



24 April 2008



Laureates Heineken Prizes 2008 announced

The Royal Netherlands Academy of Arts and Sciences has awarded this year's Heineken Prizes to five internationally renowned scientists and one highly talented Dutch visual artist.

The laureates receive the Heineken Prizes for their great merits to science, Dutch art and society.

Professor Jack W. Szostak (1952), United States, is being awarded the Dr H.P. Heineken Prize for Biochemistry and Biophysics 2008 for 'his highly original insights into the fundamental processes of life'.

Professor Sir Richard Peto (1943), United Kingdom, is being awarded the Dr A.H. Heineken Prize for Medicine 2008 for 'his pioneering work in the field of clinical epidemiology'.

Professor Bert Brunekreef (1953), The Netherlands, is being awarded the Dr A.H. Heineken Prize for Environmental Sciences 2008 for 'his environmental epidemiological research into air pollution and health'.

Professor Jonathan I. Israel (1946), United States, is being awarded the Dr A.H. Heineken Prize for History 2008 for 'his vitally new perspective on the history of the Enlightenment'.

Professor Stanislas Dehaene (1965), France, is being awarded the Dr A.H. Heineken Prize for Cognitive Science 2008 for 'his research into the higher cognitive processes, in particular numerical cognition'.

Barbara Visser (1966), The Netherlands, is being awarded the Dr A.H. Heineken Prize for Art 2008 for 'her photographic and video work, notable for its wide-ranging form and content and consistently distinct signature'.

The prizes will be presented on Thursday, 2 October 2008 in a special session of the Royal Netherlands Academy of Arts and Sciences at the Beurs van Berlage Building in Amsterdam.

The Royal Netherlands Academy of Arts and Sciences selects the winners of the scientific Heineken Prizes on the basis of nominations received from other scientists or from learned institutions throughout the world. An independent jury selects the winner of the Dr A.H. Heineken Prize for Art.

The scientific Heineken Prizes consist of a trophy and USD 150,000 each. The Dr. A.H. Heineken Prize for Art includes a trophy and a cash gift of EUR 50,000. The Heineken Prizes are financed by the Dr. H.P. Heineken Foundation and the Alfred Heineken Funds Foundation.





24 April 2008



The Royal Netherlands Academy of Arts and Sciences has awarded the

Dr H.P. Heineken Prize for Biochemistry and Biophysics 2008

(USD 150,000) to

Professor Jack W. Szostak

Howard Hughes Medical Institute, Harvard Medical School and the Department of Molecular Biology, Massachusetts General Hospital, Boston, Massachusetts, United States, for

'his highly original insights into the fundamental processes of life'

The topic

Biochemist Jack Szostak has been responsible for a series of scientific breakthroughs. Each discovery has concerned the fundamental processes of life and evolution. For example, he is one of the forefathers of today's genetic research with 'knockout mice', genetically engineered mice in which one or more genes have been turned off. This method, which has played a major role in many areas of biomedical research, can be traced back to the early 1980s, when Szostak first aired his revolutionary ideas about the crucial function of telomeres, the specialised DNA sequences at the tips of chromosomes, in cell division. His ideas were later proven correct. Szostak and Elizabeth Blackburn (Heineken Prize for Medicine, 2004) conducted pioneering research on telomeres, which have turned out to play a key role in cancer prevention.

Szostak has also developed new techniques to control the evolution of biological molecules. Known as in vitro selection, this technique has recently made it possible to evolve a new enzyme that does not occur in nature.

Today, Szostak is focusing on the origins of life. He has already shown that minerals may have acted as a catalyst for assembling the building blocks of the first cell structures.

