



**Heineken
Prizes**



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2016 Dr H.P. Heineken Prize for Biochemistry and Biophysics, awarded to Jennifer Doudna

Presentation speech by Bert Meijer, Chairperson of the 2016 Dr H.P. Heineken Prize for Biochemistry and Biophysics Jury

Ladies and gentlemen,

“Go out and do great things in the world.”

That is what we just heard Jennifer Doudna tell her students.

And that is exactly what she did herself, and still does. Today, she will receive an award for some of her outstanding achievements in science.

And she will serve as an example of how great things can happen when you follow your curiosity.

Ladies and gentlemen,

From the very beginning of her career, Jennifer Doudna wanted to understand the role of RNA molecules in biology.

For those among you who are not biochemistry experts: RNA molecules are similar to DNA molecules, which carry our genes.

But RNA molecules are smaller and they take much more active roles.

While DNA stays at home, so to speak, RNA goes out to do the shopping.

In order to understand the role of RNA, Jennifer Doudna knew that you have to begin with understanding what RNA looks like in a three-dimensional world.

So right away, she began to create crystals of RNA molecules and to measure what they looked like in three dimensions.

At first, she took small, simple RNA molecules.

But later, she made a daring attempt: to crystallize and measure much larger strands of RNA.

And she succeeded.

For the first time, researchers learnt how a long strand of RNA will twist and fold itself into shapes that interact with other molecules, such as genes and proteins.

Such RNA interactions can be very specific and very precise.

Jennifer Doudna even unravelled complex RNA molecules while they were attaching themselves to other complex proteins.

It is this pioneering work that has brought her here today.

That early RNA work is now part of the foundation of a new field that you will hear much more about in the future.

Its name, 'CRISPR-Cas', sounds like a hobby for scientists. But make no mistake:

It is a great technological achievement in science, made possible through her seminal studies in RNA-protein interactions.

It is transforming the way in which scientists can modify genes of any organism on our planet: of bacteria, plants, animals and even people.

It will make the editing of genes much easier, much cheaper and much more precise;

It will open up tremendous possibilities for science and medicine;

And it will raise all sorts of ethical questions.

Ladies and gentlemen,

Jennifer Doudna has shown that she is not afraid to take on both.

She has already won a number of prestigious awards.

And today, we are very proud that another one is added to that list.

Please join me and the jury in a firm round of applause for Jennifer Doudna, winner of the 2016 Heineken Prize for Biochemistry and Biophysics!