THE JAPAN PRIZE FOUNDATION
ARK Mori Building, East Wing 35th Floor, 1-12-32
Akasaka, Minato-ku, Tokyo, 107-6035, JAPAN
Tel: +81-3-5545-0551 Fax: +81-3-5545-0554
www.japanprize.jp

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JAPAN PRIZE

2026 Japan Prize Presentation Ceremony

Their Majesties the Emperor and Empress in attendance at this year's function

On Tuesday, April 14, 2026, the 42nd Japan Prize Presentation Ceremony took place in the presence of Their Majesties the Emperor and Empress at the New National Theatre, Tokyo in Shibuya-ku, Tokyo. The Japan Prize is an international award presented to individuals whose original and outstanding achievements in science and technology have promoted peace and prosperity for humankind. At the ceremony, the 2026 prize laureates were presented with a certificate of merit, a prize medal, and 100 million yen per field as a supplementary prize. This year's laureates were Professor Cynthia Dwork from the field of Electronics, Information, and Communication as well as Professor Shizuo Akira and Professor Zhijian "James" Chen from the field of Life Sciences. For 2026, the Japan Prize Foundation received nominations from around 16,000 prominent scientists and researchers worldwide, and the winners were chosen through a rigorous year-long selection process. Of the fields eligible for the prize in 2026, there were 107 nominations for the Electronics, Information, and Communication field and 185 for the Life Sciences field, which totaled 292.

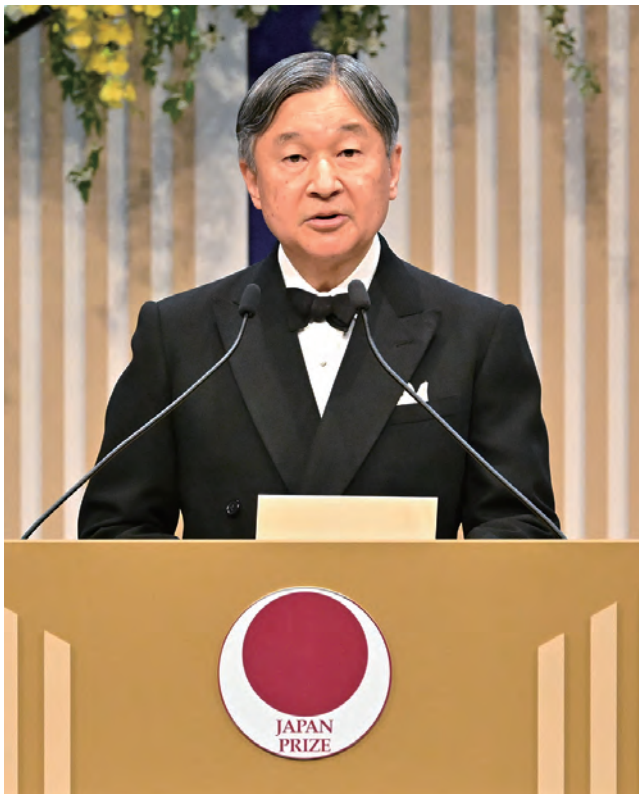
JAPAN PRIZE

The establishment of the Japan Prize was motivated by the Japanese government's desire to create an internationally recognized award that would contribute to scientific and technological development around the world. With the support of numerous donations, the Japan Prize Foundation received endorsement from the Cabinet Office in 1983.

The Japan Prize is awarded to scientists and engineers from around the world who have made creative and dramatic achievements that help progress their fields and contribute significantly to realizing peace and prosperity for all humanity.

Researchers in all fields of science and technology are eligible for the award, with two fields selected each year in consideration of current trends in scientific and technological development. In principle, one individual in each field is recognized with the award, and receives a certificate, a medal, and a monetary prize. Each Award Ceremony is attended by the current Emperor and Empress, heads of the three branches of government and other related officials, and representatives from various other elements of society.

Address by His Majesty the Emperor



It is my great pleasure to attend the 2026 Japan Prize Presentation Ceremony together with distinguished participants and guests from around the world.