The laureate

Jack Szostak (1952) was only nineteen when he was awarded his B.S. in cell biology at McGill University in Montreal, Canada. He obtained his PhD in biochemistry at Cornell University (Ithaca,

New York, USA), where he worked as a research assistant until 1979. He then moved to Harvard Medical School, where he has been a professor with the Department of Genetics since 1988. In that same year, he accepted an appointment with the Department of Molecular Biology at Boston's Massachusetts General Hospital, where he became an Alex Rich Distinguished Investigator in 2000. In 1998, Szostak became an Investigator at the Howard Hughes Medical Institute at Massachusetts General Hospital.

Szostak has been granted numerous patents and is a member of several American academies and the American Association for the Advancement of Science (AAAS). His previous awards include the 2006 Albert Lasker Award for Basic Medical Research (together with Elizabeth Blackburn and others). Szostak is praised on all sides for his versatility and originality.

Examples of key publications

Szostak, J.W, Blackburn, E.H., Cloning yeast telomeres on linear plasmid vectors. In: *Cell* 1982; 29: 245-55

Szostak, J.W., Orr-Weaver, T.L., Rothstein, R.J., Stahl, F.J., The double-strand-break repair model for recombination. In: *Cell* 1983; 33: 25-35

Murray, A.W., Szostak , J.W., Construction of artificial chromosomes in yeast. In: *Nature* 1983; 305: 189-193

Hager, A.J., Szostak, J.W., RNA-peptide fusions for the invitro selection of peptides and proteins. In: *Proc. Natl. Acad. Sci.* USA 1997; 94: 12297-12302

Seelig, B., Szostak, J.W., Selection and evolution of enzymes from a partially randomized non-catalytic scaffold. In: *Nature* 2007; 448: 828-831.

The prize

The Dr H.P. Heineken Prize for Biochemistry and Biophysics (named for Alfred Heineken's father) is the oldest of the Heineken Prizes and was established in 1964. Previous winners include Christian de Duve (Nobel Prize for Medicine 1974), Piet Borst, Michael Berridge, Paul Nurse (Nobel Prize for Medicine 2001), Andrew Fire (Nobel Prize for Medicine 2006) and Sir Alec Jeffreys. The jury was chaired by Rob Kaptein. For more background information, please see http://www.heinekenprizes. com.

The presentation ceremony





24 April 2008



The Royal Netherlands Academy of Arts and Sciences has awarded the

Dr A.H. Heineken Prize for Cognitive Science 2008

(USD 150,000) to

Professor Stanislas Dehaene,

Collège de France, Paris, for

'his research into the higher cognitive processes, in particular numerical cognition'

The topic

Stanislas Dehaene has shown that the ability to estimate amounts – an innate 'number sense' that human beings have in common with various other species – forms the basis for our mathematical (abstract reasoning) and arithmetic (calculation) abilities. The latter ability does, however, require a well-developed system of symbols – a language system. Evidence for this duality has been found not only in scientific experiments but also in anthropological research. One example is the language of the Amazonian Mundurukú tribe, which has words for numbers only up to five. The Mundurukú are not able to perform precise calculations with larger numbers, but they can approximate and compare larger amounts.

Dehaene has also conducted important research into reading, the ultimate culturally-determined – and not inborn – skill. He has devised ingenious methods for showing that when we read, we access a complex network in the brain that recognises increasingly larger fragments of words without our being aware of it.

These and other findings have led Dehaene to develop the influential 'global workspace' theory of human consciousness, which proposes that our brain uses two different mechanisms in tandem to achieve consciousness.

The laureate

Stanislas Dehaene was born in Roubaix, France, in 1965 and studied applied mathematics and information science in Paris (1985). In 1989 he obtained his PhD in the cognitive sciences. He became the youngest member of the French Academy of Science in 2005 and in the same year was elected to the chair in Experimental Cognitive Psychology at the prestigious Collège de France. Dehaene is also

the Research Director of the Cognitive Neuro-imaging Unit at INSERM, the French National Institute of Health and Medical Research. His previous awards include the Louis D. Prize of the Institut de France and the Gold Medal of the Association Arts-Sciences-Lettres.

