

JAPAN PRIZE NEWS

THE SCIENCE AND TECHNOLOGY
FOUNDATION OF JAPAN (JSTF)

Shisei Kaikan, 1-3, Hibiya-Koen,
Chiyoda-ku, Tokyo, Japan 100
Tel. 03 (3508) 7691

No. 10
DECEMBER 1991



Categories Chosen for the 9th Japan Prize in 1993

The Science and Technology Foundation of Japan announced that the two categories for the ninth Japan Prize, to be awarded in 1993, would be "Safety Engineering and Disaster Mitigation" and "Molecular and Cellular Technology in Medicine", the concepts of which are as in the right column.

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; the Prize is usually awarded to one person in each category, although the prize has sometimes been shared.

The Japan Prize is one of many projects sponsored by the Foundation to create greater awareness and understanding of science and technology.

The Japan Prize laureates receive certificates of merit and commemorative medals in addition to supplementary cash award of ¥50 million per award field.

Regarding the concepts of categories chosen for the 9th Japan Prize in 1993, the explanations are made in the following Q&A format by Dr. Jiro Kondo, the chairman of the 1993 Fields Selection Committee and the president of the Science Council of Japan; Dr. Takeshi Sato, the chairman of the "Safety Engineering and Disaster Mitigation" subcommittee and the president, Kanazawa Institute of Technology; and Dr. Michiyoshi Harasawa, the chairman of the "Molecular and Cellular Technology in Medicine" subcommittee and the director of Tokyo Posts & Telecommunications Hospital.



Dr. Jiro Kondo, Chairman of
the 1993 Fields Selection
Committee

Q: We would like to have the Chairman's comments on why the two categories of "Safety Engineering and Disaster Mitigation" and "Molecular and Cellular Technology in Medicine" have been selected.

A: Firstly, I would like to explain about "Safety Engineering and Disaster Mitigation".

In 1990, the United Nations started a program called "International Decade for Natural Disaster Reduction" (IDNDR). There have been large scale natural disasters such as the high tides in Bangladesh and the volcanic

Concepts of the Categories

Safety Engineering and Disaster Mitigation

Mankind can suffer from the loss of life and property as a result of natural disasters or accidents caused by seemingly small faults in highly developed large man-machine systems. It is very important for human welfare and prosperity to prevent these accidents and disasters and to promote safety.

The Prize for 1993 will be awarded for outstanding achievements relating to safety promotion and disaster mitigation in such research fields as: risk assessment in technical systems, engineering research on accidents and hazards, technical contributions to mitigate natural disasters, engineering developments to reduce the effects of disasters on cities and civil structures, scientific research on the planning of evacuation methods and disaster mitigation and further comprehensive and international research activities on the implementation in actual projects of the results of basic research.

Molecular and Cellular Technology in Medicine

Progress in molecular and cellular technology in life sciences has resulted in the evolution of medical knowledge and techniques. This progress is not restricted to analysis of the pathophysiology of diseases, but also extends to the development of techniques for the monitoring and diagnosis of disorders and to the production of biologically active substances for medical treatment.

The Prize for 1993 will be awarded for outstanding achievements in the development of molecular and cellular technology relating to the analysis, diagnosis and treatment of diseases or related aspects of medicine which contribute to human welfare.

eruptions of Mt. Pinatubo in the Philippines and Mt. Unzen in Japan, the earthquake in North India and the floods continuing for several months of the Yangtze River in China, which have caused widespread damage and loss of life.

Technology cannot stop such natural disasters as earthquakes, floods, volcanic eruptions and tidal waves, but it can reduce the damage, caused by such disasters.

Meanwhile, with the development of technology, large man-machine systems have been built which in turn may cause large scale accidents, hazards and disasters affecting the community.

In this field, technology can be the key to promoting safety and preventing accidents and disasters and to protecting human lives and properties.

JAPAN PRIZE

I hope that an outstanding achievement deserving of the Japan Prize will be selected.

The second category selected is "Molecular and Cellular Technology in Medicine".

One of the areas of scientific activity which has shown remarkable development during the latter half of the century is "life sciences". This particular field includes DNA recombination technology.

Medical diagnosis and treatment can apply this new technology and there is much expectation that the resulting achievements will save human lives. This could not be achieved by conventional therapeutic technology.

