



The Crafoord *Prize* 1982 - 2008



Anna-Greta and
Holger Crafoord Fund

Astronomy
Mathematics
Geosciences
Biosciences
Polymer

The Anna-Greta and Holger Crafoord Fund



The Fund was established in 1980 by a donation to the Royal Swedish Academy of Sciences from Anna-Greta and Holger Crafoord. The Crafoord Prize was awarded for the first time in 1982. The purpose of the Fund is to promote basic scientific research worldwide in the following disciplines:



Astronomy and Mathematics



Geosciences



Biosciences with particular emphasis on ecology



Polyarthritis

Support to research takes the form of an international prize awarded annually to outstanding scientists, and of research grants to individuals or institutions in Sweden. The awards are made according to the following order:

YEAR 1: Astronomy and Mathematics

YEAR 2: Geosciences

YEAR 3: Biosciences

YEAR 4: Astronomy and Mathematics

YEAR 5: Geosciences

YEAR 6: Biosciences

etc.

The prize in Polyarthrititis is awarded only when a special committee has shown that scientific progress in this field has been such that an award is justified.

Part of the Fund is reserved for appropriate research projects at the Academy's institutes.

The Crafoord prize presently amounts to USD 500 000. In addition to the prize, financial support is granted to other researchers in the same field in which the prize is awarded for that year.

Nominations

The Academy invites scientists from all over the world to nominate candidates for the prize. Nominations are submitted to the Academy during the spring prior to the year in which the decision is to be made. The received nominations are then reviewed and assessed by a Prize Committee consisting of members from the appropriate Academy classes. The prize should be awarded to one recipient, but may, if necessary, be divided among up to three recipients. At the same time, grant allocations are announced, and may be applied for both by individuals and by institutions. Grant applications can be made for scientific equipment and research, publication of scientific works, scientific conferences and symposia, studies outside of Sweden for Swedish researchers, and activities to further research within the field of research covered by the prize.

On the basis of reports from the Prize Committee and the appropriate Academy class, decisions concerning laureate(s) and grant discipline are made by the Academy in mid January of the year in which the prize is to be awarded.

Crafoord Days

The Crafoord Prize is presented at a ceremony held by the Royal Swedish Academy of Sciences during the Crafoord Days in April. On this occasion, the laureate(s) gives a public lecture, the Crafoord Lecture.

During the Crafoord Days the Academy organizes an international scientific symposium on a subject from the chosen discipline of the year.

Prizes awarded

The Crafoord Prize has been awarded:

2008 **MAXIM KONTSEVICH**, Institut des Hautes Études Scientifiques (IHÉS), France, and **EDWARD WITTEN**, Institute for Advanced Study, USA, for their important contributions to mathematics inspired by modern theoretical physics, and **RASHID ALIEVICH SUNYAEV**, Max Planck Institute for Astrophysics, Germany and Space Research Institute (IKI) of the Russian Academy of Sciences, Russia, for his decisive contributions to high-energy astrophysics and cosmology, in particular processes and dynamics around black holes and neutron stars and demonstration of the diagnostic power of structures in the background radiation.



MAXIM KONTSEVICH (LEFT) AND EDWARD WITTEN (RIGHT)



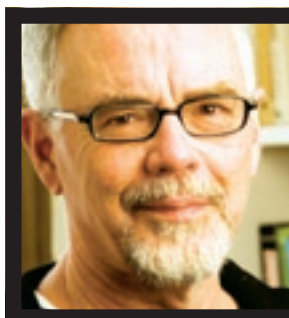
RASHID ALIEVICH SUNYAEV

2007 **ROBERT L. TRIVERS**, Rutgers University, USA, for his fundamental analysis of social evolution, conflict and cooperation.

2006 **WALLACE S. BROECKER**, Lamont-Doherty Earth Observatory, Columbia University, USA, for his innovative and pioneering research on the operation of the global carbon cycle within the ocean-atmosphere-biosphere system, and its interaction with climate.



WALLACE S. BROECKER



ROBERT L. TRIVERS

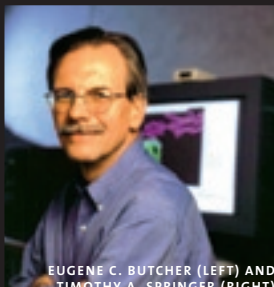


JAMES E. GUNN, P. JAMES E. PEEBLES AND LORD MARTIN J. REES

2005 **JAMES E. GUNN** and **P. JAMES E. PEEBLES**, Princeton University, USA, and **SIR MARTIN J. REES**, Cambridge University, UK, for contributions towards understanding the large-scale structure of the Universe.

