

Dr H.P. Heineken Prize for Biochemistry and Biophysics 2020 awarded to **Bruce Stillman**



Bruce Stillman
Photo: Bob Giglione

The Royal Netherlands Academy of Arts and Sciences has awarded the Dr H.P. Heineken Prize for Biochemistry and Biophysics 2020 to Bruce Stillman, President of the Cold Spring Harbor Laboratory in the state of New York. Stillman is receiving the prize for his groundbreaking research on the way DNA is copied in eukaryotic cells, a process of fundamental importance to life on earth.

The Heineken Prizes are the Netherlands' most prestigious international science prizes. Every two years the prizes are awarded to five leading researchers. They were instituted in 1964 by Alfred H. Heineken in honour of his father Dr Henry P. Heineken. The 2020 laureates will be announced in the first week of June.

Stillman discovered various proteins that are involved in DNA replication

Bruce Stillman started to become interested in DNA replication when doing his PhD research on how the DNA of adenoviruses is copied. He later switched his focus from adenoviruses to the polyomavirus simian virus 40 (SV40), a DNA virus with the potential for causing tumours, and he ultimately used a yeast as the model system.

Stillman discovered numerous important factors that are involved in DNA replication in eukaryotic cells. These cells have a nucleus. Virtually all multicellular organisms — such as plants, animals, and humans — are eukaryotes. Stillman co-discovered the RPA protein (Replication Protein A), which binds to a strand of DNA to prevent it from winding back on itself so that the enzyme polymerase can copy the strand of DNA. He also discovered Replication Factor C and the CAF1 molecule that helps packaging proteins to bind around the DNA that has just been copied.

In his later research Stillman focused on the start of replication: where on the DNA does the copying process start and which protein molecules are involved? He discovered one of the binding factors, ABF-1, that binds at locations where copying starts. He also discovered the crucial molecular complex — the Origin Recognition Complex (ORC) — that determines the exact starting point, and unravelled how this complex ensures that the replication process is initiated in a controlled manner.

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Stillman's research has led to important insights that allow us to understand how our hereditary material is copied, and how this relates to many other processes within the cell. He opened an entirely new and important field of research. His research contributes to a better understanding of the origin of mutations that can lead to hereditary conditions such as cancer.

About the laureate

Bruce William Stillman was born in Melbourne, Australia in 1953. He studied at the University of Sydney and earned his PhD in 1979 at the John Curtin School of Medical Research at the Australian National University for his research into replication of the adenovirus DNA. He then continued his career in the United States, where he started as a postdoctoral fellow at the Cold Spring Harbor Laboratory. Stillman was appointed professor in 1985. He became the director of the Cold Spring Harbor Laboratory in 1994 and nine years later its President, positions he still holds today.

Stillman is a member of the American National Academy of Science, the American Academy of Arts and Sciences, a fellow of the Royal Society in London, a corresponding member of the Australian Academy of Science and a member of the European Molecular Biology Organization. He has received numerous awards for his work, including the Alfred P. Sloan Prize (2004), the Louisa Gross Horwitz Prize (2005), the Herbert Tabor Research Award (2014), and last year the Canada Gairdner International Award.

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Note for editors

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About the Heineken Prizes

Over the past five decades, the Heineken Prizes have become an internationally renowned distinction. They are the Netherlands' most prestigious prizes in the arts and sciences. Every two years, five internationally renowned researchers and one artist, who lives and works in the Netherlands, are honoured. The work of the laureates offers new perspectives, achieves unexpected breakthroughs, and opens up new avenues for others. Since 2010 future generations are also celebrated. Four highly promising young researchers working at Dutch research institutes receive the Heineken Young Scientists Awards.

The laureates are selected by juries made up of members of the Royal Netherlands Academy of Arts and Sciences, the Young Academy, and international experts. The Heineken science prizes include a monetary reward of USD 200,000. The artist receives EUR 100,000, half of which is intended for a publication and/or exhibition. The incentive prizes for young scientists are EUR 10,000 each.

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The Heineken Prizes were instituted in 1964 by Alfred H. Heineken (1923–2002) in honour of his father Dr Henry P. Heineken (1886–1971). In that year the Dr H.P. Heineken Prize for Biochemistry and Biophysics was awarded for the first time. It has since been joined by five other Heineken Prizes: the Dr A.H. Heineken Prize for Art (1988), for Medicine (1989), for Environmental Sciences (1990) and for History (1990), and the C.L. Carvalho-Heineken Prize for Cognitive Science (2006).

Alfred Heineken's daughter, Charlene L. de Carvalho-Heineken (b. 1954), is continuing this tradition as chair of the Alfred Heineken Fondsen Foundation and the Dr A.H. Heineken Foundation for Art, which finance the prizes.

For more information, go to www.heinekenprizes.org