Charting a path from 'bench to bedside'

Lars Zender is professor and chairman of internal medicine at University Hospital Tubingen in Germany. He has received many awards, including the Gottfried Wilhelm Leibniz Prize of the German Research Foundation.

Lars Zender

When I was six years old, I had a severe accident that would alter the course of my life. I was on a swing whose seat broke. I went flying headfirst into the wall of a nearby house. Despite the 20-cm-long scar that I still have, I was so impressed by the work the trauma surgeons did to save me. This early experience not only led me to enter medical school, but it also made me determined to become a trauma surgeon.

However, something else caught my attention during medical school. I became fascinated with the complexity of cancer. I was stunned to learn that, despite significant research efforts over the previous 50 years, little progress had been made to combat advanced cancers.

After reading some of the literature on cancer genetics, I was intrigued by the multifunctional *p53* gene, including its role as a tumor suppressor, and I decided to focus my thesis on this subject. I made my own MD/PhD program (no formal MD/PhD program was in place at Hannover Medical School when I attended) within the Department of Gastroenterology & Hepatology, where a young attending physician named Stefan Kubicka had built up a gene therapy research group with a special focus on restoring *p53* function, which is often lost in tumors.

I worked in the laboratory for almost four years, a time that would now be considered too long for an MD/PhD as young physicians try to finish medical school in the shortest possible time. My extended time in the program meant that I received a solid training in molecular and cell biology research techniques, and this served as a foundation for my current work combining patient care with translational research.

After graduating from medical school and finishing my doctoral thesis, I started work as a resident in internal medicine. I worked with patients during the day and went to the lab at night to continue my research projects. I could have stayed in Germany and continued my residency, but I decided to interrupt my residency to complete a postdoctoral training stint in the US. This was a critical turning point for me.

Credit: University of Tübingen, Prof. Lars Zender

I decided to work with Scott Lowe at Cold Spring Harbor Laboratory in New York. I was interested in developing a new type of genetically engineered mouse model for hepatocellular carcinoma, a type of cancer with very limited therapy options. Adjusting to the new lab was tough. I was surrounded by postdoctoral colleagues who had all graduated from prestigious institutions and had already published high-ranking papers. But quickly, I, affectionately called 'the German MD,' became a part of the lab.

During my time in New York, some of my German colleagues advised me to return home early to finish my residency and build up my own group, but I felt that there was much more to learn. So, I stayed on for two more years, a decision that I regard as another crucial turning point for the development of my own career.

When I finally returned to Germany in 2008, I continued my training in internal medicine and also built up my research group with a joint appointment between Hannover Medical School and the Helmholtz Centre for Infection Research. It wasn't easy to convince both institutions that a joint appointment was the way to go, but the success of my research would not have been possible without the advanced infrastructure at Helmholtz.

Four years later, I decided to move to Tubingen University. This move provided the ideal environment to combine patient care in clinical oncology with a competitive cancer research program. My current clinical work focuses on treating patients with advanced and therapy-resistant solid tumors. In my lab, we are investigating genetic approaches to identifying novel therapeutic targets that can be used to develop new drugs.

It took me a long time to get here, but I am now in a position to regularly see the concept of 'bench to bedside' truly come to life. My research training has allowed me to build a solid program that generates novel targets, and, as I work with medicinal chemistry colleagues, we can turn those discoveries into novel drugs. As a clinical oncologist, I'm also in the unique position to be able to these drugs be administered to my patients. I now look forward to whether our effort—in the lab and the clinic—can ultimately do some good for our patients. ❐

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