JAPAN PRIZE NEWS

THE SCIENCE AND TECHNOLOGY FOUNDATION OF JAPAN (JSTF)
Kamiyacho Mori Building, 4th Floor
3-20, Toranomon 4-chome, Minato-ku, Tokyo, 105
Tel. 03 (3432) 5951 Fax. 03 (3432) 5954
URL http: // www. meshnet. or. jp / jstf
E-Mail jstf @mxa. meshnet. or. jp

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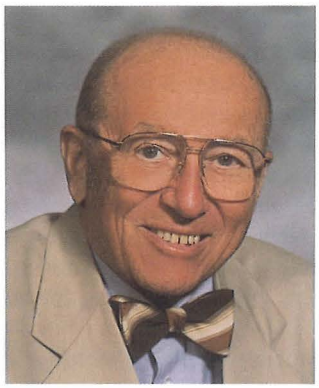
American and Japanese Scientists Named as Laureates of the 1997 (13th) Japan Prize

Category of Biotechnology in Medicine

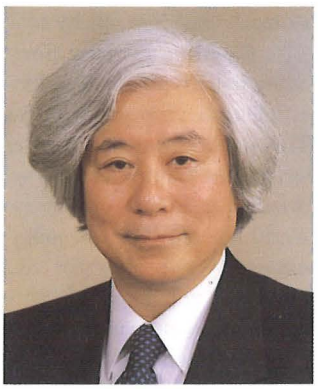
Dr. Takashi Sugimura

Dr. Bruce N. Ames

Category of Systems Engineering for an Artifactual Environment



Dr. Joseph F. Engelberger



Dr. Hiroyuki Yoshikawa

The Science Technology Foundation of Japan (Chairman: Jiro Kondo) announced that an American and a Japanese Doctors who contributed to establishment of fundamental concept on causes of cancer, and an American and a Japanese Doctors who contributed to establishment of the robot industry and creation of a techno-global paradigm, have been named as laureates of the 1997 (13th) Japan Prize. These four scientists will be honored during a Prize presentation ceremony scheduled to be held at the National Theater in Tokyo on Friday, April 25, 1997. All will receive a certificate of merit, commemorative medal, and a cash award of ¥50 million (about US$420,000) for each category.

Dr. Takashi Sugimura (70), President Emeritus of National Cancer Center and President of Toho University, and Dr. Bruce N. Ames (68), Professor of Biochemistry and Molecular Biology, University of California at Berkeley, will receive the Japan Prize in this year's category of "Biotechnology in Medicine". They demonstrated the close relationship between mutagenicity and carcinogenicity based on data they had accumulated independently, and established a method to identify environmental carcinogens by their mutagenicity. They have made crucial contributions to the establishment of the fundamental concept on causes of cancer.

In the other 1997 Japan Prize category, "Systems Engineering for an Artifactual Environment", the award went to Dr. Joseph F. Engelberger (71), Chairman and Director of HelpMate Robotics Inc., and Dr. Hiroyuki Yoshikawa (63), President of The University of Tokyo. They have contributed greatly to "Systems Engineering for an Artifactual Environment", through the establishment of the robot industry and in creation of a techno-global paradigm.

These four scientists will be honored during a Prize presentation ceremony scheduled to be held at the National Theater in Tokyo on Friday, April 25, 1997.

JAPAN PRIZE

Category of Biotechnology in Medicine

Reasons for Award: Contribution to establishment of fundamental concept on causes of cancer

■ Dr. Takashi Sugimura (Japan)

President Emeritus of National Cancer Center and President of Toho University

■ Dr. Bruce N. Ames (U.S.A.)

Professor of Biochemistry and Molecular Biology, University of California, Berkeley

Cancer is a disease caused by alteration of DNA. Dr. Takashi Sugimura and Dr. Bruce N. Ames played a crucial role in the establishment of this old but currently proved important concept in regard to cancer.

As early as 1957, Dr. Sugimura discovered the carcinogenicity of a mutagen, 4-nitroquinoline-1-oxide. In 1966, he found that the subcutaneous administration of N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) to rats resulted in the development of fibrosarcoma. In 1967, he successfully induced stomach cancer in rats by oral administration of MNNG.

Based on his long time studies of histidine biosynthesis in Salmonella typhiminium, Dr. Bruce N. Ames first established an efficient in vitro assay for mutagens using Salmonella in 1971. This method was modified and its efficiency improved and was termed the "Ames test". The Ames test has been used widely in research institutes, industries and regulatory agencies around the world not only for screening for environmental carcinogens and mutagens but also for analyzing mechanisms involved in metabolic activation of carcinogens and for screening for anti-mutagenic compounds.

