

My Transition From a Postdoctoral Fellowship in the United States to Junior Faculty in Europe Challenges and Opportunities

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I started my training to become a cardiologist in 2005 at the Division of Internal Medicine in Heidelberg, Germany. The department is headed by Hugo Katus—the inventor of the troponin T assay—who enthusiastically supports and encourages his fellows to pursue basic science projects besides their work in the clinic. After first investigating cardiac auto-antibodies¹ under the supervision of Ziya Kaya, I came across a publication from Matthias Nahrendorf.² His description of monocyte subsets following myocardial infarction fascinated me and I applied for a position as a postdoctoral fellow in his laboratory. At the time, Matthias had just started a faculty position at the Center for Molecular Imaging Research which later evolved into the Center for Systems Biology at the Massachusetts General Hospital with Ralph Weissleder as its director. The finding that monocytes reside in the spleen and are released on myocardial injury³ fueled our frenzy for this leukocyte subset even further and ignited various projects in the following years.⁴⁻⁹

When the decision was made to go back to Heidelberg, I tried to develop projects that would be a natural follow-up to what I had been working on, but also distinct enough to establish my own focus and stray away from questions too obvious. Since I was going to work in the clinic again, I also wanted to integrate human samples into our studies and to prospectively enroll patient groups of interest for experimental investigations. In addition, various brilliant research institutions beyond the university are located in Heidelberg, such as the European Molecular Biology Laboratory or the German Cancer Research Center to name only 2. I initiated collaborations with investigators at these institutions to broaden my skills, including learning about techniques that had not been applied in the context of healing after myocardial infarction in the murine model.

On my return to Heidelberg, I was again greatly supported by Hugo Katus who allocated me laboratory space in a newly

build research facility, provided financial funds for necessary materials, and allowed me protected time to develop my laboratory besides the clinical duties. And yet, even though I was given perfect support, the transition from being a postdoc in the United States to starting my own laboratory in Germany felt like changing from racing a Ferrari to riding a bicycle (with a flat tire).

This perception was certainly driven by the surrounding that I was coming from. Organization at Center for Systems Biology was—and I am sure still is—flawless. From day 1, I was embedded in a fantastic team of supervisors, technicians, and fellow postdocs (Figure). Various core facilities were readily available, and the fact that complicated machinery was operated by designated personal made it easy to advance projects in a rapid manner. So back in Germany, setting up a laboratory involved starting from scratch with an empty bench and being a one-man show in the beginning. I gradually recruited great personnel, and we got things working. Although I had previously imagined the sweet life of running my own laboratory, I quickly learned about the down sides: from the constant pressure that the bills get paid to grueling paperwork and lack of time for hands-on work at the bench.

The first funding that I received for my return was from the German Academic Exchange Service. Aiming for scientists abroad, the German Academic Exchange Service offers scholarships specifically for those who plan to move back to Germany. Subsequently, I was awarded funding from the German Heart Research Foundation, the Federal Ministry of Education and Research, and the German Research Foundation. The latter is the largest funding organization in Germany, supporting research in science, engineering, and the humanities. Another important supporter of cardiovascular research in Germany is the German Cardiac Society. Although the German Cardiac Society might not be able to match the \$170 million fund that the American Heart Association spends per year for their research activities, they offer great opportunities for young scientist and fund a variety of research programs.

One remarkable opportunity for me was the integration into the German Center for Cardiovascular Disease. The German Center for Cardiovascular Disease is a framework of 28 institutions in 7 locations throughout Germany with the mission to foster the translation of basic research into clinical practice better and faster. The partner sites closely collaborate among each other and set up prospective clinical trials, but also developed a platform to share expertise in basic experimental approaches.