Dehaene's work has been recognised well beyond his own discipline. His book *The Number Sense* is a success both within and outside the scientific community. Dehaene's research has resulted in an interactive computer program that helps children with a congenital numeracy problem (dyscalculia) to understand numbers.

Examples of key publications

Dehaene, S., *The number sense: How the mind creates mathematics*, Oxford University Press, Oxford, 1997

Dehaene, S., Spelke, E., Pinel, P, Stanescu, R., Tsivkin, S., Sources of mathematical thinking: Behavioral and brain-imaging evidence. In: *Science*, 1999; 284: 970-974

Dehaene, S., Naccache, L., Cohen, L., Bihan, D.L., Mangin, J.F., Poline, J.B., Rivière, D., Cerebral mechanisms of word masking and unconscious repetition priming. In: *Nature Neuroscience*, 2001; 4: 752-758

Pica, P., Lemer, C., Izard, V., Dehaene, S., Exact and approximate arithmetic in an Amazonian indigene group. In: *Science* 2004; 306: 499-503

Dehaene-Lambertz, G., Hertz-Pannier, L., Dubois, J., Meriaux, S., Roche, A., Sigman, M., Dehaene, S., Functional organization of perisylvian activation during presentation of sentences in preverbal infants. In: *Proceedings of the National Academy of Sciences USA*, 2006; 103: 14240-14245.

The prize

The Dr A.H. Heineken Prize for Cognitive Science was established in 2006. It is the first major international prize in the relatively new, broad field of cognitive science, which explores how human beings and animals acquire, process and apply knowledge. Ms C.L. de Carvalho-Heineken, who succeeded her father Alfred (Freddy) Heineken as the chairperson of the Alfred Heineken Funds Foundation after his death in 2002, agreed to establish this sixth Heineken Prize because of her father's lifelong interest in the workings of the human brain. American psychologist John R. Anderson was the first recipient of this important prize in 2006. The jury was chaired by Jacqueline Meulman. For more background information, please see http://www.heinekenprizes.com.

The presentation ceremony



24 April 2008

Koninklijke Nederlandse Akademie van Wetenschappen



Magie van wetenschap

The Royal Netherlands Academy of Arts and Sciences has awarded the

Dr A.H. Heineken Prize for Medicine 2008

(USD 150,000) to

Professor Richard Peto

University of Oxford, United Kingdom, for

'his pioneering work in the field of clinical epidemiology'

The topic

Richard Peto is one of the founders of meta-analysis, a mathematical method in which the outcomes of diverse medical studies are combined to produce a single answer in an objective and logical way. Meta-analysis is at the heart of evidence-based medicine, an approach in which practitioners can nowadays base many treatment decisions on appropriate randomised evidence. Peto also developed new statistical analysis techniques for prospective studies. With Richard Doll, he helped discover that tobacco is a cause of many illnesses other than lung cancer; that half of all smokers will die of it; that stopping smoking can help prevent premature death and that, if current patterns persist, smoking will kill one billion people this century. He and his colleagues at Oxford have conducted internationally influential studies of the treatment of early breast cancer, heart disease and stroke. Peto's research has made a significant contribution to public health.

The laureate

Richard Peto (1943) studied natural sciences at Cambridge University. He obtained his MSc in statistics at the University of London in 1967, has been with the University of Oxford since 1969 and was appointed professor of Medical Statistics and Epidemiology there in 1992. He is, with Rory Collins, one of the two co-directors of the Clinical Trial Service Unit & Epidemiological Studies Unit, a recent recipient of the Queen's Award for Higher and Further Education.

Peto was made a Fellow of the Royal Society in 1989 for his work on meta-analysis and received a knighthood in 1999 for his achievements in the fields of epidemiology and cancer prevention. He devotes much of his energy to advising and providing information on what he calls 'avoidable death'.