This category is already the subject of advanced research in both medicine and physiology and a number of scientists and researchers have been awarded Nobel Prizes in this field.

However, our selected category is based on a new concept and view and we hope a breakthrough which has actually been proved to contribute to the diagnosis and treatment of diseases will be selected.



A 1993 Fields Selection Committee meeting

* * * * *

* * * * *



Q: What specific areas of research can be included, by way of example, in the category of "Safety Engineering and Disaster Mitigation"?

A: Some of the areas which can be included under "Safety Engineering" are research into safety assessment, analysis and evaluation, basic principles of engineering design, man-machine interface and safety control and the achievements made with respect to the promotion of safety.

Dr. Takeshi Sato, Chairman of the "Safety Engineering and Disaster Mitigation" subcommittee

For "Disaster Mitigation" areas which can be included are countermeasures for earthquakes, floods and droughts, landslips

and landslides, volcanic eruptions, strong winds, tidal waves, storm surges and high waves.



Q: What specific areas of research can be included, by way of example, in the coverage of the category of "Molecular and Cellular Technology in Medicine"?

A: Some of the areas which can be included are not only the development of medical techniques and biologically active substances for medical monitoring, treatment and prevention, but also remarkable developments in embryo-biology, somatic cell genetics and molecular genetics having useful applications in medicine.

Dr. Michiyoshi Harasawa, Chairman of the "Molecular and Cellular Technology in Medicine" subcommittee

A Letter from Dr. Corey to the Japan Prize News

The following is a letter sent specially for the Japan Prize News by Dr. Elias James Corey (U.S.A.), the laureate of the 1989 Japan Prize (in the field of Preventative Medicine).

Dr. Corey was born in 1928. He now is a professor at Harvard University. In 1989 he received the 5th Japan Prize for his "pioneering contributions to the syntheses of prostaglandins and related compounds of great therapeutic value". In 1990 he was awarded the Nobel Prize in chemistry.

Since our return home after the Japan Prize events of April 1989, Claire and I have often remembered the many interesting and friendly people that we met in Japan during, before and after the Japan Prize Week, and we have wished for a way to keep in touch. So, we are very pleased to have an opportunity to transmit to the Japan Prize News this brief account of our more recent activities.

New England, like Japan, enjoys four distinct and special seasons, and as I write this note, the transition from summer to

fall is evident not only in the crisp, cool weather, but also in the foliage which has just started to assume the bright colors of autumn. It has been a summer of unusually fine weather, and the garden around our house, which had been so beautiful during the past few summers, surpassed all records.

Our springtime stay in Japan in April 1989 was followed by another beautiful spring which awaited us on returning to Cambridge. That lovely, extended, double spring, which we remember fondly, was followed by a wonderful summer with

JAPAN PRIZE

children, family and students. The backlog of work was quickly cleared, and my research and teaching flourished. In fall of 1989 I received from the government of Japan the Order of the Rising Sun, Gold and Silver Star, for my role in the development of many leading Japanese chemists over a forty-year period. The award was presented in Boston at a splendid lunch by Mr. Kensaku Hogen, Consul General (see picture at right side). In addition, I was named an honorary member of the Pharmaceutical Society of Japan and the Chemical Society of Japan.

In January 1990 I visited India for the first time as Keynote speaker for an international meeting in New Delhi. Almost thirty former Indian students and many Indian friends made my stay a wonderful and unforgettable experience.

The spring of 1990 brought several honorary degrees and pleasant commencement visits for Claire and me. The highlight was a trip to the University of Helsinki which celebrated its 350th anniversary in June 1990. On the way we had a marvelous holiday in Paris with our three children, each of whom had just completed studies. David received the Ph.D. degree in Chemistry-Molecular Biology from Berkeley; John received a Diploma in Classical Music Composition from the Paris Conservatory, and Susan graduated from Harvard College.

In August 1990 I traveled to Japan to receive an honorary LLD. degree from President Yoshio Ban of Hokkaido University and to lecture there and at an International Meeting in Oiso. My former students in Japan arranged a wonderful reunion, our third, which even included some of their own students, altogether a group of about eighty.