The Japan Prize was established in 1982 through private donations and under the Japanese government's vision of contributing to the evolution of science and technology throughout the world. It is awarded to scientists and engineers across the globe who are recognized for making remarkable contributions to the peace and prosperity of humankind through their significant achievements supporting the advancement of science and technology.

This year's Japan Prize was conferred in the fields of "Electronics, Information, and Communication" and "Life Sciences." I extend my heartfelt congratulations to Prof. Cynthia Dwork (Ph.D.) for receiving the prize in Electronics, Information, and Communication, and to Prof. Shizuo Akira (Ph.D.) and Prof. Zhijian "James" Chen (Ph.D.) for receiving the prize in Life Sciences. I would like to express my utmost respect to the three laureates for their research successes that have tremendously contributed to the improvement of security and convenience in people's daily lives and to the advancement of medicine and disease prevention.

In recent years, the global challenges faced by the international community in these fields and other domains have become increasingly diverse and complex. In such circumstances, I believe that the role that science and technology are expected to play will become ever more important. By working together in ways that incorporate broader perspectives and integrate the insights of diverse fields, I hope that earnest efforts will be made to seek the best ways to utilize science and technology for the future of the Earth and toward the sustainable development of humankind.

I would like to conclude by expressing my sincere hope that the Japan Prize will further contribute to the advancement of science and technology that bring happiness to people, and at the same time make a significant contribution to the future of all humanity.

Presentation Ceremony

The 2026 Japan Prize Presentation Ceremony was held at the New National Theatre, Tokyo in the presence of Their Majesties the Emperor and Empress. The magnificent occasion was celebrated by approximately 600 attendees, including distinguished guests such as Dr. Eisuke Mori, Speaker of the House of Representatives; Mr. Masakazu Sekiguchi, President of the House of Councillors; Mr. Yukihiko Imasaki, Chief Justice of the Supreme Court; and Mr. Yohei Matsumoto, Minister of Education, Culture, Sports, Science and Technology. During the presentation ceremony, Chairman Hiroshi Komiyama of the Japan Prize Foundation presented the laureates certificates of merit and prize medals. The laureates received warm applause from the audience as they held up their prize medals and expressed joy in their acceptance speeches.

Prof. Cynthia Dwork

Prof. Shizuo Akira

Prof. Zhijian "James" Chen

Congratulatory Speech H. E. Mr. Masakazu Sekiguchi

Their Majesties the Emperor and Empress applauding the recipients

Opening Remarks Dr. Ryozo Nagai

Commemorative concert

Field: Electronics, Information, and Communication

Contribution to leading research for building an ethical digital society, including differential privacy and fairness

Prof. Cynthia Dwork

Born: 27 June 1958 Based in: USA

Professor of Computer Science, Harvard University

Message from the Laureate

Their Majesties the Emperor and Empress, Excellencies, Members of the Japan Prize Foundation, and Distinguished Guests

It is with profound gratitude and humility that I accept the 2026 Japan Prize.

I believe that theoretical computer science is an excellent vehicle for the introduction of societal values into computation, and this has been my goal for over a quarter century. When I began this work, confidentiality in official statistics – how a government can publish statistics about a population without revealing granular information about individuals – was the purview of statisticians. It became clear to me that the field could benefit from modern cryptography, a discipline sophisticated in reasoning about partial information. A key step was a mathematically rigorous definition of privacy tailored to the statistical analysis of datasets. Several magical properties follow from this definition, and to this day there is no competing theory of statistical privacy loss. Together with successful algorithmic innovations, this has led to widespread deployment in industry and in government.

In time, a new concern arose: fairness. Similarly situated people should be treated similarly. One of my earliest fairness goals was to prevent AI, as used in large advertising networks, from, for example, steering credit-worthy members of historically disadvantaged groups toward credit offerings with less favorable terms. This led to a theory of algorithmic fairness, a more challenging area than privacy, and one whose urgency has only grown.

My work has been immeasurably enriched by the contributions of many collaborators, to whom I extend my deepest and most humble thanks. For all of us, I thank the Japan Prize Foundation for this tremendous honor.

