

JAPAN PRIZE NEWS

THE SCIENCE AND TECHNOLOGY
FOUNDATION OF JAPAN (JSTF)

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Categories Chosen for The 10th Anniversary Japan Prize in 1994 and The Rotating Areas Decided within Which The Prize Categories Will Fall from 1995 (11th) to 2003 (19th)

The Foundation announced that the two categories for the tenth Japan Prize, to be awarded in 1994, are "Aerospace Technologies" and "Psychology and Psychiatry."

The concepts of such categories are as in the right column.

Further detailed explanations on the categories are made in the following Q&A format by Dr. Jiro Kondo, the Chairman of the 1994 Fields Selection Committee and the President of the Science Council of Japan.

The Japan Prize, launched in 1985, is an international prize awarded to scientists and researchers who have made original and outstanding achievements in science and technology. The recipients are recognized for contributing not only to the progress of science and technology, but also to peace and prosperity for mankind.

Every year, two fields of research are selected for the award of the Japan Prize.

"Aerospace Technologies"

Q: We would like to have the Chairman's comments on why has "Aerospace Technologies" been selected?

A: The development of aerospace engineering has extended the areas of activity of human beings from two-dimensions (plane) to three-dimensions (space).

During the period of such expansion, majority of innovative technologies has been applied to the three-dimensional area and has become a center of engineering.

Q: What about the fact that "Aerospace Technologies" has been used for wars?



Dr. Jiro Kondo, Chairman of
the 1994 Fields Selection
Committee

A: It was true that in the World War II, commanding of the air was the key to the victory.

However it is also the fact and everybody recognizes that, in the latter half of the century, the development of civil air traffic has made a remarkable development and has made a great contribution to the prosperity of mankind.

In space, there has been a scheme to use satellites for the Star Wars such as, SDI, but at present satellites have been utilized for scientific exploration, resources sensing, environmental preservation,

Concepts of the Categories

Aerospace Technologies

In the 20th century, mankind expanded its activities into space beyond the surface of our planet, by the development of aeroplanes and spacecraft.

Today, it has brought complete changes in our daily lives: aeroplanes fly over the world's continents, TV programs are broadcast live through the communication satellites and weather is forecast with the use of meteorological satellites.

The Prize for 1994 will be awarded for outstanding achievements in the basic technologies supporting the development of aeroplanes and spacecraft, e.g. (1) structures, materials, propulsions, controls, aerodynamics, space navigation, space communications and remote controls for flying machines such as aeroplanes, rockets, artificial satellites and spacecraft, (2), as applications of (1) above, satellite communications, satellite broadcasting, the earth observations from space, remote sensing such as resource surveillance and (3) as a related application, space environmental applications.

Psychology and Psychiatry

Problems of population explosion and contamination of the environment are being widely spread over the earth and infrastructural developments of advanced technologies and information systems among advanced industrial countries have brought about various and psychological stresses among people.

Research in the field of neuroscience has been promoted in order to have a better understanding of the intellectual functions of brains. The fundamentals for mechanisms and functional changes in the fields relating to emotions and intentions have recently been elucidated by using methods based on natural sciences. Such research is the center for the development of psychology (i.e. studies of the mind) and psychiatry (i.e. studies for disorders of mental functions).

The Prize for 1994 will be awarded for outstanding achievements in the research and development of natural sciences relating to psychology and psychiatry.

telecommunication and weather observation. Any technology can be used for military application. However, any science and technology in the context of military application cannot be considered within the category covered of the Japan Prize.

Q: In this category of extended coverage can an individual scientist

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be nominated for the prize?

A: Yes, there are many individuals who have made outstanding contributions to the development of technology within the scope of this category, although the actual selection will be hard. No organization and enterprise such as NASA, Boeing, ESA and Airbus Industry can be a nominee of the Japan Prize.

“Psychology and Psychiatry”

Q: What specific areas can be included in the research and development of natural sciences relating to psychology and psychiatry?