Dr. Sugimura and Dr. Ames independently established the fact that many carcinogens were mutagens. Using the Ames test, Dr. Sugimura successfully isolated and identified many mutagens with a structure of heterocyclic amine from foods cooked under ordinary conditions. He proved, by their long-time administration to rats and mice, that many of these compounds were carcinogens. He further showed that tumors induced by these heterocyclic amines had genetic alterations. Dr. Sugimura further developed his studies to analyze multiple-step carcinogenesis at molecular levels and to promote effective primary prevention of cancer. Dr. Ames made further contributions to the understanding of endogeneous oxygen-radicals in carcinogenesis and to the understanding of the mechanisms involved in aging.

Dr. Sugimura and Dr. Ames demonstrated the close relationship between mutagenicity and carcinogenicity based on data they had accumulated independently, and established a method to identify environmental carcinogens by their mutagenicity. They have made crucial contributions to the establishment of the fundamental concept on causes of cancer. In view of their remarkable achievements, we recommend Dr. Takashi Sugimura and Dr. Bruce N. Ames as awardees of the 1997 Japan Prize for Biotechnology in Medicine.

Category of Systems Engineering for an Artifactual Environment

Reasons for Award: Establishment of the Robot Industry and Creation of a Techno-Global Paradigm

■ Dr. Joseph F. Engelberger (U.S.A.)

Chairman and Director, HelpMate Robotics Inc.

■ Dr. Hiroyuki Yoshikawa (Japan)

President, The University of Tokyo

Dr. Engelberger foresaw from the beginning that machines called robots would markedly improve productivity and was a key person in their development and introduction for practical purposes. He has greatly contributed to the long-term expansion and development of the world economy by innovatively improving productivity in the manufacturing industry.

The Robot Industries Association of the United States honored Dr. Engelberger by giving his name to the award of the association as Joseph F. Engelberger Robotics Award which is given annually during the symposium to individuals who have contributed greatly to the science and application of robots.

Design and manufacturing engineering has contributed greatly to improvement of manufacturing activities, resulting in a higher quality of human life. However, the large-scale growth of manufacturing has also created serious problems such as environmental destruction on a global scale, depletion of resources and excessive competition.

Dr. Yoshikawa has engaged in the study of design and manufacturing engineering with the aim of optimizing productivity and the artifactual environment on a global scale. He has shown that the professional disciplines associated with the production of artifacts have been too specialized with respect to the system of knowledge, which has made the solving of these problems difficult.

He has played a leading role in research in the systematizing knowledge related to design and manufacturing and has developed a new field called general design theory. Based on this concept, he has proposed that artifactual engineering be aimed at systematization of knowledge in order to solve the above global problems.

To realize this goal, he proposed an international joint research project, the Intelligent Manufacturing Systems Program, which was established in 1994 and in which Japan, the U.S.A., some European countries, Canada and Australia are participating.

As described above, Dr. Engelberger and Dr. Yoshikawa have contributed greatly to " Systems Engineering for an Artifactual Environment" through the establishment of the robot industry and in creation of a techno-global paradigm. For these reasons, they both deserve the 1997 Japan Prize.

View of Press Conference

Members of The 1997(13th) Japan Prize Selection Committee

Name	Post
Chairman: Jiro Kondo	Chairman, The Science and Technology Foundation of Japan Director-General, Research Institute of Innovation Technology for the Earth

Selection Panel for Biotechnology in Medicine

Chairman: Masaaki Terada	Director, National Cancer Center Research Institute
Acting Chairman: Michio Oishi	Director-General, National Institute of Bioscience and Human-Technology
Member: Tadamitsu Kishimoto	Dean, Professor and Chairman, Medical School, Osaka University
Member: Takao Sekiya	Chief, Oncogene Division, National Cancer Center Research Institute
Member: Kumao Toyoshima	President, Osaka Medical Center for Cancer and Cardiovascular Diseases
Member: Katsuhiko Mikoshiba	Professor, Department of Molecular Neurobiology, The Institute of Medical Science, The University of Tokyo

Selection Panel for Systems Engineering for an Artifactual Environment

Chairman: Setsuo Ohsuga	Professor, School of Science and Engineering, Waseda University
Member: Yoji Umetani	Professor and Director of University Library, Toyota Technological Institute
Member: Naomasa Nakajima	Professor, Graduate School of Engineering, The University of Tokyo
Member: Yoshikazu Nishikawa	Dean and Professor, Faculty of Information Sciences, Osaka Institute of Technology
Member: Yukio Hasegawa	Professor, System Science Institute, Waseda University

Chairmen of the Selection Panels, Dr. Terada and Dr. Ohsuga, explain the selection process at the Directors Meeting.

Chairman Jiro Kondo receives the list of recommended candidates.