2004 **EUGENE C. BUTCHER**, Stanford University, USA, and **TIMOTHY A. SPRINGER**, Harvard Medical School, USA, for their studies on

the molecular mechanisms involved in migration of white blood cells in health and disease.



EUGENE C. BUTCHER (LEFT) AND
TIMOTHY A. SPRINGER (RIGHT)

2003 **CARL R. WOESE**, University of Illinois, USA, for his discovery of a third domain of life.

2002 **DAN P. MCKENZIE**, University of Cambridge, UK, for fundamental contributions to the understanding of the dynamics of the lithosphere, particularly plate tectonics, sedimentary basin formation and mantle melting.

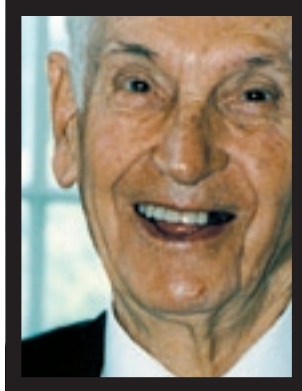
CARL R. WOESE



2001 **ALAIN CONNES**, IHÉS and Collège de France, Paris, for his penetrating work on the theory of operator algebras and for having been a founder of the non-commutative geometry.

2000 **RAVINDER N. MAINI** and **MARC FELDMANN**, both of the Kennedy Institute of Rheumatology, London, UK, for their definition of TNF-alpha as a therapeutic target in rheumatoid arthritis.

1999 **JOHN MAYNARD SMITH**, University of Sussex, Great Britain, **ERNST MAYR**, Harvard University, Cambridge MA, USA, and **GEORGE C. WILLIAMS**, State University of New York, USA, for their fundamental contributions to the conceptual development of evolutionary biology.



ERNST MAYR

1998 **DON L. ANDERSON**, California Institute of Technology, Pasadena CA, USA, and **ADAM M. DZIEWONSKI**, Harvard University, Cambridge MA, USA, for their fundamental contributions to our knowledge of the structures and processes in the interior of the Earth.

1997 **FRED HOYLE**, UK and **EDWIN E. SALPETER**, Cornell University, Ithaca, NY, USA, for their pioneering contributions to the study of nuclear processes in stars and stellar evolution.

1996 **LORD ROBERT M. MAY**, University of Oxford, UK, for his pioneering ecological research concerning theoretical analysis of the dynamics of populations, communities and ecosystems.



WILLI DANSGAARD (RIGHT) AND
NICHOLAS J. SHACKLETON (LEFT)

1995 **WILLI DANSGAARD**, Københavns Universitet, Denmark, and **NICHOLAS SHACKLETON**, University of Cambridge, UK, for their fundamental work on developing and applying isotope geological analysis methods for the study of climatic variations during the Quaternary period.

1994 **SIMON DONALDSON**, University of Oxford, UK, for his fundamental investigations in four-dimensional geometry through application of instantons, in particular his discovery of new differential invariants, and **SHING-TUNG YAU**, Harvard University, USA, for his development of non-linear techniques in differential geometry leading to the solution of several outstanding problems.

1993 **SEYMOUR BENZER**, California Institute of Technology, USA, for his pioneering genetical and neurophysiological studies on behavioural mutants in the fruit fly, *Drosophila melanogaster*, and **WILLIAM D. HAMILTON**, University of Oxford, UK, for his theories concerning kin selection and genetic relationship as a prerequisite for the evolution of altruistic behavior.

1992 **ADOLF SEILACHER**, Institut und Museum für Geologie und Paläontologie, Germany, for his innovative research concerning the evolution of life in interaction with the environment as documented in the geological record.

1991 **ALLAN R. SANDAGE**, The Observatories of the Carnegie Institution of Washington, USA, for his very important contributions to the study of galaxies, their populations of stars, clusters and nebulae, their evolution, the velocity-distance relation (or Hubble relation), and its evolution over time.

ALLAN R. SANDAGE



1990 **PAUL R. EHRLICH**, Stanford University, USA, for his research on the dynamics and genetics of fragmented populations and the importance of the distribution pattern for their survival probabilities, and **EDWARD O. WILSON**, Harvard University, USA, for the theory of island biogeography and other research on species diversity and community dynamics on islands and in other habitats with differing degrees of isolation.

1989 **JAMES VAN ALLEN**, University of Iowa, USA, for his pioneering exploration of space, in particular the discovery of the energetic particles trapped in the geomagnetic field which forms the radiation belts – the Van Allen belts – around our planet Earth.