Peto is among the twenty most cited medical researchers in the world and his list of publications runs to almost 500 titles. His previous awards include the Guy Silver Medal from the Royal Statistical Society (1986), La Médaille de la Ville de Paris (1994), and the European Award for Excellence in Stroke Research (1996). He has also been granted two honorary professorships in China, where he was one of the first Western researchers to help initiate and conduct large-scale epidemiological studies.

Examples of key publications

Peto, R., Pike, M.C., Armitage P. et al., Design and analysis of randomized trials requiring prolonged observations of each patient, II: analysis and examples. In: *Br J Cancer* 1977; 35: 1-39 Doll, R., Peto, R., The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today. In: *J Natl Cancer Inst* 1981; 66; 1191-1308

Doll, R., Peto, R., Boreham, J., Sutherland, I., Mortality in relation to smoking: 50 years' observations on male British doctors. In: *BMJ* 2004; 328; 1519-1528

Early Breast Cancer Trialists' Collaborative Group, Effects of chemotherapy and hormonal therapy for early breast cancer on recurrence and 15-year survival: an overview of the randomised trials. In: *The Lancet* 2005; 365: 1687-1717.

The prize

The Dr A.H. Heineken Prize for Medicine was established in 1989. Previous winners include Paul Lauterbur (Nobel Prize for Medicine in 2003), David de Wied, Eric Kandel (Nobel Prize for Medicine in 2000), Barry Marshall (Nobel Prize for Medicine in 2005), Elizabeth Blackburn and Mary Claire King. The jury was chaired by Jos van der Meer.

For more background information, please see http://www.heinekenprizes.com.

The presentation ceremony



24 April 2008

Koninklijke Nederlandse Akademie van Wetenschappen





The Royal Netherlands Academy of Arts and Sciences has awarded the

Dr A.H. Heineken Prize for History 2008

(USD 150,000) to

Professor Jonathan I. Israel

School of Historical Studies, Institute of Advanced Studies, Princeton, New Jersey, United States, for

'his vitally new perspective on the history of the Enlightenment'

The topic

Some scholars believe the Enlightenment began with eighteenth-century French philosophers such as Voltaire and Rousseau, whereas others trace its origins to England and to Newton and Locke. But these theories have been altered by the work of British historian Jonathan Israel, who emphasises the significance of what went before: the early, radical phase of the Enlightenment, dominated by the ideas of the philosopher Spinoza (1632-1677).

In Israel's view, Spinoza played a key role in the emancipation movement on which our modern, secular, democratic and tolerant society is based. His philosophy led directly to the French Revolution's notions of freedom, equality and brotherhood. The Enlightenment was a single, pan-European movement, according to Israel. It is ideas that make the difference in history, he believes. Not everyone agrees with Israel, but his themes are of special relevance to many contemporary discussions.

Israel had already caused quite a stir outside his discipline with his writings on the Dutch Republic.

The laureate

Jonathan Israel (London, 1946) studied history at Cambridge University and took his PhD at Oxford. He concentrated on the early modern history of Europe, initially at the University of Hull and then at University College London, where he became the first non-Dutch professor of Dutch history. He became a professor at Princeton in 2001.

Israel is extraordinarily productive and has written authoritative books about such wide-ranging topics as Jewry in early modern European history, colonial politics in Mexico, and world trade in the age of mercantilism. He is also a keen debater of contemporary issues. He knows eight European languages, including contemporary and seventeenth-century Dutch.

In 2007 Israel was granted a Fellowship by the Royal Library of the Netherlands and gave the Royal Library Lecture, *Failed Enlightenment. Spinoza's Legacy and the Netherlands (1670-1800)*, which can be heard on the Royal Library website.

Israel is a Fellow of the British Academy and a Foreign Member of the Royal Netherlands Academy of Arts and Sciences. He was granted an honorary professorship at Amsterdam University in 2003 and, one year later, was made a Companion of the Order of the Dutch Lion, an honour seldom conferred on foreigners.

