



INTERVIEW WITH DR WILJAN HENDRIKS: COLLABORATIVE SCIENCE AT THE RADBOUD(UMC)

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Insight

This year, our beloved university becomes a centenarian. One can imagine that a lot has changed during this time, both within the university and beyond. For this special jubilee edition of RAMS, I was joined by Dr Wiljan Hendriks of the Department of Cell Biology, who has been walking around on this campus on and off since 1977. This four-time Molecular Mechanisms of Disease lecturer of the year winner and (co-)author of over 130 papers shared his insights about his time at the Radboud these last decades, how science has changed during this time, and what his most valuable tips are for scientists during the next 100 years.

Changes at the Radboud over 50 years

While I don't think any of us students were alive in 1977, some might have an idea of what the university, then still under the name Catholic University Nijmegen, looked like back then. Dr Hendriks explains that most of the buildings we think of as characteristically Radboud did not exist yet. Both the Huygens building and the Experience Centre had yet to be built, and the hospital also looked completely different. This difference in architecture also translated to differences in study programmes. Dr Hendriks was interested in recombinant DNA techniques from a young age, and to pursue that interest he could only choose between Chemistry and Biology as a programme. Now, with the addition of Medical Biology, Molecular Mechanisms of Disease, and Molecular Life Sciences, there are many more options for combining the different natural sciences.

Dr Hendriks felt an intense craving to understand how the living world around us can exist when in essence it is only built up from 'dead' molecules and atoms. At the end of Dr Hendriks' programme in Chemistry, he was finally able to take some biochemistry courses and come into contact with this field that he had been admiring since his youth. From here, he had to decide on internships to wrap up his programme, which would now encompass both a bachelor's and a master's degree. While many of us now do one internship and one thesis, tradition back then was to do one major internship related to your specialisation and two minor internships in the broader field. Now, these internships are often highly established and you stay in a group for a short and defined period of time. While it was Dr Hendriks' goal to do this as well, he ended up staying at both of his internships for two full years.

When asked whether his long-awaited second internship in recombinant DNA techniques was worth the wait Dr Hendriks gives two reasons, the first being a personal one. The other reason he enjoyed the internship so much was the techniques he was working on at the time. Most of us will know dideoxy DNA sequencing, now more well-known as Sanger sequencing, as a widely used and well-established technique. However, at the time of Dr Hendriks' work at the Biochemistry Department, this technique was not up and running yet in Nijmegen. Therefore, it was his job to get this technique going and to start using it. Dr Hendriks states that this

work laid the foundation for his later academic career. "After working on this for two years, I enjoyed it so much that I realised this was the way to go".

Work and life are intertwined

When asked to elaborate on his first reason for enjoying the second internship in recombinant DNA techniques Dr Hendriks becomes bashful. He states "The moment I entered the lab and the group I would be working with I saw this fantastic technician whom I fell in love with". After she taught him all of the nitty-gritty aspects of the work, she apparently felt the same as they are still together 41 years later. This is not the only personal relationship Dr Hendriks has developed during his time at the Radboud. He explains that he feels he succeeded in science because of the tutorage and mentorship he received from some great role models over the years. The guidance of the late Professor Wilfried de Jong at the Biochemistry Department allowed him to feel comfortable enough to continue with his PhD there [1]. Additionally, in Professor Dr Bé Wieringa Dr Hendriks found another person who was fascinated with how 'dead' molecules make up living materials.

Because of this, after working on a transgenic knockout mouse in Zurich for two years, Professor Dr Wieringa invited Dr Hendriks to come back to Nijmegen and help establish the same techniques there. While reminiscing about his time working with Prof. Dr Wieringa until 2016, Dr Hendriks claims "I have been the luckiest guy alive with such a person as a boss". When asked to elaborate on this further he boasts about the brilliance, cooperation and personalness of his former boss. He explains how Prof. Dr Wieringa conversed with everyone in the department, always making time for his employees when needed. Dr Hendriks reminisces about wonderful times, having fun in the lab and hanging out with other people from the department. He also explains that this luck of having thoughtful supervisors or bosses has not changed over time. His current superintendent, Alessandra Cambi, has significantly helped him through rough periods at Cell Biology.



Dr Wiljan Hendriks

Collaboration is key

During Dr Hendriks' work on DNA sequencing and transgenic knock-out mice, his first love within science crept back into his life. His interest in understanding how cooperation between 'dead' molecules could be transformed into living materials still fascinated him. For this, he went on to do 25 years of work on protein tyrosine phosphatases. These essential signalling molecules are the counterparts of the much more studied kinases and regulate a host of physiological processes [2]. In this work, Dr Hendriks encountered many obstacles. For one, the human genome contains 125 protein tyrosine phosphatase genes, so redundancy impeded his ability to create knock-out mice quite a bit [3]. Furthermore, the sudden death of his main collaborator on this research line, Jan Schepens, struck Dr Hendriks hard. This loss has significantly impacted both his persona and professional life to this day.

However, although he is no longer performing his own research, Dr Hendriks has taken up somewhat of an advisory role in both the Department of Cell Biology and beyond. He explains: "It is so rewarding to be able to help another person. Especially with research, which contains a lot of blood, sweat and tears. You encounter many failures, and then at the end, there is this success. If you can boost the number of success experiences by having lots of collaborations, that is amazing." Dr Hendriks, for example, recalls getting a phone call from Japan exclaiming that the constructs he helped them with worked beautifully. "These things, they make your scientific heart tick", according to him.

The next 100 years of science

Dr Hendriks concludes that the current scientific climate is much more separated into islands than what he experienced at the beginning of his career. Funding from grants has become both more important and more difficult to obtain. There is fewer permanent staff available in a department to keep knowledge alive and consistent. Now, more than ever, it is essential that we as scientists collaborate and share ideas. This is even more topical now with the recent merger of the three different research institutes into the Radboud Institute for Medical Innovation. The merger will fundamentally change the research lines in Nijmegen from the 'top-down', so 'bottom-up' scientific collaboration and cooperation will become even more essential.

Hendriks's final message is one for all current students and future scientists. In 2016, the FAIR data principles, meaning Findable, Accessible, Interoperable and Reusable, were published to ensure the reusability and usefulness of data and to limit the occurrence of research waste [4]. Many students who have taken courses by Dr Hendriks will have come across his love for acronyms and abbreviations. During this interview, he proposed an additional meaning to the FAIR principles that should be the guiding principles for any prospective or current scientist: Friendly, Approachable, Interactive, and Respectful. "If you are open, honest and collaborative, that is also what you will meet in others". With these attributes in mind, future scientists within the next 100 years of Radboud University can attempt to step into the hole that Dr Wiljan Hendriks will leave when he retires at the end of this academic year.

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