Cynthia Dwork

Field: Life Sciences

Discovery of the nucleic acid sensing mechanism by the innate immune system

Prof. Shizuo Akira

Born: 27 January 1953 Based in: Japan

Specially Appointed Professor
Center for Advanced Modalities and DDS (CAMaD),
The University of Osaka

Message from the Laureate

Over the years I have engaged in research on nucleic acid recognition sensors in innate immunity. While unmethylated CpG sequences are abundant in pathogen DNA, they are rare in mammalian DNA. Moreover, mammalian CpG sequences are typically methylated and generally do not stimulate immune responses. We determined that this distinction is recognized by TLR9. In addition, we discovered that TLR7 recognizes singlestranded RNA. Viruses are primarily composed of nucleic acid, and these two receptors function as sensors that detect invasion by DNA viruses and RNA viruses. Nucleic acids are molecules common to both viruses and humans, and our body's ability to distinguish between viral and human nucleic acids is imperfect. In recent years, research has revealed that the body's errors in identification can lead to autoimmune diseases and chronic inflammation. Given this background, nucleic acid recognition sensors show promise for application as immune adjuvants in vaccines and cancer immunotherapy, and as therapeutic targets. In closing, I would like to extend my deepest gratitude to the research staff, postdoctoral fellows, and graduate students who have collaborated with me.

Shizuo Akira

Prof. Zhijian "James" Chen

Born: 1 January 1966 Based in: USA

Professor of Molecular Biology
University of Texas Southwestern Medical Center

Message from the Laureate

Their Majesties the Emperor and Empress, Excellencies, Members of the Japan Prize Foundation, and Distinguished Guests

It is a tremendous honor for me to receive the Japan Prize in Life Sciences today in your presence. I am accepting this prize on behalf of a team of dedicated scientists in my lab whose collaborative work led to the discovery of the DNA sensing enzyme cGAS that is being recognized by this prize. About 15 years ago, driven by the curiosity to understand how DNA stimulates immune response, we embarked on a journey to hunt for the elusive DNA sensor. The results exceeded my wildest dream. We didn't expect to discover an enzyme that has existed for billions of years from bacteria to human, playing an important role in immune defense against viral infections throughout evolution. We didn't expect the enzyme to make a small but mighty molecule that strongly stimulates immune responses. We didn't expect this enzyme to play a key role in so many diseases including viral infections, autoimmune diseases, cancer and neurodegeneration such as Parkinson's and Alzheimer's disease. I am excited to see that many laboratories and companies are now targeting the cGAS enzyme to develop new drugs for the treatment of various diseases caused by our own DNA. I look forward to the day when cGAS-targeting medicines can benefit millions of people worldwide. I want to take this opportunity to thank many scientists around the globe who have contributed to the rapid progress in our understanding of the cGAS-STING pathway. This is a celebration of the field, and I want to thank the Japan Prize Foundation and the selection committee for recognizing the importance of this pathway in biology and medicine. I also want to express my gratitude to the past and current members of my lab especially the students and postdocs for their hard work and dedication. I would not be here today without the love and support of my family. Finally, I want to thank UT Southwestern Medical Center and Howard Hughes Medical Institute for their many years of unwavering support, which made it possible for me to focus on scientific discovery.

Zhijian" James" Chen

Banquet

After the presentation ceremony, a banquet was held at The Okura Tokyo. His Majesty the Emperor delivered a congratulatory toast, and the approximately 200 attendees raised their glasses once again to celebrate the three laureates' awards. Accompanied by elegant music performed by a string quartet and harp, Their Majesties the Emperor and Empress conversed with the laureates and their families, who were seated on either side of the royal couple. The 90-minute banquet concluded with a congratulatory address by Mr. Yukihiko Imasaki, Chief Justice of the Supreme Court, followed by words of gratitude from the laureates.

Opening address by Dr. Hiroshi Komiyama

Toast by His Magesty Emperor of Japan

Congratulatory address by H.E. Mr. Yukihiko Imasaki

Prof. Cynthia Dwork

Prof. Shizuo Akira

Prof. Zhijian "James" Chen

Japan Prize Commemorative Lectures

Prof. Cynthia Dwork

Field: Electronics, Information, and Communication

Theme: Differential Privacy: Public Methods for Private Data

Is it possible to mathematically guarantee privacy in large-scale data analysis? Differential privacy emerged in the early 2000s as an answer to this question. The direct motivation for its development was the legal mandate for confidentiality imposed on the US Census Bureau. Differential privacy guarantees that the outcome of any analysis is essentially unchanged regardless of whether a particular individual participates or not.

