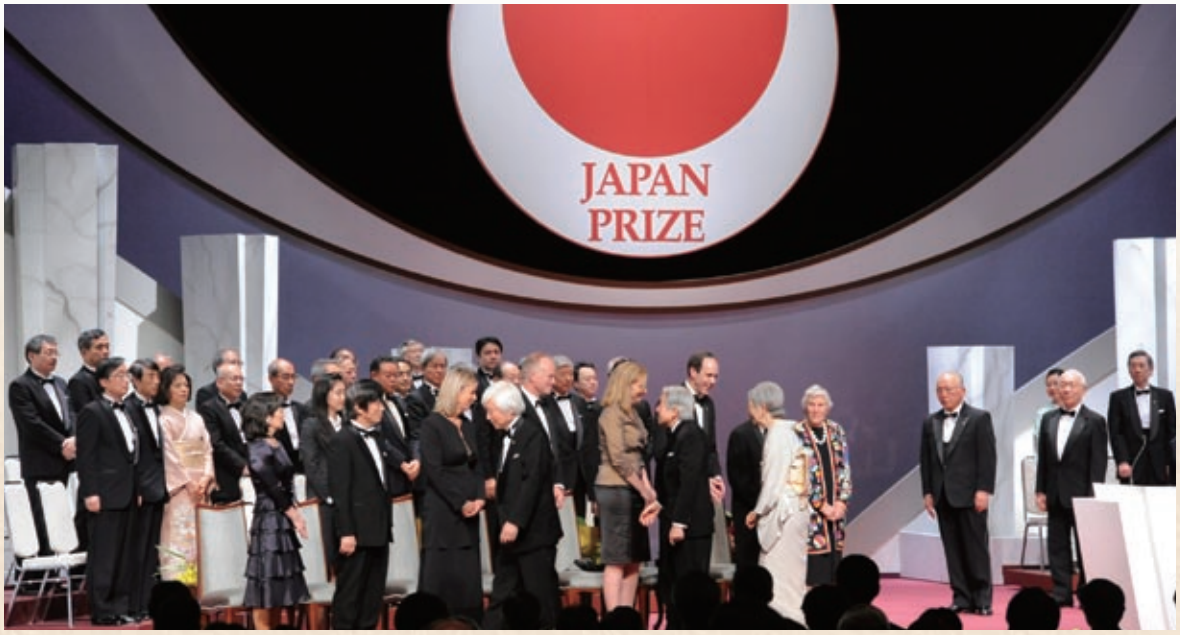
THE JAPAN PRIZE FOUNDATION
Akasaka Twin Tower East, 13th Floor, 2-17-22
Akasaka, Minato-ku, Tokyo, 107-0052, JAPAN
Tel : +81-3-5545-0551 Fax : +81-3-5545-0554
www.japanprize.jp

Japan Prize News
No. 48 Jun. 2012

JAPAN PRIZE

2012 (28th) Japan Prize Presentation Ceremony

Attended by Their Majesties the Emperor and Empress of Japan
Prize awarded to four doctors from the United States and Japan



The 2012(28th) Japan Prize Presentation Ceremony was held on Wednesday, April 25, 2012 at the National Theatre of Japan in Tokyo. The prize is awarded to those whose original and outstanding achievements in science and technology are recognized as having advanced the frontiers of knowledge and served the cause of peace and prosperity for mankind.

This year, there were 396 nominations in the field of "Healthcare and Medical Technology" and 167 nominations in the field of "Environment, Energy and Infrastructure." From the tota1 563 nominations, the 2012 Japan Prize was awarded to four scientists.

In the field of "Healthcare and Medical Technology", it was awarded to Dr. Janet Rowley, Dr. Brian Druker and Dr. Nicholas Lydon for their development of a new therapeutic drug targeting cancer-specific molecules. Dr. Masato Sagawa received the prize in the field of "Environment, Energy and Infrastructure" for developing the world's highest performing Nd-Fe-B type permanent magnet and contributing to energy conservation.

