2018 Dr H.P. Heineken Prize for Biochemistry and Biophysics, awarded to Xiaowei Zhuang

Presentation speech by Bert Meijer, chair of the jury of the 2018 Dr H.P. Heineken Prize for Biochemistry and Biophysics

Ladies and gentlemen, here in The Netherlands, everyone knows Johan Cruijff. He was a soccer superhero, but he was also famous for his unforgettable quotes.

Allow me to give you one of his most memorable wisdoms: 'Sometimes, something has got to happen before something is going to happen'.

And that, in a nutshell, explains why the jury chose this year's laureate in Biochemistry and Biophysics.

In the United States, ladies and gentlemen, people don't know Johan Cruijff. But they all know Yogi Berra. He was a baseball superhero, and he too was known for his particular brand of wisdom.

You just heard our laureate cite one of his famous quotes: 'You can observe a lot by watching.' Channelling Johan Cruijff, I could add: 'But before you can watch, you must be able to see.'

And that is where Xiaowei Zhuang comes in. She developed tools that bring blurry molecular images into sharp focus. Only after she gave us razor-sharp pictures, we can see and watch living molecules at work.

Ladies and gentlemen, I will try to avoid too much technical detail. You just heard Zhuang talk about the 'diffraction limit'. It is what prevents even the best microscopes from seeing things that are smaller than the wavelength of light.

That used to mean that we could clearly see cells, but not the viruses and molecules inside those cells. It was as if I would try to read without my reading glasses.

In recent years however, scientists invented tricks to solve the problem. Zhuang came up with her own. It is called STORM, and it is brilliant. It is hard to explain here from this podium, but it involves chemical labels glowing in the dark, long exposure times and clever software. Taken together, they produce stunning pictures.

I have been fortunate to witness them in my own lab. All of a sudden we can see individual molecules. We can even watch them move.

For Zhuang, having the tool is not the end of the story. As Yogi Berra used to say: 'It ain't over until it's over.'

The jury much admires how she uses STORM to probe long-standing mysteries of the cell, that biological machine made up of moving molecules. Most of what goes on in there, we still don't know. How, exactly, is our nervous system constructed? How and when do cells process information from our genes? How do viruses enter cells, and how do they then take things over?

The jury found Zhuang a brilliant researcher, a world leader in her field. We praise her not just for letting us watch, but also for making great observations. So please join us, ladies and gentlemen, in paying tribute to Xiaowei Zhuang, winner of the 2018 Heineken Prize for Biochemistry and Biophysics!