As shown by the fact that 52 million people could be re-identified from the 7.7 billion published statistics in the 2010 Census, statistical anonymization has inherent limitations. A 2023 study also reported cases in which specific prompting strategies caused ChatGPT to output its training data verbatim, leaking personal information. This shows that the issue remains serious even in the era of large language models.

By introducing calibrated noise into algorithms, differential privacy quantitatively controls the risk of personal information leakage and enables the cumulative privacy loss associated with multiple analyses to be managed. It separates the acquisition of population-level knowledge, such as the association between smoking and cancer, from the protection of personal information, making it the first practical framework to render the two mathematically compatible.

Prof. Shizuo Akira

Field: Life Sciences

Theme: From Nucleic Acid Sensing TLRs to Endoribonuclease Regnase-1

Analysis of MyD88 knockout mice led to the discovery that Toll-like receptors (TLRs) recognize LPS, TLR9 recognizes unmethylated CpG DNA, and TLR7/8 recognizes single-stranded RNA. Nucleic acid sensing TLRs are localized in endosomes, and their activation was shown to require Z-loop processing together with appropriate nuclease-mediated processing of nucleic acids.

The elucidation of multiple binding sites in TLR7/8, together with the discovery of a new braking mechanism in which 2'-O -Methyl-guanosine RNA fragments bind to site 3 and fix the receptor in an inactive state, has also contributed to our understanding of how pseudouridine-modified mRNA vaccines evade innate immunity.

In addition, we clarified the function of the endoribonuclease Regnase-1 as a mechanism that controls excessive inflammatory responses. Regnase-1 acts as a "brake" in unstimulated cells by degrading inflammatory mRNAs such as IL-6. After TLR stimulation, Regnase-1 is degraded by the IKK complex, thereby inducing an inflammatory response. These findings have led to broad applications in infectious diseases, autoimmune diseases, and nucleic acid therapeutics, including the elucidation of the pathogenesis of juvenile SLE caused by TLR7 gain-of-function mutations and the development of therapeutic agents.

Prof. Zhijian "James" Chen

Field: Life Sciences

Theme: Igniting the Flame with cGAS – How DNA Triggers Inflammation and Causes Many Diseases

The mechanism by which DNA that enters cells triggers an immune response had long been a mystery. Using a biochemical approach, we first identified the DNA-dependent second messenger cyclic GMP-AMP (cGAMP). We then used mass spectrometry to discover cyclic GMP-AMP synthase (cGAS), the enzyme that synthesizes cGAMP. This enzyme is activated by binding to double-stranded DNA regardless of the DNA sequence and produces cGAMP. When cGAMP binds to stimulator of interferon genes, it induces a strong innate immune response.

cGAS is capable of detecting a wide range of pathogens, including DNA viruses, retroviruses, bacteria, and parasites. However, when abnormally activated by self-DNA, cGAS can potentially cause a variety of diseases, including Aicardi-Goutieres syndrome (AGS), lupus, and neurodegenerative diseases. In Trex1-deficient mice, deletion of one allele of the cGAS gene could prevent lethal inflammation, suggesting that therapeutic benefits may be expected even without complete inhibition.

IMSB-301, a cGAS inhibitor we have developed, can be administered orally, and its efficacy and safety have been confirmed in multiple disease models. A clinical trial in patients with AGS is also ongoing, and promising preliminary results have been obtained. cGAMP is also expected to have potential future applications as an adjuvant in human vaccines against cancer and infectious diseases.

Watch the videos of the commemorative lectures online.

https://www.youtube.com/user/JapanPrize/videos

Japan Prize Week

April 13

Welcome Reception

April 14

Presentation Ceremony

Banquet

April 15

Commemorative Lectures

Academic Roundtable Discussion
"Life Sciences" field

Social Gathering

April 15

Courtesy Call on the Japan Academy

April 16

Media Interview

Courtesy Call on the Prime Minister

April 17

Sightseeing in Kyoto

Shinshin-an

Kyoto State Guest House