- 1988** **PIERRE DELIGNE**, Institute for Advanced Study, USA, and **ALEX-ANDRE GROTHENDIECK**, Université des Sciences et Techniques du Languedoc, France, for their fundamental research in algebraic geometry. (Mr Grothendieck declined his prize.)
- 1987** **EUGENE P. ODUM**, University of Georgia, USA, and **HOWARD T. ODUM**, University of Florida, USA, for their pioneering contributions within the field of ecosystem ecology.
- 1986** **CLAUDE J. ALLÉGRE**, Université de Paris, France, and **GERALD J. WASSERBURG**, California Institute of Technology, USA, for their pioneering studies of isotope geochemical relations and the geological interpretations that these results permit.
- 1985** **LYMAN SPITZER, JR.**, Princeton University, USA, for his fundamental pioneering studies of practically every aspect of the interstellar medium, culminating in the results obtained using the Copernicus satellite.
- 1984** **DANIEL H. JANZEN**, University of Pennsylvania, USA, for his imaginative and stimulating studies on co-evolution which has inspired many researchers to further work in this field.
- 1983** **EDVARD N. LORENZ**, Massachusetts Institute of Technology, USA, and **HENRY STOMMEL**, Woods Hole Oceanographic Institution, USA, for their fundamental contributions to the field of geophysical hydrodynamics, which in a unique way have contributed to a deeper understanding of the large-scale motions of the atmosphere and the sea.
- 1982** **VLADIMIR I. ARNOLD**, Moscow State University, Soviet Union, and **LOUIS NIRENBERG**, Courant Institute, USA, for their outstanding achievements in the theory of non-linear differential equations.

Anna-Greta and Holger Crafoord

Holger Crafoord (1908–1982) was prominent in Swedish industry and commerce. He began his career with AB Åkerlund & Rausing and devoted a larger part of his working life to this company.

In 1964, Holger Crafoord founded Gambro AB in Lund, Sweden, where the technique of manufacturing the artificial kidney was developed. This remarkable dialyser soon became world famous. Since then, a series of medical instruments has been introduced on the world market making Gambro a leading company in this field.

In 1980, Holger Crafoord founded the Crafoord Foundation, which annually contributes greatly to the Anna-Greta and Holger Crafoord Fund.

Holger Crafoord became an honorary doctor of economics in 1972 and in 1976 an honorary doctor of medicine at the University of Lund.

Anna-Greta Crafoord (1914–1994) took, as Holger Crafoord's wife, part in the development of Gambro AB. Through generous donations and a strong commitment in the society around her, she contributed to the scientific and cultural life. In 1986 she founded the Anna-Greta Crafoord foundation for rheumatological research and in 1987 Anna-Greta Crafoord became an honorary doctor of medicine at the University of Lund.

Over the years, the Crafoords have furthered both science and culture in many ways and it is noteworthy that research in the natural sciences has received an important measure of support from the Anna-Greta and Holger Crafoord Fund.



THE Crafoord PRIZE

www.crafoordprize.se



THE ROYAL SWEDISH ACADEMY OF SCIENCES is an independent, non-governmental organisation whose aim is to promote the sciences and strengthen their influence in society.

Traditionally, the Academy takes a special responsibility for the natural sciences and mathematics, but in its work strives to increase exchanges between different disciplines. The Academy has about 400 Swedish members and 175 foreign members. The Swedish members are active within Classes and Committees. They initiate investigations, responses to government proposals, conferences and seminars. Once a month the Academy holds a General Meeting and in connection with this it arranges public lectures. (For more information, please see www.kva.se.)

The Academy's institutes offer unique research environments for climate research, botany, ecological economics, the history of sciences, astrophysics, mathematics and other disciplines. The Academy awards annually a number of prizes, the best known of which are the Nobel Prizes in Physics and Chemistry and the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel.

Other important prizes are the Crafoord Prize, the Söderbergiska Prize and the Göran Gustafsson Prizes. The latter are awarded to outstanding young researchers and are a unique combination of a personal prize and a research grant. The Academy also supports researchers who have been researching actively for five to ten years after taking their doctorate by providing a salary for five years through the support of external foundations.

Through its various Committees the Academy also works for the development of a society based on scientific grounds. Great interest is paid to educational issues and the major school development program, NTA (Natural Sciences and Technology for All), is organised in collaboration with the Royal Swedish Academy of Engineering Sciences.



**KUNGL.
VETENSKAPSAKADEMIEN**
THE ROYAL SWEDISH ACADEMY OF SCIENCES