A: Areas of research and development of natural sciences relating to functions of nervous systems include various achievements employing methods such as physiology, chemistry, pharmacology, morphology and molecular biology.

Studies in such areas concerning animal behavior and the normal and abnormal human mental activities can be included.

Q: What about achievements employing technologies of information sciences and image analyses which have recently been radically developed?

A: If such achievements fall in the category above, they should be included.



A 1994 Fields Selection Committee meeting

The Foundation announced that for the Japan Prize for the years 1995 to 2003 inclusive, the areas within which the Prize categories will fall will rotate every three years as shown in the following schedule.

The schedule also shows as a way of example which categories, falling within each area, will be considered for the Prize.

List of Japan Prize 3-year rotating Areas from 1995 (11th) through 2003 (19th)

1. Category Areas I (e.g. Mathematics, Physics, Chemistry and Engineering)

Year	Prize	Area	Category	Japan Prize Categories
1995	11th	Materials Science and Technology	e.g. hardware, new material, production engineering, electronics, electro-optics, etc.	“Materials Science and Technology” (2nd) “Electro-Optics” (3rd) “Science and Technology of Material Interfaces” (8th)
1998	14th			
2001	17th			
1996	12th	Non-Materials Science and Technology	e.g. software, information, communication, applied mathematics, energy, computer, etc.	“Information and Communications” (1st) “Energy Technology” (4th) “Technology of Integration – Design, Production and Control Technologies” (6th) “Applied Mathematics” (7th)
1999	15th			
2002	18th			
1997	13th	System Science and Technology	e.g. ecosystem, aerospace, ocean, city planning, disaster prevention, safety engineering, etc.	“Environmental Science and Technology” (5th) “Earth Science” (6th) “Safety Engineering and Disaster Mitigation” (9th) “Aerospace Technologies” (10th)
2000	16th			
2003	19th			

2. Category Areas II (e.g. Biology, Agriculture and Medicine)

Year	Prize	Area	Category	Japan Prize Categories
1995	11th	Science and Technology for Production of Food and Preservation of Environment	e.g. land use technology, ecology, agricultural technology, forestry technology, fishery technology, environment, etc.	“Improvements of Biological Functions” (3rd) “Science and Technology for Biological Production” (8th)
1998	14th			
2001	17th			
1996	12th	Life Science and Technology	e.g. brain, aging, psychology, behavioral science, pharmacological technology, etc.	“Biotechnology” (1st) “Medicinal Science” (5th) “Psychology and Psychiatry” (10th)
1999	15th			
2002	18th			
1997	13th	Health Care and Therapeutic Science and Technology	e.g. innovative medical technology, promotion of human health, prevention of diseases, etc.	“Medical Engineering” (1st) “Medical Technology” (2nd) “Preventative Medicine” (4th) “Imaging Techniques in Medicine” (7th) “Molecular and Cellular Technology in Medicine” (9th)
2000	16th			
2003	19th			

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Two American Scientists Named The Laureates of the 1993 (9th) Japan Prize

The Foundation announced the two laureates of the 1993 (9th) Japan Prize. The detail of the laureates is as follows.

The prize presentation ceremony will to be held at the National Theatre in Tokyo on Wednesday, April 28. Besides the certificate of merit and medal, each laureates will receive a cash award of ¥50 million (Approx. US\$400,000).

Category of Safety Engineering and Disaster Mitigation



Dr. Frank Press (U.S.A.)

President of the U. S. National Academy of Sciences

Reasons for Award: Development of Modern Seismology and Advancement of International Cooperation in Disaster Science

Dr. Press was the first to propose that the dispersion of long period earthquake surface wave motion could be used as a tool for studying the structure of the earth's crust and upper mantle. Dr. Press verified by the analysis of surface waves that the occurrence of an earthquake is fault motion itself. It was the beginning of modern seismology and the forerunner for studies on earthquake mechanisms.