International Exchange Activities

The Science and Technology Foundation of Japan maintains a close relationship with the Novel Foundation in Sweden. Every year it sends two Japanese students to the Stockholm International Youth Science Seminar (SIYSS), an annual meeting held during the Novel Prize Week in early December sponsored by the Swedish Federation of Young Scientists and supported by the Nobel Foundation.

This year, The Science and Technology Foundation of Japan sent Mr. Daisuke Kurabayashi of The University of Tokyo and Mr. Jun Koyama of Tokyo Institute of Technology to the Stockholm International Youth Science Seminar. Their report follows.

At the Parliament

At the Youth Hostel (Back row: Mr. Koyama left, Mr. Kurabayashi on his left)

Many of the twenty attendants were winners of mathematics competitions. We all stayed at the same youth hostel during the seminar where we duly made friends. It was very constructive for us to be able to make friends with these excellent students from various countries. (The five secretariat members were all students and they took good care of the attendants.) At the reception, we had chances to talk with the prizewinners. We were impressed that all were so frank and kind. On December 10, we witnessed a gorgeous ceremony but we thought that the atmosphere was relaxed. The banquet was spectacular. The dishes were served while music was played and a short play was presented. After the ball, we all stayed up at the Hall until late that night, excited as we were.

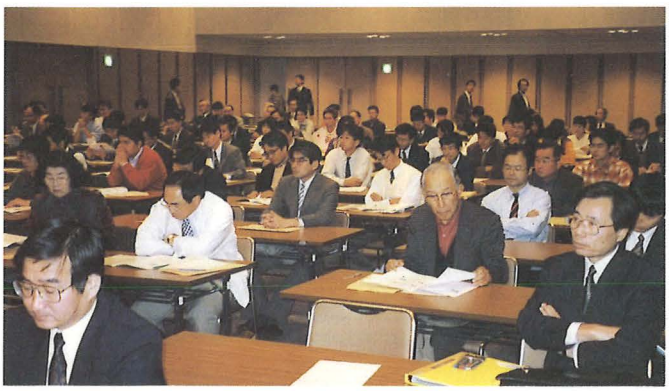
Foundation's Annual Science and Technology Seminar Held in Fukuoka

A special annual seminar to discuss the general science and technology in plain language was held on November 28, 1996, in Fukuoka, one of Japan's largest cities. This is fifth year that this seminar has been held in Fukuoka.

In Tokyo, the Foundation has held a monthly seminar for the general public since March 1989. In this seminar, famous scientists lecture about various topics in science and technology in plain language to develop and disseminate information and ideas regarding science and technology.

The Fukuoka version of the seminar was launched in 1990 as a result of an agreement reached between the Foundation and the Fukuoka City Municipal Office marking the establishment of the Fukuoka Asian Culture Award.

The 1996 Fukuoka special seminar was held in the Fukuoka Software Research Park, SRP, attended by some 150 people. The lectures were delivered by Prof. Setsuo Arikawa of the Graduate School of Information Science and Electrical Engineering, Kyushu University; and Prof. Hiromichi Morikawa of Graduate Department of Gene Science, Faculty of Science, Hiroshima University. Prof. Arikawa spoke about "Knowledge Discovery from Scientific Data", and Prof. Morikawa spoke about "Air-Pollutant - Philic Plant - a dream Plant of 21st century..."



Prof. Setsuo Arikawa

Prof. Hiromichi Morikawa

Categories Selected for the 1998 (14th) Japan Prize

The Science and Technology Foundation of Japan has announced the two categories for the 1998 (14th) Japan Prize. The categories are "Generation and Design of New Materials Creating Novel Functions" and "Biotechnology in Agricultural Sciences."

Concepts of the Categories

Generation and Design of New Materials Creating Novel Functions

Recently, we have made rapid progress in the area of materials science and technology. Most of them are definitely based upon the methodology of generation and design of novel structures having controllability at the atomic and molecular level. Due to these advances, various new material functions and characteristics have been generated, which has contributed to the innovation of science and engineering.

The Prize for 1998 will feature the aforementioned field of "Generation and Design of New Materials Creating Novel Functions". The Prize will beawarded to a pioneering individual who has substantially contributed to the dramatic progress of this science and technology making a strong impact on society.

Biotechnology in Agricultural Sciences

The promotion of sustainable agricultural production compatible with the preservation of the environment will become difficult in future in view of the rapid increase of the population, particularly in the developing regions of the world.

In order to address this problem, the development of biotechnology is considered to be one of the key issues.

The prize for 1998 will be awarded for outstanding achievements in the development of biotechnology in agricultural sciences relating to genetics, breeding and cultivation to improve the yield, quality and tolerance to biotic and abiotic stresses, including post-harvest biotechnology to reduce the losses and deterioration of agricultural products during transportation, storage and processing.

Kamiyacho Mori Building where the Office of the Foundation is Located