

Lecturer for Molecular Informatics, Centre for Molecular Informatics  
Department of Chemistry, University of Cambridge, UK  
[Andreas Bender's lab website](#)

Andreas Bender is the quintessential hybrid scientist. He knows how industry research works from the inside, having spent two years at NIBR as a postdoctoral fellow, and he has since built his career in an academic setting - two years at Leiden University in the Netherlands and six years at the University of Cambridge in the UK, while continuing to build close collaborations with industry partners.

For Andreas, furthering his professional training at NIBR had unique advantages. "It was the best of both worlds. I had a lot of resources available to me, good questions to pursue, and the ability and encouragement to try new things and publish. Perhaps most importantly, it helped me understand which types of questions really matter when applying computer science to drug discovery data. Now as an academic researcher, I can work on problems directly relevant to discovering new bioactive molecules that may be developed into medicines."

At NIBR, Andreas worked in the Discovery Informatics group with Jeremy Jenkins and John Davies, exploring mode-of-action models based on experimental data. What that means is, given a molecular structure, can you predict what biological targets it might hit, what molecular pathways it might modulate, and what would be its likely effect on the disease or side effects on the individual (the "phenotype").

Andreas's postdoctoral work is being continued in his own lab. "We now have quite a lot of data that link molecules to targets, and molecules to phenotypes. We have bioactivity profiles of compounds on thousands of human molecular targets. We are gathering information on the effects of compounds on gene expression." In principle, this approach can connect the entire human genome of targets to a massive database of compounds and their effects.

That's just one project in his lab. There is a lot more going on. "We have 22 people right now – 16 PhD students, 3 postdocs, and usually 3-4 academic visitors from all over the world." Several lab members work on the mode-of-action models first explored during his postdoc. With so many projects and his first PhD students graduating, Andreas's lab is well-established and running full steam. But this particular scenario was not always so certain.

"After my PhD, my plan was to do my postdoc in Novartis, then stay in industry. I was 99% sure about this." So what made him change plans? It turned out that, while his postdoc experience at NIBR was the right thing at the right time for developing his skills and knowledge, he saw that academia provided even more freedom to explore new ideas, with partners from any academic or industrial background.

He can work with industry and not be tied to the projects and objectives of a larger commercial operation. "My group has 16 projects, out of which 6 or 7 are with industry – exploring a diverse set of questions. And every company we work with is different – specialty chemical companies, pharmaceutical companies, consumer goods companies."

Recently, based on data analytics methods developed in his lab, Andreas was involved in forming a start-up company that applies bioinformatics approaches to drug repurposing for rare diseases. The company has received seed funding and won the 'Life Science Business of the Year' award by Cambridge University Entrepreneurs. As Andreas points out, his postdoc experience at NIBR has continued to influence his work, in both academic and entrepreneurial contexts.

Andreas added that his NIBR postdoc helped him make the transition back to academia. “The publications definitely supported my move back, and to some extent I could already define my own projects. I basically started out as a kind of PI - a ‘group’ of 1 - with help from many experts. I was learning a path to independence.”

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