JAPAN PRIZE

The Japan Prize is awarded to scientists throughout the world who have been credited with original and outstanding achievements and have made major contributions to the advancement of science and technology, thereby manifestly furthering the cause of peace and the prosperity of mankind.

While the prize encompasses all categories of science and technology, two fields of study are designated for the prize each year in consideration of developments in science and technology.
Each Japan Prize laureate receives a certificate of merit and a prize medal. A cash prize of 50 million yen is also awarded to each prize field.

Message from the Laureates

Field : "Healthcare and Medical Technology"

Development of a new therapeutic drug targeting cancer-specific molecules

Dr. Janet D. Rowley

Born: April 5, 1925
Blum-Riese Distinguished Service Professor of Medicine, Molecular Genetics & Cell Biology and Human Genetics, The University of Chicago

Your Majesties the Emperor and Empress, distinguished guests, my former co-works from Japan, ladies and gentlemen. I am exceedingly honored to receive the Japan Prize which is one of the most prestigious prizes in the world. I am proud and humbled to join the previous winners who included the world's most distinguished scientists ! I am delighted to share this honor with eminent scientists who built on my discovery of the translocation.

At the time of its discovery in 1972, the role of translocations was unclear; in fact it was uncertain whether they played any role at all in the process of the malignant transformation of cells. When the first translocation breakpoints were cloned, it was found that the genes that were involved were known "cancer-causing" genes and thus it was clear that translocations were critical to the malignant process. Knowing the function of the genes at the translocation breakpoints, my co-prize winners developed compounds that inhibited the abnormal function of these genes. Fortunately they could modify these compounds which were then extremely effective in treating chronic myelogenous leukemia.

Finally, I must thank the Japan Prize Foundation and the members of the Selection Committee for selecting me to be one of the recipients of the 2012 Japan Prize for Healthcare and Medical Technology.

Dr. Brian J. Druker

Born: April 30, 1955
Professor and Director of OHSU Knight Cancer Institute, Oregon Health & Science University

I am greatly honored to receive the Japan Prize and to be in the company of such esteemed past winners. I am especially honored to be given this award in the presence of Your Majesties the Emperor and Empress.

I especially want to thank the executives of the Japan Prize Foundation, and all members of the Selection Committee for this incredible honor.

I am particularly honored to receive this award with Dr. Janet Rowley, who has been an inspiration to me and with my good friend, Dr. Nicholas Lydon a tireless champion for targeted therapies.

I also want to take this opportunity to thank my many friends, colleagues and collaborators from Japan who have helped me throughout my career. This includes Dr. Tsukasa Oda and Dr. Shu Tamura, two post-doctoral fellows who helped me start my lab, Dr. Yuzuru Kanakura and Dr. Atsushi Oda who published numerous papers as collaborators with me, and all of the investigators from Japan who helped with the early imatinib clinical trials.

I am very fortunate that I work not only as a scientist but as a physician and every day I get to see patients who are thriving because of our work. They inspire me to continue to work for better treatments and it is in their honor that I accept this award.

Field : “Environment, Energy and Infrastructure”

Achievement

Developing the world’s highest performing Nd-Fe-B type permanent magnet and contributing to energy conservation

Dr. Masato Sagawa

Born: August 3, 1943
President,
Intermetallics Co., Ltd.

It is a great honor to be here today in the presence of Their Majesties the Emperor and Empress, to humbly accept the prestigious Japan Prize together with Dr. Janet D. Rowley, Dr. Brian J. Druker, and Dr. Nicholas S. Lydon.

The “Environment, Energy, and Infrastructure,” is the field I have been awarded this prize for developing the world's highest performing Nd-Fe-B type permanent magnet and contributing to energy conservation. When I consider that one of the most important research themes humanity faces today is energy conservation, I feel I have achieved what I once dreamed of: being able to someday help others.