Examples of key publications

Jonathan Israel, *European Jewry in the Age of Mercantilism, 1550-1750*, Oxford, 1985 Jonathan Israel, *Dutch primacy in world trade, 1585-1740*, Oxford, 1989 Jonathan Israel, *The Dutch Republic: Its Rise, Greatness, and Fall, 1477-1806*, Oxford, 1995 Jonathan Israel, *Conflicts of Empires: Spain, the Low Countries and the Struggle for World Supremacy, 1585-1713*, London, 1997

Jonathan Israel, *Radical Enlightenment: Philosophy and the Making of Modernity*, 1650-1750, Oxford, 2001.

The prize

The Dr A.H. Heineken Prize for History was established in 1990. It was initially intended for European history alone, but in 2006 eligibility was extended to all areas of the discipline. Previous winners include Peter Gay, Heiko Oberman, Jacques le Goff and Joel Mokyr. The jury was chaired by Willem Frijhoff. For more background information, please see http://www.heinekenprizes.com.

The presentation ceremony





24 April 2008



The Dr A.H. Heineken Prize for Art 2008

(EUR 50,000) has been awarded to

visual artist Barbara Visser

for

'her photographic and video work, notable for its wide-ranging form and content and consistently distinct signature'

The work

Barbara Visser's photographs, videos and installations disrupt our patterns of expectations, sometimes very directly and sometimes more subtly. Alienation from reality and the astonishing nature of reality are certainly not unfamiliar themes in contemporary art, but Visser uses them in her work in a distinctively creative fashion and with immense visual conviction. *For A Day in Holland/Holland in a Day* (2001), for example, she disguised Dutch actors as Japanese tourists and photographed them in the Holland Village theme park in Nagasaki. The result: Dutchmen in Japan who look like Japanese in the Netherlands.

In an earlier work, she stuck a knife in the upholstery of a Martin Visser couch, similar to Lucio Fontana's slashed canvasses. She battered other familiar icons of design furniture as well, robbing them of their functionality but transforming them into works of art at the same time (*Detitled*, 2000).

She attracted attention with The World Belongs to Early Risers (2002), a series of photographs of a man sunbathing on the seashore while, a short distance away, photographers are snapping photos of a refugee who has washed up on the beach.

Barbara Visser has also created future postcards. In one work, she had an actress impersonate her giving a lecture while she dictated the text into a microphone hidden in the actress's ear. She used the recordings for her next work (Lecture on lecture with actress, 2004), in which she worked with another actress who resembled her more closely. Differing realities, originals and copies are recurring themes in Visser's work.

The artist

Barbara Visser (Haarlem, 1966) attended the Gerrit Rietveld Academy in Amsterdam and Cooper Union University in New York (1985 to 1991). In 1998 she spent a year at the Jan van Eyck Academy in Maastricht.

By now she has become a well-known name both in the Netherlands and abroad. Her work has been purchased by the Stedelijk Museum in Amsterdam, the Museum for Modern Art in Arnhem, the Municipal Museum of The Hague, the Frans Hals Museum in Haarlem and the Boijmans van Beuningen Museum in Rotterdam. She has also taken part in exhibitions in Tokyo, Antwerp and Auckland, and exhibited at Büro Friedrich in Berlin and at the Sao Paulo Art Biennial. De Paviljoens Museum in Almere organised a retrospective exhibition of her work entitled *Vertaalde Werken/Translated Works 1990-2006*, accompanied by a publication (*Barbara Visser is er niet*).

Visser has received the Charlotte Köhler Award (1996), the Young Belgian Painting Prize (1999) and the David Roëll Award (2007).

The prize

Previous winners of the Dr A.H. Heineken Prize for Art (established in 1988) include Job Koelewijn (2006), Daan van Golden (2004), Aernout Mik (2002), Guido Geelen (2000) and Marrie Bot (1990).