In October 1990 I learned of the award of the 1990 Nobel Prize in Chemistry and for the next several weeks was extremely busy. Our whole family traveled to Stockholm for the Nobel ceremonies, lectures and festivities which we enjoyed very much. Claire



Dr. and Mrs. Elias J. Corey

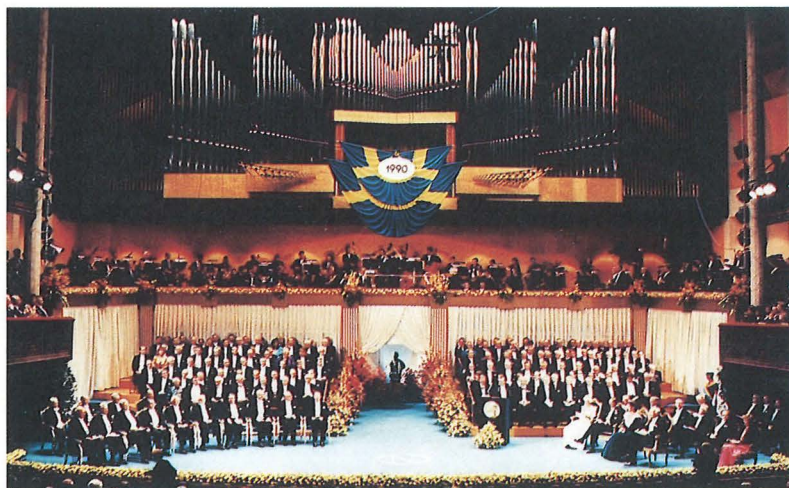
and I were invited back to Stockholm for the 1991 Nobel Prize events as part of the 90th anniversary Nobel Jubilee. Among the many delights of the visit to Sweden was the surprise meeting with the lovely young lady, Kawamura-san, who had presented Claire with a bouquet of flowers at the Japan Prize Banquet.

So far this year I have been able to devote most of my time to research which has gone very well. The most exciting advances of the past few years include: (1) the development of molecular robots for the assembly of complex molecules from simpler ones, (2) advances in the understanding of steroid biosynthesis at the fine molecular level and also determination of relevant enzyme and gene sequences, and (3) the completion of several very intricate syntheses of complicated bioactive molecules. My research group retains its international make-up, exuberant spirit and youthful brilliance. It is an endless source of inspiration.

I am very much looking forward to a return visit to Japan in August 1992 for an International Meeting in Tokyo.



Dr. Corey received the 1990 Nobel Prize in Chemistry wearing the Order of the Rising Sun, Gold and Silver Star



Award ceremony for the 1990 Nobel Prize

Foundation's Special Seminar held in Fukuoka City

The Foundation held its general science and technology seminar first time outside Tokyo on November 1, 1991, in Fukuoka City. The special seminar was co-sponsored by Fukuoka City Government.

The Foundation has held the monthly seminars in Tokyo to develop and disseminate information and ideas regarding science and technology.

The Foundation has invited distinguished Japanese scholars, scientists and engineers as the seminar lecturers. The lecturers at the Fukuoka City special seminar were Prof. Isao Karube from the University of Tokyo's Research Center for Advanced Science and Technology, and Prof. Masao Mukaidono from Meiji University's Department of Computer and Science. Prof. Karube presented "Biocommunication — the Keyword for the 21st Century", while Prof. Mukaidono presented "The Reality of Fuzzy theory" to approx. 230 seminar participants.

Prof. Karube, in his lecture, emphasized "The task of science in the 21st Century is said to be the science of mind and the biocommunication is expected to trigger it." He further explained about various biosensors already in actual use and a scope for the biocommunication which will apply such biosensors.

Prof. Mukaidono told "The Fuzzy theory is a mathematical theory to deal with fuzziness which would be essential for science and technology amiable to man and particularly important idea to build a human-oriented information society." and further made detailed explanations on what part of Fuzzy theory would be interesting and why it would be useful in actual applications.

A survey simultaneously conducted during the Fukuoka City special seminar found that majority of the audience desired the seminar to be held regularly in Fukuoka City and that since the lectures had been presented in rather plain and easy contexts they were able to comprehend them. The Foundation plans to hold the seminar with a different program in Fukuoka City next year with the cooperation of Fukuoka City Government.

The forthcoming programs of the Foundation's monthly seminar in Tokyo will be "Environment and Ecology — In Search for a Better Global Society," "Science of Clothing — for comfortable life" and "Protection from man's aging — the most familiar but difficult problem."



Prof. Isao Karube



Prof. Masao Mukaidono



Scenes at the Fukuoka City special seminar (upper and left)