership roles, I have noticed other positive changes too. I am part of the EMBO Young Investigator Program, which supports scientists with families: They provide up to €500 if you want to bring your child with your partner when you attend conferences, for example. That

sounds trivial, but it encourages scientists with small children to go to conferences, and that type of support can mean a lot when you have a toddler. I also see other positive changes, like seminars being scheduled at more family-friendly times. All in all, although there is still work to do, I think things are positively changing, and I hope that in a near future women will not have to worry about parity anymore.

**What do you most enjoy about your role as a group leader?**

I love mentoring, sharing with the student/postdoc the excitement of a result, presenting the latest data at conferences, and getting to know people all around the world. I truly enjoy the freedom you have in deciding which line of research to follow. These things are not unique to being a group leader, of course, and apply at other levels too.

**While not in the lab, how do you like to spend your time, or alternatively, how would you like to spend your time?**

I love outdoor activities, particularly skiing and hiking. I love high-altitude hikes; for instance, I have climbed Kilimanjaro and Mount Fuji, and I have trekked to the Annapurna base camp in Nepal. I also love being in the sea, whether that is diving or kayaking, and I love to travel and experience new cultures. We now have a little one at home with whom we are sharing our passions too.