

Dr H.P. Heineken Prize for Biochemistry and Biophysics 2006 awarded to Sir Alec Jeffreys

Amsterdam, 30 March 2006 - The Royal Netherlands Academy of Arts and Sciences has awarded the Dr H.P. Heineken Prize for Biochemistry and Biophysics 2006 (USD 150,000) to Professor Sir Alec J. Jeffreys, Department of Genetics, University of Leicester, United Kingdom, for

‘his discovery of the genetic fingerprint’

The subject

In the mid-1980s, Alec Jeffreys discovered sequences within strands of DNA that differ from one individual to the next and form a personal code as unique as our fingerprints. He was also the scientist who invented the technique for identifying those sequences. Since his discovery, it has been possible to identify every individual from any cell in his or her body, the only exception being identical twins, who share the same DNA pattern. The consequences of Jeffreys’s discovery have been so far-reaching and rapid that it is virtually impossible to imagine the world without it. His technique – DNA fingerprinting – allows us to answer such questions as: Who is the biological father of a child? Whose blood, sweat, hair or sperm has been left behind at the scene of a crime? Who is this tsunami victim? Are these bones truly the remains of the last czar of Russia? Jeffreys’s technique was even able to tell us whether Dolly was in fact the clone of another sheep.

The new discipline of forensic molecular biology is therefore a direct outcome of Jeffreys’s research, but his discoveries have also opened up other doors, for example the ability to determine whether someone is a carrier of certain pathogenic genes. Most recently, Jeffreys has concentrated on genetic mutations and environmental factors. He is, for example, studying how irradiation may have caused genetic mutations in families from Chernobyl.

The prizewinner

Alec Jeffreys was born in Oxford, United Kingdom, in 1950. He attended Oxford University, where he studied biochemistry and commenced his research career with a dissertation on mitochondria in cultured mammalian cells. In 1975 he moved to Amsterdam University, where he worked as a post-doctoral fellow in the laboratory of Piet Borst, a 1994 Heineken prizewinner. While there, he developed what is now a widely used technique for analysing individual genes, and also made the unexpected discovery that genes are split by non-coding sections of DNA (introns).

Jeffreys returned to the United Kingdom in 1977 to work for the Department of Genetics at the University of Leicester. Ten years later, he accepted an appointment as Professor of Genetics, a position he has held to this day.

Jeffreys is a Fellow of the Royal Society and is a Royal Society Wolfson Research Professor. He has received numerous prizes and awards, including the Australia Prize (1998), the Louis-Jeantet Prize for medicine (2004) and the Albert Lasker Award for Clinical Medical Research (2005). Jeffreys was knighted for his work in 1994.

Jeffreys still prefers to conduct his experiments himself.

Further reading

Jeffreys, A.J., Wilson, V., Thein, S.L., Hypervariable ‘minisatellite’ regions in human DNA, *Nature* **314**: 67-73, 1985

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Jeffreys, A.J., Brookfield, J. F. Y., Semeonoff, R., Positive identification of an immigration test-case using human DNA fingerprints, *Nature* **317**: 818-819, 1985

Jeffreys, A.J., MacLeod, A., Tamaki, K., Neil, D.L., Monckton, D.G., Minisatellite repeat coding as a digital approach to DNA typing, *Nature* **354**: 204-209, 1991

Jeffreys, A.J., Genetic fingerprinting, *Nature Medicine* **11**: 1035-1039, 2005

About the prize

The Dr H.P. Heineken Prize for Biochemistry and Biophysics (named after the father of Alfred Heineken) is the oldest of the Heineken Prizes and has been awarded since 1964. Previous prizewinners include Christian de Duve (winner of the 1974 Nobel Prize for Medicine), Michael Berridge, Piet Borst, Paul Nurse (2001 Nobel Prize for Medicine), James Rothman and Andrew Fire. For more background information, see <http://www.knaw.nl/heinekenprizes>.

The awards ceremony

The six Heineken Prizes for science, scholarship and art are presented every other year during a special session of the Royal Netherlands Academy of Arts and Sciences. This year the presentation will take place on Thursday 28 September at the Beurs van Berlage Building in Amsterdam.