I am a materials scientist, a researcher of magnetic materials. It has taken much time and effort to bring this research to fruition, and for those results to be of service to society. Having gained a certain hint, I began studying alloys formed from combinations of rare earths, iron, and boron as permanent magnetic materials, and succeeded in developing the world’s first Nd-Fe-B magnet. However, its subsequent development is the combined result of numerous researchers and engineers, including those assembled here today. I would like to share the honor of this award with these colleagues.

Last but not least, I sincerely thank the members of the Japan Prize Foundation, the members of the Selection Committee, and all gathered here today.

Dr. Nicholas B. Lydon

Born: February 27, 1957
Founder and Director,
Blueprint Medicines

Your Majesties, members of the Japan Prize Foundation, Ladies and Gentlemen.

It is a tremendous honor to receive the prestigious Japan Prize together with Janet Rowley, a pioneer in our field, and my friend and collaborator Brian Druker.

In accepting this award, I also need to acknowledge my colleagues at Novartis who contributed to the discovery and development of Imatinib. I would especially like to mention the major contributions made by Elisabeth Buchdunger and Juerg Zimmerman. This success story in drug discovery, and its impact on patient’s lives, was a result of teamwork, commitment, perseverance, and of course a little luck.

The pioneering work of Nowell and Hungerford and Janet Rowley, and subsequent work from multiple academic groups in the leukemia field, established the scientific foundation for our translational work. My fortune in standing here today is an example of how a productive industry-academic collaboration can impact translational research in medicine.

Finally, I would like to express my deep gratitude to the executives of the Japan Prize Foundation and the members of the Selection Committees, and the Japan Prize Foundation.

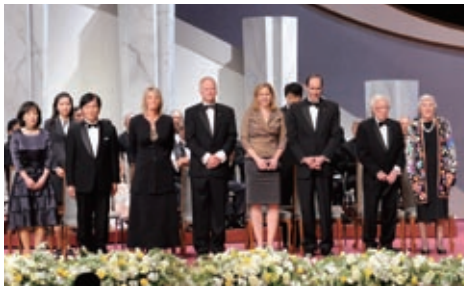
Thank you.

Presentation Ceremony

The Japan Prize Presentation Ceremony took place at the National Theatre of Japan, Tokyo, in the presence of Their Majesties the Emperor and Empress, and with the attendance of the Prime Minister of Japan, the Speaker of the House of Representatives, the President of the House of Councillors, the Chief Justice of the Supreme Court of Japan, foreign ambassadors and ministers, and about 850 notable figures including scholars, politicians, officials, business leaders and journalists.

In 2011, the Presentation Ceremony was canceled due to impact of Great East Japan Earthquake Disaster. Therefore, this year's ceremony began with the introduction of last year's laureates.

Following the opening remarks by Prof. Yoshikawa, Chairman of the Japan Prize Foundation, Dr. Komiyama, Chairman of the Selection Committee, reported on the results of the selection and explained the reasons why the laureates were chosen, and Dr. Nakayama, Chairman of Board of Councilors, presented the certificate of merit and the prize medal to each of the four laureates. After the laureates' acceptance speeches, Prime Minister Noda gave a congratulatory address on behalf of the Three Branches of the Japanese Government. The ceremony ended with a commemorative concert by the Tokyo Geidai Student Orchestra.



Laureates of the year 2012

Laureates of the year 2011
Dr. Hirano(left), Dr. Kishimoto

Prize presentation by
Dr. Nakayama, Chairman of
Board of Councilors

Congratulatory address
by H. E. Mr. Noda
Prime Minister of Japan

Opening remarks
by Prof. Yoshikawa,
Chairman of the Japan
Prize Foundation

Reporting on the selection
results by Dr. Komiyama,
Chairman of the Selection
Committee

Commemorative concert
by the Tokyo Geidai Student Orchestra

Banquet

Following the presentation ceremony, a banquet was held for the laureates at the Hotel New Otani Tokyo where it was attended by Their Majesties the Emperor and Empress of Japan, the head of the legislative branch, foreign ambassadors and ministers, along with around 350 dignitaries from various fields.