Dr. Press helped bring about the International Geophysical Year (IGY) 1957-1958, the first worldwide attempt to measure and map various geophysical phenomena. During the IGY, instruments known as the Press-Ewing Seismographs were installed at ten places all over the world, which became the origin of the Worldwide Standardized Seismograph Network (WWSSN). Dr. Press exercised supreme leadership to promote the cause of scientific research and development in the area of disaster mitigation. He was instrumental in initiating the US national program in earthquake prediction. As demonstrated by his efforts for IGY and WWSSN, he recognized the importance of international cooperation in disaster sciences. He conceived and has been a leader in promoting the International Decade for Natural Disaster Reduction (IDNDR), a UN program starting from 1990 in which the international community under the auspices of the United Nations will pay special attention during the last decade of the century to fostering international cooperation in the field of natural disaster (such as earthquakes, floods, droughts, volcanos, landslides, windstorms and wildfires) reduction.

Category of Molecular and Cellular Technology in Medicine



Dr. Kary B. Mullis (U.S.A.)

Founder and Vice President Research of Atomic Tags, Inc.

Reasons for Award: Development of the Polymerase Chain Reaction

The polymerase chain reaction (PCR) has revolutionized molecular biology, medicine and many other related scientific fields. In analyzing genes, a major problem is that targets are rare in a complex genome. Many of the techniques involving the analysis and manipulation of genomic DNA are concerned with overcoming this problem. These techniques are very time-consuming, involving cloning and methods for detecting specific DNA sequences. The PCR has changed all this situation by enabling us to produce a specified DNA sequence without resorting to cloning.

The PCR was first applied to amplification of β -globin genomic sequences and restriction analysis for diagnosis of sickle cell anemia. Thus, in medicine the PCR has had a major impact on the diagnosis.

Second Special Seminar Held by Foundation in Fukuoka City

The Foundation held its second General Science and Technology Seminar in Fukuoka City on November 6, 1992. The seminar was organized in response to enthusiastic requests from the Fukuoka community after a previous seminar, the Foundation's first outside Tokyo, was held in Fukuoka in November 1991.

The seminar took place in the lecture hall of the Fukuoka Municipal Office under the co-sponsorship of the Fukuoka City Government.

The Foundation holds monthly Seminars in Tokyo to develop and disseminate information and ideas regarding science and technology. Distinguished scholars, scientists and engineers from Japan and overseas are invited to participate as lecturers.

The lecturers at the Fukuoka seminar were Ryozauro Yamamoto, a professor emeritus of Kyoto University, and Professor Yoshihiko Otsuki of Waseda University's Department of Science and Engineering. Prof. Yamamoto lectured about the theme "The Science of Global Warming - The Global Climate in the 21st Century?" and Prof. Otsuki gave a presentation entitled "Scientific and Unscientific Aspects of Supernatural Phenomena." The lectures were attended by approximately 350 people, including Fukuoka's Mayor Keiichi Kuwahara.

Prof. Yamamoto discussed changes in the global environment, including global warming and rising sea-levels, which have become reasons for concern in recent years. After explaining the atmosphere's greenhouse effect and the mechanisms of global warming, he talked about simulations using super computers, the most promising new method for forecasting climates. The professor presented his forecasts of global climate in the 21st century, explaining that although such forecasting has made steady



Prof. Ryozauro Yamamoto



Prof. Yoshihiko Otsuki

advances, many uncertainties still exist regarding weather in the next century.

Professor Otsuki spoke about supernatural, scientifically unsubstantiated phenomena, a subject which has attracted substantial attention particularly in the latter half of this century. The professor cited specific examples such as superhuman powers, and presented the social as well as religious perspectives on these phenomena. Warning that not everything can be explained by science, Professor Otsuki stated that a broader scientific scope will be needed to better understand supernatural phenomena in the next century.



Mr. Keiichi Kuwahara
Mayor of Fukuoka City



Scenes at the Fukuoka City
Special Seminar