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SPECIAL

Broerstraat 5

Ben Feringa
Winner Nobel Prize for
Chemistry

Big in the supersmall



Ben Feringa about winning the Nobel Prize

‘This award is so special, almost magical’

Since the news broke on 5 October, there has been a storm of public and media interest. All eyes are now on **Ben Feringa** as the hero of the University, and even beyond it. Here is the scientist's story in his own words. He describes his career so far, the amazing events of the last few weeks and where he would like to go afterwards.

'Chemists will be sorely needed to achieve a sustainable future under these circumstances'



ELLIS ELLENBROEK REYER BOXEM

NOBELPRIZEWINNER

The UG plans to name a building after you and to have a copper bust cast. Everywhere we go, we are greeted by waving banners with your face on them, and you probably must have had one or two of the 28 thousand cakes that the University had baked, with your name on them. How do you undergo this?

'This elaborate tribute was not my idea, of course, but I understand that this award is so special, almost magical, that the University and Dutch chemistry want to showcase it. That's fine. I'm more than happy to cooperate and am delighted with the tribute. It is such an enormous honour that our new building will carry my name. In November, I was in China for eleven days of lectures and conferences. That trip had already been planned a year ago. Even in China, I saw banners with my picture on them. Quite an extraordinary experience. Students wanted to take selfies with me afterwards. After a lecture, they came running at me, fifty at a time.'

What about fan mail?

'In the first hour after the announcement, I had already received 350 e-mails from all over the world. A thousand more came in later that day. Shoe boxes full of postcards and letters. Overwhelming. I have only been able to look at part of the congratulations, reactions and requests. It will take me until the Christmas holidays to answer all my mail. There is mail from people who collect autographs and photographs of Nobel Prize winners or other celebrities. They've got Obama's, so they write me, and include a stamped return envelope. I've also received very moving letters, asking whether my nanomotor can help detect tumours at short notice. I have to disappoint these people: this is fundamental research for the long term.'

Bob Dylan will not be collecting his Nobel Prize for Literature. Can you understand that?

'Who am I to judge? But I find it regrettable. I think it is sad that he doesn't appear to realize that accepting the Nobel Prize can contribute to the standing of literature and pop music. A pop musician receiving such an award is good news to young people, culture being under pressure so often as it is.'

What does music mean to you?

'I don't have enough time for it, otherwise I would listen to music more often. Music distracts me when I need to concentrate or write. But the young people in the labs here have music on all day. Chemistry is a very sociable programme. People forget that sometimes, and think: ah, those solitary scientists. But we work in teams here. Students, PhD students and postdocs spend the entire day together, challenging each other and having a whole lot of fun in the process. When they heard that Dylan had received the Nobel Prize, they played his music all day. I still have a few of his LPs from my student days. In those days, the seventies, he was one of my favourites too, together with The Who, The Rolling Stones and Creedence Clearwater Revival. LPs are hot again. My daughter just bought a record player. She plays my old records now.'

You've said several times: 'Now I know how Epke Zonderland must have felt when he won the gold medal at the 2012 Olympic Games.' But Epke knows all about disappointment too. How disappointing can your profession be?

'If you cannot handle frustration, you should not become a researcher, as there are many disappointments: not every funding application makes it to a grant. Spending the entire Pentecost weekend writing an application and getting a rejection back – that sure puts you in a lesser mood for the rest of the day, I can tell you that. Or receiving the funding but finding out that many things don't work the way you expected they would. Nature often gets the better of us. Or not being able to manufacture the materials, construct the molecules. We worked on the nanocar for seven years. Another example from our research is a discovery in catalysis. The Nobel Prize was not awarded for that. We've spent twenty years working on a new method to construct carbon-carbon compounds using a carbon-lithium compound. Twenty years! Sometimes we ran out of ideas, and we only reached a breakthrough three years ago. That is research. I enjoy working on difficult problems, and in a number of cases we don't even know what question to ask. Where should we go? Where will we end up? When you're walking in the dark, you sometimes bang your head on a wall.'

How do you respond to that?

'I need to get that frustration out of my system, but I don't go around slamming doors. I start thinking and inventing something new on my bike ride home, or while jogging. If something doesn't work, we need to do better. It means we are just not good enough. Usually I still have a few ideas up my sleeve, and luckily I am a born optimist. Sometimes something just doesn't work, and we terminate the project. Being the head of a large group of researchers also makes you a psychologist or social worker sometimes. Like that time when I arrived at the lab at quarter past eight: a PhD student walked up to me and shoved an article from our Japanese competitors in my face. 'Look, Ben; published just yesterday.' It was an article similar to the one we were planning to submit to an American journal that same week. The young woman had been toiling on it day after day for a full year. Now, those are the times when you don't put your lab coat on just yet and take care of the student with tears rolling down her cheeks first. It is her future that is at stake.'

Your team currently consists of 35 talented people, most of them young. Are you still on top at age 65?

'I would like for them to be on top. That is exactly what I tell all new PhD students, whether they are from China, Italy or the Netherlands. I tell them: 'Four years from now, you should be better at this than I am.' We invent things together, discuss them, and I give them hints, also based on my experience. But they perform the experiments; they make the discoveries. I love it when they are better than me.'