The banquet was opened by His Majesty the Emperor proposing a toast in honor of the laureates.
H. E. Mr. Hirata, the President of the House of Councillors, gave a congratulatory address. The banquet concluded with speeches of heartfelt gratitude by the laureates.

His Majesty the Emperor engaging in a conversation with laureates

Her Majesty the Empress engaging in a conversation with laureates

Congratulatory address
by H. E. Mr. Hirata, the President of
the House of Councillors

Acknowledgment
by Dr. Rowley (right) on behalf of the group

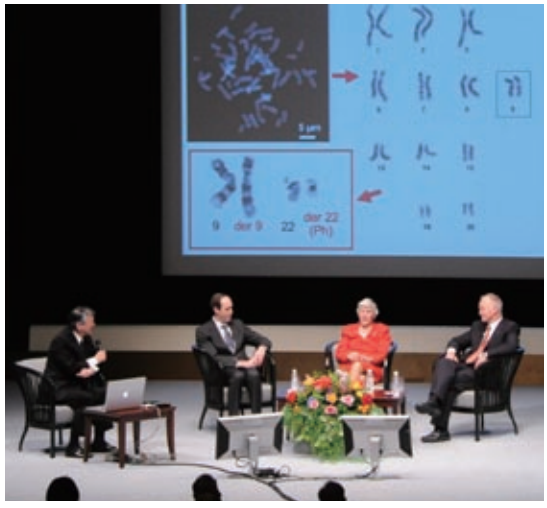
Acknowledgment
by Dr. Sagawa

Commemorative Lectures

On the following day of the Presentation Ceremony and the Banquet, Commemorative Lectures were held in Tokyo. The laureates of the "Healthcare and Medical Technology"field, Dr. Janet Rowley, Dr. Brian Druker and Dr. Nicholas Lydon discussed the pathogenic mechanism of Chronic Myelogenous Leukemia (CML) and their development of the molecularly targeted drug "Imatinib" under the coordination by Dr. Hiroaki Mitsuya of Kumamoto University.

In the field of "Environment, Energy and Infrastructure", Dr. Sagawa talked about how the world's highest performing Nd-Fe-B type permanent magnet came to be developed and gave an easy-to-understand explanation of the magnet's structure with actual demonstrations.

"Healthcare and Medical Technology" field



From left, Dr. Mitsuya (Coordinator), Dr. Druker, Dr. Rowley, and Dr. Lydon

"Environment, Energy and Infrastructure" field

Dr. Sagawa demonstrating the power of the Magnet

Theme

Successful Approach Targetting Leukemia Cells

Dr. Rowley talked about her discovery of abnormal chromosome 22 unique to Leukemia being caused by translocation with chromosome 9, and the pathogenic mechanism of CML in which abnormal growth of hematopoietic cells is triggered by the protein kinase produced from the gene of the translocated chromosome 22 (the *Bcr-Abl* gene).

Dr. Lydon, who played a major role in the drug development, talked about the difficulties involved with finding the right protein kinase inhibitor for CML. He mentioned that during the early stage of the development, finding the right protein kinase inhibitor was thought to be not so difficult because of the relatively small number of protein kinase gene family. But as new discoveries were made, the known protein kinase gene family expanded to a final complement of ~500, making the search very difficult.

Dr. Druker, who made a great contribution in the clinical trials, talked about how Imatinib was approved as a therapeutic drug in Japan in 2001 and saved the lives of many patients. He also stressed that through the establishment of molecularly targeted approach in treating cancer, he will continue to work towards the goal of eradicating as many types of cancer as possible.

Theme

How the World's Strongest "Neodymium Magnet" Came to Exist

"For a scientist, a discovery comes in many ways. When I was doing basic research at university, unfortunately I was not a good researcher. However, when I began working for a corporation and was given a research theme, important ideas for breakthroughs came to my mind one after another." said Dr. Sagawa.

He also mentioned that "At the symposium in 1978, I was inspired with an idea of widening the interatomic distance of Iron by creating an alloy with metals of small atomic radius such as Carbon or Boron. From this idea, Neodymium Magnet was born and I was able to make broad contributions to the society".