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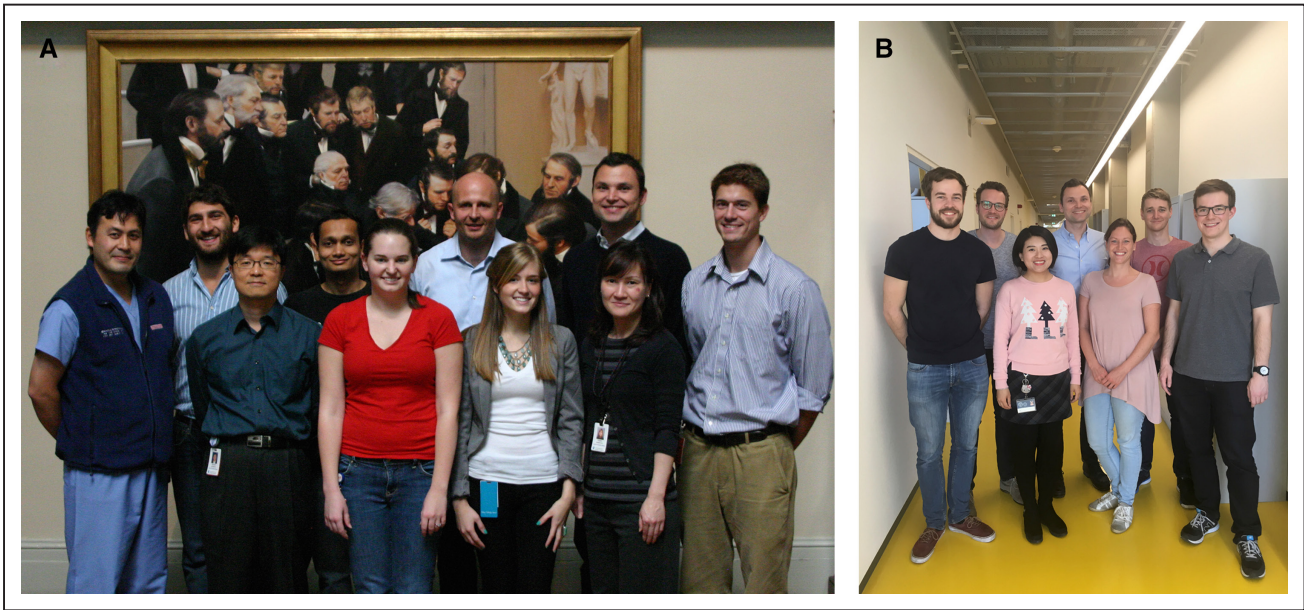


Figure. **A**, The author during his postdoctoral fellowship in the Nahrendorf Laboratory. From left to right, Takuya Ueno, Rostic Gorbato, Won Woo Lee, Parta Dutta, Jessica Donahoe, Matthias Nahrendorf, Brena Sena, Florian Leuschner, Yoshiko Iwamoto, and Brett Marinelli. Picture taken in the Ether Dome at Massachusetts General Hospital. **B**, Current members of the Leuschner Laboratory in Heidelberg. From left to right, Florian Sicklinger, Tim Kuhn, Xue Li, Florian Leuschner, Susann Werkmeister, Sören Meyer, and Johannes Knobel.

One of the most exciting aspects of the US laboratories is the diversity of scientists from around the globe. Our team in Heidelberg does not include as many nationalities yet, but we already have a fantastic team of international students and fellows. The culture in the laboratory and the individual expectations and challenges, therefore, seem to be not that different from what I experienced in the United States. To me—and this might account for other physician scientists returning from the US as well—the biggest difference compared with my time as a postdoctoral fellow is to balance laboratory and clinical duties again. This seems especially important when you are choosing interventional cardiology. On my return to Heidelberg, I was eager to develop my skills in the catheter laboratory and become proficient in percutaneous coronary interventions and transcatheter aortic valve implantation. To this end, I currently spend half of my time in the clinic and devote the other half to research. I am still not sure if this is the right balance, but it is certainly a most exciting combination for a physician scientist.

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Disclosures

None.

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