TURNING POINT
Job Dekker

Job Dekker won the 2011 Young Investigator Award from the American Society for Biochemistry and Molecular Biology in Bethesda, Maryland, for his efforts to develop techniques to probe the three-dimensional structure of chromosomes. Dekker, a biochemist at the University of Massachusetts Medical School in Worcester, accepted the honour on 12 April.

What was the most important factor in your career development?
Where I did my postdoc. I did my PhD in biochemistry at Utrecht University in the Netherlands, but I had always been interested in how chromosomes interact and exchange information. I followed the literature on this issue, and when it was time to set up a postdoc, I contacted Nancy Kleckner, a molecular biologist at Harvard University in Cambridge, Massachusetts. She was studying how chromosome structure dictates where and when recombination occurs, which dovetailed with my interest in mapping chromosome structure.

Describe the roots of your technique.
I developed a biochemical technique for determining how DNA segments are linked to one another and interact. The result is akin to a 'molecular microscope' to detect physical interactions between chromosomes, and it eventually became the chromosome conformation capture (3C) method. 3C has helped my team and others to study how chromosomal activities influence, for example, gene expression. Nancy was supportive of this wild idea and was willing to keep me in the lab for as long as it took to get it to work.

How did you approach this high-risk project?
I gave myself 12 months to collect experimental evidence that it would work. A year isn't long, but a postdoc is the right time to do a risky project. If it works out, it's a great starting point for the rest of your career. If you stick to safe projects, you carve out a less distinct niche. I started in January of that year and got the first hint that it would work in November. But I immediately put it aside.

Why?
During my postdoc, I was also doing a 'safe' project — studying how proteins mediate interactions between chromosomes. More labs were entering the competition, so I had to pause the high-risk project to focus on the safe one. But I got scooped on that, so I went back to the microscope project, which took two more years. I published the 3C paper four years into my postdoc, which is a long time to go without papers. But it's an important one.

Did you worry about cultivating a reputation as a technologist rather than as a scientist?
Yes, and I discussed the issue with my department chair. But quite a few career opportunities came my way as a result of the 3C work. I forged collaborations with Eric Lander, founder of the Broad Institute genomic-medicine research centre in Cambridge, Massachusetts, and his sequencing group, and we developed the technology further, using it to visualize whole genomes, and ultimately combining it with next-generation sequencing to create a high-throughput version of 3C. And we published all the intermediate technologies, so I have a solid publication record.

What are the consequences of sharing your technological developments?
It's both beneficial and harmful. We train people from other labs and give them our protocols to help promote advances. The benefit is that I have a whole network of connections, and the technology has rapidly taken hold. As a result, we've got a lot of competition. We've been scooped several times because the technology is now so easy to gain access to. But that's normal in science.

You've just achieved tenure. Is your career in transition?
My research direction is changing. After spending 13 years on this technology, we can now look at whole chromosomes to address real questions, such as how chromosome structure affects disease formation. I don't think I'll embark on a new round of technology development, but you never know. ■

INTERVIEW BY VIRGINIA GEWIN