Furthermore, Dr. Sagawa gave words of encouragement to the young up-and-coming researchers by saying "A scientist or researcher is a wonderful occupation, for one is able to solve problems our society is facing by one's ideas".

You can watch video of Commemorative Lectures at
www.japanprize.jp

Japan Prize Week

4/23 (Mon)

Welcome Reception

4/24 (Tue)

Courtesy Visit to the Japan Academy

Academic Round Table Discussion

4/25 (Wed)

Presentation Ceremony

Banquet

4/26 (Thu)

Commemorative Lectures

4/27 (Fri)

Sightseeing in Kyoto

In Katsura Imperial Villa

In Matsushita Shinshin-An

JAPAN PRIZE WEEK PHOTOS

Fields Eligible for the 2013 Japan Prize

Areas of Physics, Chemistry and Engineering

Materials and Production

Background and rationale:

Discoveries and inventions of new materials with unprecedented functions as well as advanced production technologies have brought about numerous technological innovations, thereby contributing greatly to the advancement of society.
Development of materials with new functions such as semiconductors, natural products, nano-materials and new catalysts, and also new production technologies such as computer-aided design and manufacturing and measuring techniques have all contributed in creating highly developed and innovative industries of today.
In order to make effective use of finite resources, protect the environment and maintain the continuous prosperity of our society, further development of materials with new functions and epoch-making production technologies have come to be indispensable.

Achievement eligible:

The 2013 Japan Prize in the fields of "Materials and Production" is awarded to individuals who have made significant contributions to society by achieving momentous scientific and technological breakthroughs that improve the quality and safety of people's lives by designing and developing materials with new functions, or advanced production technologies that will create new products and industries.

Areas of Life Science, Agriculture and Medicine

Biological Production and Biological Environment

Background and rationale:

The existence of human being on Earth is completely dependent on the continuous and diverse use of biological resources. In recent years, however, the biological environment of our planet which fosters indispensable biological resources is deteriorating rapidly.
Despite the advent of many technological innovations that have dramatically increased our food production capacity, the human race is set to outgrow that capacity at an even greater pace.
In order to protect the precious biological environment in our global society, there is an ever growing need for development of environmental technologies for conservation of biodiversity and creation of sustainable and environmentally-conscious biological production technologies.

Achievement eligible:

The 2013 Japan Prize in the fields of "Biological Production and Biological Environment" is awarded to individuals who have made significant contributions to the welfare of society by achieving momentous scientific and technological breakthroughs in development of technologies that will measure, evaluate and respond to the effects of human activity on the environment, thereby helping to protect and conserve biodiversity and biological environment, or eradicate hunger and poverty by improving biological productivity of food and other useful materials.

The Japan Prize Foundation

The Japan Prize Foundation was established in 1982, with the aim of contributing to the further development of science and technology. In addition to recognizing outstanding achievements with the Japan Prize, the Foundation has been promoting science and technology by hosting the "Easy-to-understand Science and Technology Seminars" and awarding Research Grants to help nurture young scientists.

Research Grants

The Foundation provides research grants to scientists and researchers who are under 35 years of age. Every year, the Foundation selects projects in the same fields as the Japan Prize and gives one million Japanese yen (approx. US $ 12,000) for a project. Each year, about 20 young scientists receive grants.

"Easy-to-understand Science and Technology Seminars"

The Foundation hosts a series of seminars on advanced technologies that are being used widely in our everyday life. The seminars are designed for students and the general public, and experts in the related fields explain in plain language. Over 200 seminars have been held across Japan since the first seminar was held over 20 years ago.

Stockholm International Youth Science Seminar (SIYSS)

The Foundation sends two Japanese students to the annual Stockholm International Youth Science Seminar, which is held under the auspices of the Swedish Federation of Young Scientists with the support of the Nobel Foundation. Since the program started in 1987, about 50 students from Japan have participated in this event.