

Vishva M. Dixit receives Dr A.H. Heineken Prize for Medicine 2022



Vishva Dixit
Photo: Bram Belloni



Amsterdam, 2 June 2022 – Vishva M. Dixit, vice president of Early Discovery Research at Genentech, will be awarded the Dr A.H. Heineken Prize for Medicine 2022. The award honours his pioneering biomedical research on apoptosis, the process of programmed cell death, and necrosis, where cell death is caused by factors outside the cell such as infection or trauma. His discoveries have provided mechanistic insight for new clinical treatments, including immunotherapy in cancer patients.

The Heineken Prizes are the Netherlands' most prestigious international science prizes. Every two years they are awarded to five distinguished researchers. The Royal Netherlands Academy of Arts and Sciences is responsible for the nomination and selection process. During the first week of June, a 2022 laureate will be announced every weekday. Previous laureates of the Dr A.H. Heineken Prize for Medicine include Karl Deisseroth (2020) and Peter Carmeliet (2018). The award was established in 1989 by Alfred H. Heineken.

'We can live because we are continuously in the process of dying'

About the study

Dixit studies how the cells of the body die, and how our bodies regulate the process of apoptosis. Every second, your body replaces about a million cells because they are old, damaged or mutated. As the biomedical researcher himself explains: *'We live because we are continuously dying.'* Dixit discovered which enzymes are involved in apoptosis, and how they activate each other in a chain reaction. This knowledge could be used, among other things, for enhancing immunotherapy in cancer patients, with immune cells initiating this chain reaction, killing cancer cells.

In addition to this 'silent' form of cell death, there is also 'loud' cell death: necrosis. This occurs, for example, in the case of a cut, burn or infection. Dying cells alert immune cells to come and clear away the danger: they trigger an inflammatory response (inflammatory signalling). Dixit discovered that cells have different sensors for specific forms of danger, but

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that they trigger the inflammatory process in the same way. The discovery of one of these so-called receptors, NLRP3, is of importance for treating inflammation that is not caused by pathogens (bacteria, viruses or fungi) and that can contribute to degenerative conditions such as arthritis, atherosclerosis and Alzheimer's disease. Dixit's research group discovered drugs that specifically inhibit NLRP3. This will make it possible to treat sterile infections in the future, without reducing resistance to pathogens.

Jury praises significant contribution of clinical treatments

Dixit's early findings revealing the fundamental mechanism of apoptosis form the basis of advanced therapies now used in clinics. The jury, with chair René Medema, director of Science Policy at the Netherlands Cancer Institute, said it was confident that Dixit's future research would have a similar impact on the treatment of numerous diseases, including cancer, autoimmune diseases, and infections. In addition to these important scientific discoveries as a 'leader in apoptosis research', the jury says Dixit is a highly dedicated mentor for postdocs and his students. The jury is awarding the prize to Dixit because of his drive to disseminate knowledge about the immune system to a wide audience. The fact that he actively promotes science education in low- and middle-income countries also factored into the jury's decision.

About Vishva Dixit

Vishva Dixit (Kisii, Kenya, 1956) studied medicine at the University of Nairobi in Kenya. In 1981, he moved to the United States for a medical residency training programme at Washington University in St. Louis. In 1986, he joined as an Assistant Professor the Pathology Department at the University of Michigan, where he was appointed full Professor in 1995. Beginning in 1997, he held various positions at the biotech company Genentech, and he has been vice president of Early Discovery Research since 2005. Between 1999 and 2008, he was also a professor of Pharmaceutical Chemistry at the University of California. Dixit has more than fifty patents to his name. In addition to the Dr A.H. Heineken Prize for Medicine, awards he has received include the Vilcek Prize, the Gutenberg Research Award, and the Dawson Prize in Genetics.