Continued on page 6 →

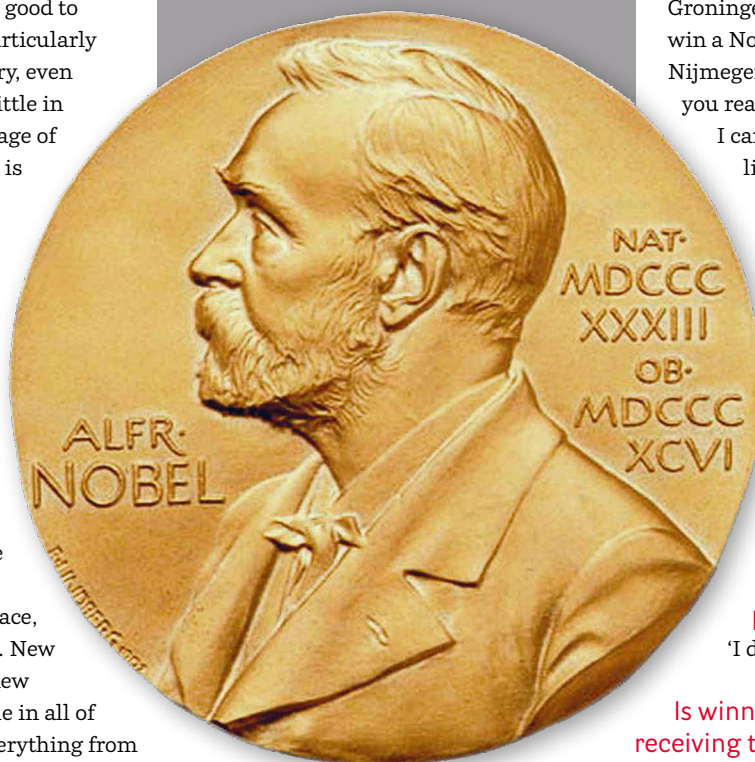
You plan to continue working until you are 70. What are your plans?

'I will continue running my research groups for the next several years, just doing new things. We are currently working on smart drugs, such as nano-scale light switches built into drugs that can be switched on and off. We are also working on an artificial muscle that moves under the influence of light. Another fun thing: self-repairing materials. Cars with self-repairing paint, for example. We'll have those, for sure. In about ten years we'll have them. Or smart glass that cleans itself. Nature can already do it. Look (runs his nail across his arm)! If I scratch here, it heals by itself. You don't have to do anything. I did promise myself to reserve more time to promote science. I've given quite a number of public lectures throughout the years, and I think that it is good to stress the importance of science, particularly fundamental research and chemistry, even more. This country invests far too little in fundamental research. The percentage of NWO grants awarded, for instance, is much too low in quite a few fields; only one in ten receives a grant. We will simply be running behind soon. We cannot compete with China and other countries if we don't maintain a strong base.'

Should we even want to win from China?

'Well, what is winning? If we want to retain our wealth and our manufacturing industries, let alone our ability to judge what is important about technology in the first place, we will have to train people for that. New drugs, clean industrial processes, new materials; chemistry plays a key role in all of them. Do we just want to import everything from China, relying on what they produce for us? Or do we want to have expertise of our own, too? I heard that the world will be using eighty percent more energy in the next thirty years. Eighty percent more, not less. I was in Beijing recently. Do you have any idea of how the number of cars has grown in Beijing alone? By two million in three years' time, so I was told. Chemists will be sorely needed to achieve a sustainable future under these circumstances.'

Ben Feringa (b. 18 May 1951), the second of ten children in a Catholic family of farmers in Barger-Compascuum, wanted to be a farmer. How differently things went is well known. Feringa lives in Paterswolde. He is married to Betty (60), who retired this summer from a management position at the UMCG Centre for Rehabilitation at the Beatrixoord location in Haren. Together they have three daughters: Femke (29), Hannah (26) and Emma (22). Femke and Hannah are PhD students in Amsterdam and Utrecht respectively. Femke performs cancer research, while Hannah performs food and allergy research. Emma obtained her Bachelor's degree in Human Movement Sciences from the UG on the day her father won the Nobel Prize.



With the exception of a few years at Shell, you have been in Groningen for your entire career. You studied there, completed a PhD there and have been a full professor there since 1988. You seem remarkably sedentary for someone of your calibre.

'There have been prestigious universities and institutes who wanted me. I won't tell which ones. I would think about it for a week and decline. Those are personal choices involving family, but also the fact that life wasn't bad in Groningen. Of course they were difficult choices to make. In Cambridge or Harvard you would probably only have top-notch students, and there is more money available there. So, while Groningen is no Harvard or Cambridge, I am enormously proud of the students in Groningen. Moreover, this shows that you can win a Nobel Prize in Groningen, Leiden or Nijmegen by doing your job. It is about what you realize in thirty years of hard work.'

I can tell you what my working day looks like: I get up at 6:45, get on my bike at 7:30 and arrive at the institute at 8:15. I work there until seven and usually arrive home at around quarter to eight, where I have dinner, watch the news and work some more until eleven or half past eleven. During weekends, I usually put in another ten hours of work.'

So when did you have time to train for the Elfstedentocht skating tour in which you participated in 1997?

'I didn't train for it.'

Is winning the Nobel Prize comparable to receiving the Elfstedentocht token?

'The road to the Nobel Prize is bumpy, too, with highlights and challenges. You try not to fall and to get up and move on whenever that happens. There are moments of intense cold and beauty. I still remember skating into the city of Dokkum (drums on the table enthusiastically), at exactly eight o'clock. I'll never forget it. The Mayor was just being interviewed live on the national news. Thousands of people were cheering along the way. Well, that gives you a new boost of energy. I drank hot chocolate, still had twenty-four kilometres to go to the city of Leeuwarden, but I knew I would make it.'

More about Ben Feringa on WWW.RUG.NL/NOBELPRIZE