Unlike the other Heineken Prizes, the Dr A.H. Heineken Prize for Art is awarded by a jury that is independent of the Royal Netherlands Academy of Arts and Sciences. A number of jury members are Academy Fellows, but they act in a private capacity. The jury was chaired by Henk van Os. For more background information, please see http://wwwheinekenprizes.com.

The presentation ceremony





24 April 2008



The Royal Netherlands Academy of Arts and Sciences has awarded the

Dr A.H. Heineken Prize for Environmental Sciences 2008

(USD 150,000) to

Professor Bert Brunekreef

Institute for Risk Assessment Sciences, Utrecht University, for

'his environmental epidemiological research into air pollution and health'

The topic

Environmental epidemiologist Bert Brunekreef began to question the health effects of home insulation during the oil crisis, when many home owners insulated their homes in an effort to reduce their energy bill. He demonstrated that children living in a damp home with mildew are much more likely to develop asthma. He also showed a close association between dust mite allergies and the quality of the air in the home. Brunekreef continues to track a group of people as part of his world-renowned PIAMA project (Prevention and Incidence of Asthma and Mite Allergy).

But Brunekreef is also a major influence when it comes to the outdoor environment. His name will forever be associated with the health standards for fine particle pollution. His studies led to the first Air Quality Standard in the United States. The European guidelines for fine particle pollution, which were incorporated into law in 2005, are based directly on his research.

Brunekreef was also the first to calculate the impact of living close to a busy motorway on child mortality and sickness.

The laureate

Bert Brunekreef (Utrecht, 1953) studied environmental science at Wageningen University, where he specialised in air pollution and environment and health. After receiving his PhD, he spent a year at the Harvard School of Public Health. He was appointed professor of Environmental Epidemiology at Wageningen University in 1993 and at Utrecht University in 2000. In 2005, Brunekreef founded the Institute for Risk Assessment Sciences at Utrecht University. He is still the institute's director.

He is often asked to advise on health and environmental issues, both in the Netherlands and at international level. For example, he was a member of the WHO advisory committee for health and air pollution in Europe; he is currently a member of a committee set up by the Netherlands Health Council; and he has a seat on the Steering Committee of the International Study of Asthma and Allergies in Childhood (ISAAC). Brunekreef is highly committed to ensuring that steps are taken against air pollution.

His previous awards include the Goldsmith Award from the International Society of Environmental Epidemiology and the European Lung Foundation Award. Earlier this year he received an honorary PhD from Leuven University.

Examples of key publications

Brunekreef, B., Dockery, D.W., Speizer, F.E., Ware, J.H., Spengler, J.D. & Ferris, B.G. Home dampness and respiratory morbidity in children. In: *Am Rev Respir Dis* 1989; 140: 1363-1367 Brunekreef, B., Janssen, N.A., Hartog, J. de, Harssema, H., Knape, M., & Vliet, P. van (1997). Air pollution from truck traffic and lung function in children living near motorways. In: *Epidemiology* 1997; 8:298-303

Hoek, G., Brunekreef, B., Goldbohm, S., Fischer, P.& Brandt, P.A. van den. (2002). Association between mortality and indicators of traffic-related air pollution in the Netherlands: a cohort study. In: *The Lancet* 2002; 3601203-1209

Brauer, M., Hoek, G., Van Vliet, P., Meliefste, K., Fischer, P.H., Wijga, A., et al. (2002). Air pollution from traffic and the development of respiratory infections and asthmatic and allergic symptoms in children. In: *Am J Respir Crit Care Med* 2002; 166: 1092-1098

Brunekreef, B., Holgate, S.T., Air Pollution and health. In: The Lancet 2002; 360: 1233-1242.

The prize

The Dr A.H. Heineken Prize for Environmental Sciences was established in 1990. Previous laureates include James Lovelock, Paul Ehrlich, Lonnie Thompson and Stuart Pimm. The jury was chaired by Gert-Jan van Heijst. For more background information, please see http://www.heinekenprizes.com.

The presentation ceremony